EEAG Report on the European Economy 2020: Fair Taxation in a Mobile World

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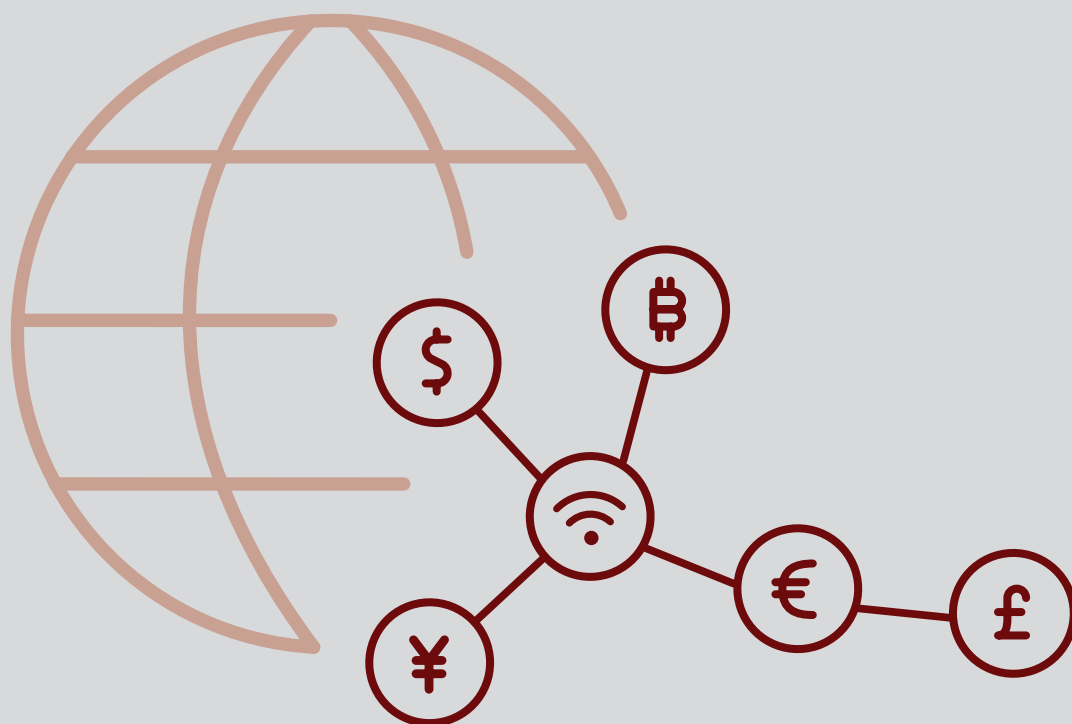
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Foreword

In the 1930s, countries fought destructive trade conflicts – now we have a similar situation, but the conflicts are taking place in the tax system. These conflicts arise out of the twin impacts of globalization and digitalization. Once upon a time, there was an implicit understanding of fairness in taxation, meaning how countries tax within their borders and how the tax burden is distributed. More specifically, companies and individuals were taxed based on their residence and consumption in the destination country. Such an approach worked while these events were mostly perceived as national. However, the world has changed, and in an increasingly globalized, digitalized, and mobile world, these understandings no longer appear to work smoothly, efficiently, and uncontentiously.

Recently, policymakers have focused their attention on the taxation of the so-called 'digital economy' and 'gig economy'. Firms with digital business models find it easier than other firms to operate in countries without a local physical presence. They also rely more on immaterial assets, which are highly mobile internationally. **Chapter 2** illustrates the rapid digital and technical transformation of business models and the emergence of major digital platforms in numerous industries. Special emphasis is devoted to the question of how to regulate them in the light of data and privacy protection. The chapter also illustrates how Europe could promote the development of a European competitor in the platform market, which is largely dominated by firms from the United States and China.

Another reason for a renewed interest in the fairness of the tax system is tax planning and avoidance by multinational firms. Spectacular cases of tax planning by individual multinational companies have attracted strong media attention and raised public concern. This has led to a debate about reforming the international tax system to fight tax avoidance. **Chapter 3** reviews the evolution of the corporate tax system in the recent past and points out the need for reform. It discusses recent proposals by the European Union and the OECD as well as country-specific initiatives, such as the digital services tax in France.

International mobility of capital and people has increased significantly, while tax and social policy remain the responsibility of national governments. This creates incentives for governments to cut taxes on companies and wealthy and highly skilled individuals, and reduce public transfers. These implications of mobility raise concerns that the tax system will become less progressive and that the tax burden will increasingly be shifted away from mobile taxpayers to immobile factors like low-skilled labor. **Chapter 4** outlines the policy options in designing efficient labor income-tax systems without jeopardizing the financing of the social safety net when the mobility both of jobs and of workers is increasing.

Land and property goods are examples of relatively immobile factors. It is surprising to note, however, that in most EU countries, these goods are taxed only lightly. **Chapter 5** argues that there are good reasons – both economic and fairness-related – for why politicians should consider higher taxes on these goods, as compared to inheritance and wealth taxes, which instead require a reduction of rates and a simplification of the tax system in the light of incentives for capital flight and international mobility.

As usual, **Chapter 1** of the report contains an in-depth analysis of the economic situation of the European Union and other countries around the world and a forecast for the coming year. The global slowdown that began in 2018 continued last year, partly driven by ongoing trade disputes and the uncertainty about Brexit. Growth prospects for 2020 are mildly positive, both for Europe as a whole and for its largest economies.

The European Economic Advisory Group at CESifo, which is collectively responsible for all parts of the report, consists of seven economists from seven countries. This year the Group is chaired by Harold James (Princeton University). The other members are Torben M. Andersen (Aarhus University), Giuseppe Bertola (University of Turin), Cecilia García-Peñalosa (Aix-Marseille University), Jan-Egbert Sturm (KOF Swiss Economic Institute, ETH Zurich), Branko Urošević (University of Belgrade), and myself (ifo Institute and Ludwig-Maximilians-University Munich).

I would like to express my gratitude for the valuable assistance provided by the scholars and staff at CES and ifo who helped to prepare the report. This year's participants were Tanja Stitteneder and Daniel Stöhlker (assistants to the group), Christian Grimme (economic forecast), Christiane Nowack, Christoph Zeiner, Jasmin La Marca (graphics), Katharina Pichler and Elisabeth Will (typesetting), and Ines Gross (cover). I also wish to extend my warmest thanks to Swiss Re for hosting our September meeting in Zurich.

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Munich, February 2020

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The global slowdown that began in 2018 continued last year, partly driven by ongoing trade disputes and uncertainty about Brexit. While the service sector maintains its momentum, manufacturing has fallen into recession in numerous countries. As last year, the price-adjusted Gross Domestic Product in the euro area is projected to grow by 1.2 percent this year. Each of the European Union's three largest economies (France, Germany, and Italy) is expected to grow less than 1.5 percent in 2020, which will weigh on overall European growth.

The rapid digital and technical transformation has led to an immense increase in the global connectivity and an unprecedented growth of digital platforms. Major platforms, almost exclusively from the United States and China, operate in Europe with little or no physical presence which raises questions of how to regulate and tax them. In this chapter we present some of the core issues related to the digital transformation of the global economy and how Europe can potentially respond to these momentous changes, including the build-up of a European competitor.

There is a general perception that globalization and technological change have made it easier for large, multinational corporations to avoid paying their fair share of taxes. Part of the debate is related to the question of where value added is created and can be taxed – where factories are located, where entrepreneurial risk is borne, where research and development is carried out or where goods are sold to private consumers. This chapter looks at the recent development of the corporate tax system and discusses the urgent need to reform. We also evaluate recent reform proposals by the European Union and country-specific initiatives, such as the digital services tax in France.

The changing nature of globalization and increasing mobility of jobs and people present a potential challenge to welfare states in the European Union. Welfare systems come under pressure if those contributing most to tax-financed arrangements – high-income groups – migrate to low-tax countries, while those who benefit the most from social protection migrate to high-tax countries. This chapter outlines the policy options in designing tax systems and the social safety net when the mobility of both jobs and workers is increasing – both from a national and a European perspective.

While mobile factors can change their location in response to differential taxation, immobile factors cannot, by definition, cross borders, thus making them an attractive policy option for raising revenues. This chapter discusses reasons for taxation of land and property, both of which are lightly taxed in most (though not all) EU countries at the moment. Moreover, we argue that inheritance and wealth taxes, where applied, require a reduction of rates and a simplification of the tax system in the light of incentives for capital flight and international mobility.

The views expressed in this report are those of the authors and do not necessarily reflect those of the institutions they are affiliated with.

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RECOMMENDATIONS FOR EUROPE

- Europe can and should do more to be competitive with the major players (United States and China) in the digital sector. In particular, it could try to lead by example, providing a third way that would couple innovation and entrepreneurship with protection of privacy and freedoms, perhaps by giving individuals a choice in the amount of privacy they surrender.

- Europe should bring down barriers for cooperation and data exchange within the European internet companies, scale up the European venture capital industry, and possibly provide EU-wide fiscal incentives for the most prominent platforms "made in Europe" that would act in accordance with the European privacy laws.

- Fairness is an important property of tax systems; although views about fairness differ widely, a situation where different companies are taxed very differently and some companies are able to avoid part of the taxes on their profits is clearly unfair.

- A lack of clarity exists with respect to the magnitude of profit shifting and tax avoidance by multinational companies. Data collected in the framework of country by country reporting has the potential to improve the informational basis of the discussion about tax avoidance. However, currently this data suffers from a lack of clarity and standardization as to what exactly is reported. Better standardization is needed to make sure that this data is appropriate and internationally comparable.

- Plans in the European Union to make this data public for EU companies are harmful. In its current state, the data would give rise to misinterpretations. In the absence of global coordination, the publication of this data would put European companies at a competitive disadvantage. Rather than making this data public it should be made available for economic analysis by researchers, safeguarding the anonymity of individual companies. We propose that the European Union publishes a regular report on the basis of country by country data, combined with other available micro and macro data, to highlight the extent to which multinational companies pay taxes in European and other countries.

- We think that the current proposals to reallocate taxing rights to the market countries are unnecessarily complex. This is primarily a result of splitting the profits into routine and residual profits and using only residual profits for the allocation of taxing rights to market countries. While this may protect the fiscal interests of the 'headquarter countries', this complexity runs the risk of generating new tax avoidance opportunities and new conflicts about taxing rights between countries.

- Shifting taxation from mobile to less mobile tax bases is a solution to the mobility of individuals and jobs. It is also possible to maintain progressive elements in taxation, while it may not be possible to change the top statutory tax rates, by focusing on the definition of tax bases and tax exemptions, in particular for taxation of capital gains.

- On the expenditure side, we argue that the subsidies for tertiary education, study grants, absent or subsidized fees, should be rethought. Such policies are regressive in a lifetime perspective, and with increasing skill premiums they also reward the winners. While there are substantial arguments for subsidizing primary and secondary education, this argument is less compelling for tertiary education. One way to reduce educational subsidies is to substitute state-guaranteed loans for study grants; this also reduces the extent to which emigrants can free ride on tax-financed education. Such a change is consistent with maintained incentives for education, and it improves public finances.

- Taxing inheritances (or donations) is part of a fair tax system since receiving an inheritance increases an individual's ability to pay. It is important to eliminate exemptions in order to broaden the tax base and keep the system simple so as to reduce the possibilities for tax optimization.

EXECUTIVE SUMMARY

This year's EEAG report focuses on the taxation-mobility nexus in Europe and the OECD. As the main source of public revenue, taxes affect, among other things, individual labor income, corporate revenue flows, intergenerational wealth transfers, capital markets, and trade and consumption. In particular, the report raises the question of what fair taxation looks like in an increasingly connected and mobile world. The first chapter provides an overview of past and future macroeconomic conditions in the world economy and explains how recent political developments have influenced economic performance. Chapter 2 reviews the digital transformation and outlines how Europe could respond to changes from technological advances. Chapter 3 pays particular attention to corporate taxation in a mobile and digital world. The chapter discusses the development of corporate tax systems in recent decades and the need for reform. At the individual level, Chapter 4 highlights recent developments in income inequality. The chapter also discusses taxation of labor income and the efficient and sustainable design of the social safety net as workers become more mobile. Despite increasing globalization and digitalization, some factors cannot, by their very nature, cross borders. Chapter 5 looks at the taxation of such inherently immobile factors, including consumption, land, wealth, and inheritance.

CHAPTER 1
Macroeconomic Conditions and Outlook

Political events such as Brexit and the ongoing trade disputes have weighed on the global economy in the last year. Weak developments in industrial production and international trade led to two consecutive years of overall stagnation. Falling demand for motor vehicles weakened industrial production, which was further exacerbated by structural changes. Trade conflicts, especially between the United States and China, severely disrupted the international exchange of goods and in some cases postponed investment activities. Ongoing political discussions, e.g. on Brexit, strikes in France, unrest in Hong Kong, and tensions in the Middle East have increased uncertainty about the political environment and existing international value chains. As a result, companies have become more reluctant to invest, which has a negative impact on economic growth. While the economic stimulus is gradually fading in the United States, fiscal policy in other countries is expan-

sionary. In the European Union, the positive momentum is likely to be balanced across the member states.

However, the downside risks to global economic development continue to dominate the upside risks. Clarity about future relations between China and the United States could remove the hesitancy on investment decisions and initiate a faster than expected recovery. On the other hand, despite the recent partial agreement, there is still a risk of further escalation, and the conflict could spread to other countries and regions.

All over the world, a long period of loose monetary policy has had negative consequences for financial stability. Although it is to some extent offset by increased regulation, financial investors are taking on more and more risk in search of return. The economic outlook for the euro area is exposed to several political and economic risks. At the political level, the United Kingdom's exit from the European Union, disputes within the governing coalition in Italy, the lacking majority in the parliament of the new Spanish government and the struggling grand coalition in Germany pose risks for the European economy. In addition, the future development of manufacturing industry in the euro zone is also to some extent uncertain. The possible continuation of the weak intermediate and capital goods industry could have a stronger than expected impact on the labor market and thus have a negative effect on private consumption.

CHAPTER 2
Digital and Technical Transformation

Chapter 2 reviews the rapid digital and technological transformation of recent decades. Companies with digital business models, mostly operating in high-technology industries, have revolutionized the way we live, work, and do business. US companies like Facebook, Apple, Uber, Google, Amazon, and Microsoft started out as small start-up companies and now share most of the market capitalization among themselves. Due to China's technology investments, this type of organization has emerged there as well, leaving Europe (relatively) behind.

As a result of the digital transformation and the introduction of new technologies, world trade and the patterns of globalization are changing. While the impact of these changes on global trade can be positive or negative, digital platforms will certainly

challenge traditional multinational value chains. Nowadays digital platforms play a particularly transformative role in the global economy. The chapter describes some of the major players, such as eBay and YouTube, that have become the centre of exchange of information and integrators of economic activity. Digital platforms have the potential to be important drivers towards more inclusive global development. However, since data is the central component of the digital economy, the question arises to what extent privacy and security require protection from possibly harmful actions. This chapter argues that Europe can and should do more to compete with the major players in the United States and China. One possibility may be to lead by example by providing the third way that would couple innovation and entrepreneurship with protection of privacy and freedom.

CHAPTER 3
Taxing Multinational Companies

Chapter 3 discusses the development of the corporate tax system and presents various reform options. Globalization and technological change seem to make taxation, particularly of large, multinational companies, increasingly difficult. Companies with digital business models often have little or no physical presence in Europe despite generating large revenues. There is a general perception that multinational companies find it easier than traditional companies to avoid taxes. To counteract such developments, France has introduced a 'digital services tax' to collect part of the revenues that would otherwise remain untaxed.

Interestingly, while the debate about (perceived) tax fairness continues, tax revenues are currently at record levels. Yet calls for a reform of international tax systems are becoming more frequent. However, before introducing new taxes to ensure tax fairness and to offset the tax advantages that some multinational companies may enjoy, it is worth paying particular attention to the tax incidence, i.e. who bears the burden of certain taxes. Since some of the assumptions underlying the tax system are implicit, a much more effective approach than introducing new taxes would be to examine whether such unequal treatment in the tax system is justified and possibly to eliminate unfair tax benefits.

The chapter also discusses how countries try to attract internationally mobile economic activity by lowering the corporate tax rate, a behavior known as tax competition. In this context it is useful to distinguish between the competition of real economic activity and competition for accounting profits. The options for reforming the international tax systems for multinational companies include the shift from separate accounting to formula apportionment. In addition, the OECD has initiated a process of international tax policy coordination to reduce profit shift-

ing, by distinguishing between routine and residual profits (profits above what could be otherwise expected given capital and labor inputs) and taking corporate profits at a minimum rate. Transparency and data also play an important role in the discussion of reform options. With the implementation of Country-by-Country (CbC) Reporting Standards, the OECD intends to facilitate and standardize the international exchange of tax and tax-relevant data and information.

CHAPTER 4
Taxing Mobile Jobs and People

After reviewing corporate taxation, this chapter takes a closer look at the taxation of jobs and people in a mobile world. Increased mobility of jobs and workers is an important factor for the design of tax-financed welfare systems, and the benefits and costs of globalization must be distributed fairly. The principles regulating the internal market and social security limit the EU's scope for shaping the welfare state when people migrate within the European Union. On the other hand, there is greater leeway with regard to the migration of non-EU citizens. Policy measures affect both the revenue and the expenditure side. Developments in recent decades show that differences in welfare state regulations persist and that some of the most efficient economies include some countries with lean welfare states and some with extended welfare states. This is an indication that the scope of national policies with respect to the design of welfare systems is largely intact.

The main source of tax revenue is the direct and indirect taxation of labor income. Increased mobility of people can reduce tax revenues. Shifting taxation from mobile to less mobile tax bases is one possible solution. The chapter illustrates that maintaining progressive elements in taxation may be possible, while changing the top statutory tax rates may be not. To limit potential outward migration and loss of tax revenues of very rich income groups, some countries have resorted to tax exemptions. These either target broad groups to increase labor supply or narrow groups to attract the talented or very rich. These developments should be closely monitored at the EU level.

On the expenditure side, there are significant differences between the main types of expenditure. For instance, there are important arguments for subsidizing primary and secondary education to ensure equal opportunities and the use of human capital potential in the population, which are less convincing in the case of higher education. Yet tertiary education is heavily subsidized in most countries. In order to reduce education subsidies, state-guaranteed loans could be replaced by study grants. Such a change would be consistent with education incentives, improve public finances and reduce regressive policies.

CHAPTER 5
Taxing Immobile Factors and Wealth

In Chapter 5, we discuss the taxation of immobile factors, which are characterized by their inability to cross borders. Taxing immobile factors avoids the erosion of the fiscal base related to international mobility. However, the incidence of such tax is not always fair, and this sets limitations on the extent to which governments are willing to use such taxes. In this chapter, we describe some of the most prominent immobile factors in the discussion surrounding fair taxation: consumption, land, wealth, and inheritance.

The main argument against consumption taxes concerns redistribution. Given that the propensity to consume is higher among people on lower incomes, a proportional consumption tax means that people with high incomes pay a lower proportion of their income than people with low incomes. Consumption taxes should therefore be combined with other taxes and since they are a suitable source of revenue and immune to mobility, they should be an essential part of fiscal systems.

Land-value or property taxes are also an efficient source of revenue because the tax base consists of immovable factors. However, land-value taxes do not fully reflect the ability to pay and are therefore relatively rare in the European Union. Land taxes should be gradually implemented and exemptions should be well thought through. A wealth tax is in principle fair, but in practice people with high wealth can avoid the tax, thereby reducing both the tax base and the distributional characteristics. A double wealth tax with a higher rate for immovable assets and a lower rate for movable assets could be an option; however, the overall tax burden of an individual should be assessed taking into account both the wealth tax and the income tax.

The taxation of inheritances has the potential to reduce income and wealth differences across generations as most intergenerational transfers usually occur late in the individual's working life. Although, fairness implies that governments should tax the transfer of wealth, inheritance taxes are less frequent in their incidence and unpopular. The basic principle of any tax should be to keep it simple, as this makes tax optimization difficult or less likely. Special treatment in the form of exemptions for family businesses and the rich is often not justified from an economic point of view. Moreover, the policy options chosen should ensure that individuals contribute in proportion to their ability to pay. In addition, transfers to younger heirs could be encouraged to promote intergenerational fairness. When choosing the right tax rate, it is important to keep in mind that high tax rates can promote tax optimization/avoidance, while low tax rates offer individuals less incentive to reduce their tax bill but also generate less revenue.

Macroeconomic Conditions and Outlook

1.1 INTRODUCTION

Following the cyclical peak in 2017, the global slowdown that began in 2018 continued last year and was exacerbated by a political environment of, for instance, trade disputes and an ongoing Brexit debate. The structural changes that have been initiated in the automotive industry also had a dampening effect on economic growth. Monetary policy reacted to the deteriorating economic situation by further loosening interest rates, and fiscal policy also tried to counteract the situation as far as possible. Nevertheless, the manufacturing sector has fallen into recession in many countries. The steady improvement in the labor market situation in most countries in recent years and the associated growth in aggregate income, which has been further supported by continuing low inflation rates, have kept developments in the service sector strong and prevented stronger declines. Whereas there are first indications that labor market conditions might not improve further, the service sector is more recently being affected by the slowdown in manufacturing. The recent spreading of the Corona virus poses a short-term risk as it might disturb production chains worldwide. Nevertheless, the recent easing of trade dispute tensions and the prevention of a hard Brexit give reason to believe that the situation will not deteriorate further. However, a slight recovery is to be expected only from the second half of this year onward.

Within Europe, growth will remain particularly low in Germany and Italy, but France and the United Kingdom will also continue to grow less than the EU average. Each of these countries faces specific challenges that are burdening their economic climate. While the United Kingdom is in a transition phase and has time until the end of the year to agree on its future relationship with the European Union, both Italy and France need structural reforms that are not considered necessary by either their governments or electorates. As an exporting nation, Germany feels the consequences of de-globalization tendencies in the world and structural changes in its automobile industry.

1.2 CURRENT SITUATION

1.2.1 Global Economy

In 2018, a weakening set in and the global economy has continued to slow down further (see Figure 1.1). Growth in industrial production even came to a halt. The overall stagnant level of production in manufacturing reflects both a decline in the advanced economies and weak development in the emerging markets (see Figure 1.2). Also, international trade in goods, which witnessed a clear decline during the last quarter of 2018, was more or less stagnant during 2019. As a consequence, the world economy has seen two consecutive years of overall stagnation in world trade.

The weakness in industrial production and world trade can be attributed to two factors. First, demand for motor vehicles has fallen sharply in many places, with corresponding slumps in production (see Box 1.1). As motor vehicles are a very trade-intensive product group – according to figures by the World Trade Organization (WTO), 12 percent of global exports of industrially manufactured goods in 2017 came from the automotive industry – world trade was severely negatively affected as a result. The International Monetary Fund (IMF) estimates that about one-fifth of the decline in world production growth and more than one-quarter of the decline in world trade growth in 2018 can be attributed to the automotive sector (IMF, 2019).

Second, the trade conflict between the United States and China in particular has severely restricted the exchange of goods between these countries and

Figure 1.1

World Economic Growth[a] and Growth in Industrial Production
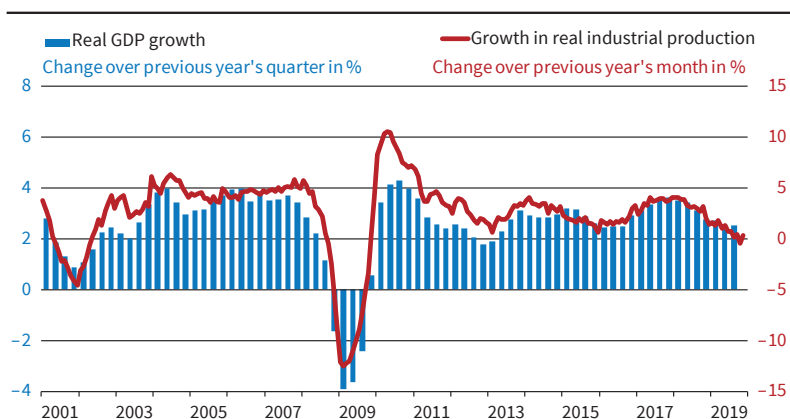
a Purchasing Power Parity (PPP) weighted aggregate year-over-year real GDP growth rate.
Source: Eurostat; OECD; National Statistics; CPB Netherlands Bureau for Economic Policy Analysis; last accessed on 2 February 2020; EEAG calculations.   © CESifo

Figure 1.2

Regional Contributions to Industrial Production and World Trade
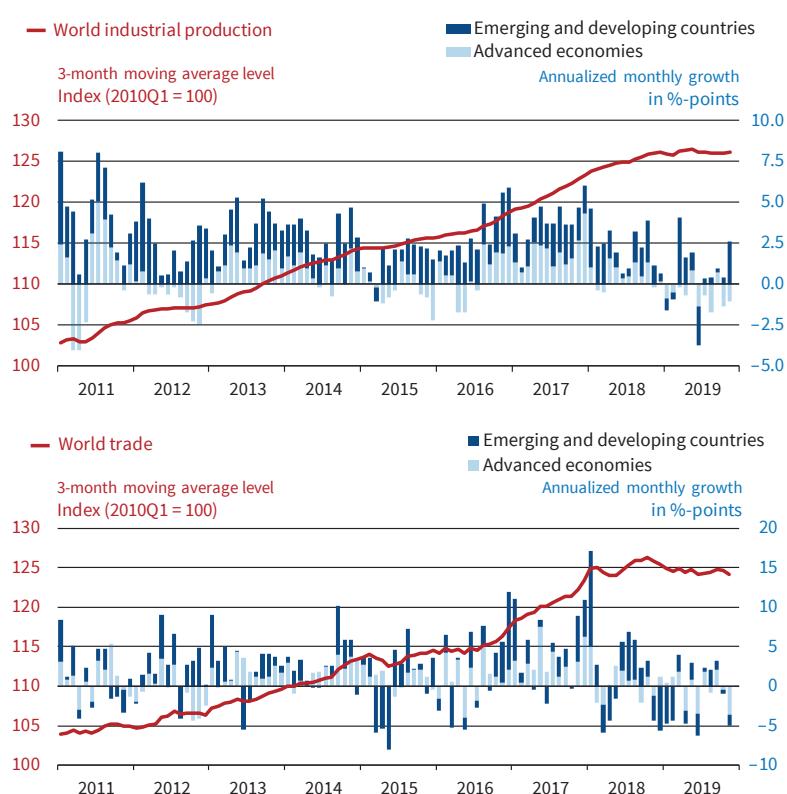
Source: CPB Netherlands Bureau for Economic Policy Analysis; last accessed on 2 February 2020; EEAG calculations.

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thus curbed production. In a survey, one-fifth of US companies stated that they had either stopped or postponed their investment activities in the first half of 2019 in response to the trade conflict (Altig et al., 2019). Furthermore, South Korea and Japan, countries with close economic ties to China, are indirectly affected. China purchases many of its intermediate goods from these countries. The trade conflict had negative effects on other regions as well: Canada, the European Union, South Korea, and Mexico in particular have been hit by US import tariffs that were put in place from 2018 onward. Furthermore, the risk of new US trade policy has not disappeared. For instance, it remains uncertain whether US customs duties will be imposed on European vehicles.

The uncertainty about the further existence of established international value chains has increased. Also ongoing political discussions around Brexit, the strikes in France, the riots in Hong Kong, fiscal policy in Italy, the political tensions between Iran and the United States, to name just a few, have generated excessive discussions in the media and have fueled uncertainty about the political environment (see Figure 1.4). Uncertainty triggers a wait-and-see attitude, which is an important reason for the current slowdown of the world economy. It is putting a burden on firms' willingness to invest and therefore slowing business investment growth.

World trade slightly picked up again in the third quarter of 2019. This was also a result of increased trade activity in the emerging Asian countries. China's exports to Vietnam, Taiwan, and Singapore increased again. At the same time, the exports of these three countries to the United States increased significantly. This could be a first indication that value chains in Asia are becoming more fragmented and that parts of production in China are being shifted to other Asian countries (Clark and Kelly, 2019, and Lee, 2019). However, the shift in trade is also likely to partly reflect the fact that Chinese goods are increasingly being delivered to the United States via other Asian countries in order to avoid customs duties (Pearson and Nguyen, 2019).

Nevertheless, surveys report that economic sentiment is, at the world aggregate, at its lowest level since the Great Recession. This is reflected by the coincident version of the Global Economic Barometer (see Figure 1.5).[1] The decline is particularly visible for economic tendency survey results stemming from the Western Hemisphere and, within that region, North America. In the case of Europe, the coincident indicator has fallen to levels comparable to what was observed during the peak of the euro area crisis in 2012.

World GDP growth is clearly not immune to the overall negative assessment of the current economic situation and has, as a consequence, fallen below its potential rate. However, world GDP growth did not fall to the extent that could have been expected based upon historical experience. The reason for this reduced correlation between industrial production and economic tendency indicators on the one hand and GDP growth on the other hand is that robust developments in services and consumer spending have so far been able to partly compensate for the weak industrial sector that is driving these sentiment indicators. Services and consumer spending have been supported over the years by clearly improved labor market conditions and more recently by relatively strong wage growth.

[1] This indicator is based upon a large number of economic tendency surveys conducted in countries all over the world. It is constructed such that it has a high correlation with contemporaneous world GDP growth. The index has an in-sample average of 100 and a standard deviation of 10. See Abberger et al. (2020) for further information.

BOX 1.1   ON THE WEAKNESS OF THE GLOBAL AUTOMOTIVE INDUSTRY

An important reason for the weakness of global industrial production is the automotive industry. Starting in the second half of 2018, both sales and production saw their first year-over-year declines since the outbreak of the financial crisis. In the three largest global automobile production locations – the United States, the European Union, and China – production of motor vehicles has been declining since the beginning of 2018 and saw significantly weaker development than production in other manufacturing industries.

In line with the weak motor vehicle production figures, since mid-2018 many countries across the world have also been experiencing falling sales and registration figures (see Figure 1.3). For 2019, global registration numbers are expected to have declined by more than 4 percent after a decline of 1 percent in 2018. They are falling particularly sharply in China and India, but also in the European Union. The declines are likely to be largely structural in nature. In China, for example, the tax reductions for car purchases that ended in 2018, lower subsidies for electric cars, and stronger emission regulations from mid-2019 onward are likely to explain a large part of the decline. Furthermore, Chinese car manufacturers are required to ensure that 10 percent of the vehicles sold are equipped with an electric engine. This quota has been binding since 2019 and is expected to increase over the next few years; by 2025, electric vehicles are expected to account for one-fifth of all Chinese car sales (Shirouzu and Jourdan, 2017).

In the European Union, the temporary problems with the Worldwide Harmonized Light Vehicles Test Procedure (WLTP) certification in autumn 2018 led to a setback in approvals, which, however, was subsequently not made up for. This missing rebound in approvals may be related to the increased public debate on the environment, mobility, and propulsion technologies, which has probably contributed to less dynamic purchases of cars with internal combustion engines. Furthermore, in India the crisis in the shadow banking system may be responsible for the slump in Indian car purchases (OECD, 2019b). Shadow banks in India are very important for the financing of motor vehicles (Deutsche Bundesbank, 2019).

Hence, the weak momentum in motor vehicle production and sales appears to be driven by structural phenomena that are likely to persist for the time being. A long-term recovery is likely only once the transition to electromobility has advanced.

Figure 1.3

World Growth in Vehicles Sales and Industrial Production[a]

[a] Both variables are measured as 3-month moving averages before calculating growth rates.
Source: Wards Intelligence; CPB Netherlands Bureau for Economic Policy Analysis; last accessed on 2 February 2020; EEAG calculations.
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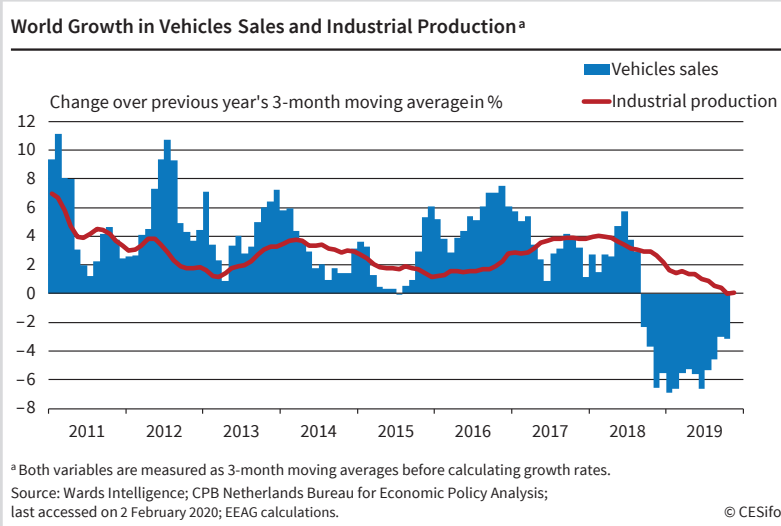
The global cooling has depressed the oil price, which has fallen continuously from its peak of over USD 70 per barrel in April 2019 to USD 60 in October. The attacks on central oil production facilities in Saudi Arabia in mid-September increased oil prices sharply only for a few days before oil production there returned to normal. As a consequence of the US-Iranian conflict, the oil price rose again at the end of 2019, though still remaining below the annual average for 2018. The fall in energy prices last year has dampened the rise in consumer prices in the advanced eco-nomies and in many emerging countries (see Figure 1.6).

In contrast, core inflation rates, which measure the rise in consumer prices excluding energy and food components, have barely moved in most advanced economies (see Figure 1.7). In the euro area and in Japan, the core inflation rate remained below the respective inflation targets of the central banks. Only in the United States has core inflation been significant, hovering above but close to 2 percent for almost two years now. In many emerging markets, core inflation rates declined last year. This holds for Turkey in particular, whose core rate had peaked at just under 25 percent in autumn 2018 due to the sharp devaluation of the Turkish lira. Turkish core inflation then fell to below 10 percent during the last quarter of 2019. In recent months, core rates also fell in Brazil and Russia as a result of the global economic slowdown. In China, core inflation gradually declined over the course of 2019 due to both weak internal and external demand.

Figure 1.4

Global Economic Policy Uncertainty Index and Investment Growth in the OECD
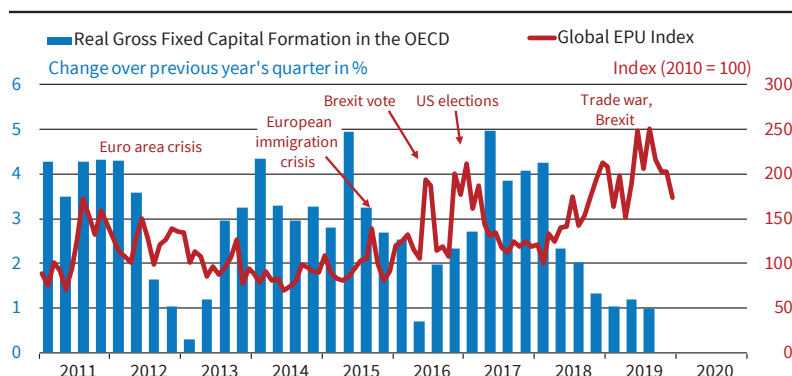
Global Economic Policy Uncertainty (EPU) is calculated as the GDP-weighted average of monthly EPU index values for the United States, Canada, Brazil, Chile, the United Kingdom, Germany, Italy, Spain, France, Netherlands, Russia, India, China, South Korea, Japan, Ireland and Australia using GDP data in current prices from the IMF World Economic Outlook Database.
Source: Baker et al. (2016), www.policyuncertainty.com; OECD; last accessed on 2 February 2020.   © CESifo

Figure 1.5

Global Economic Barometer
Coincident composite indicator
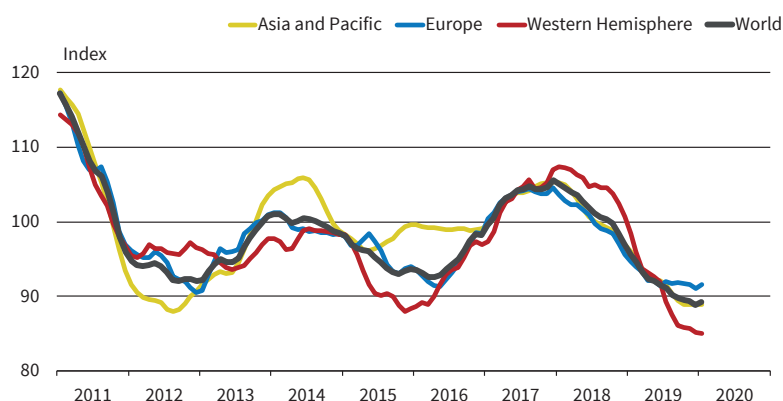
3-month moving averages of indicators with an in-sample average of 100 and a standard deviation of 10.
Source: KOF/FGV.   © CESifo

Figure 1.6

Inflation in the World and Oil Price Movements
Change over previous year's month in %
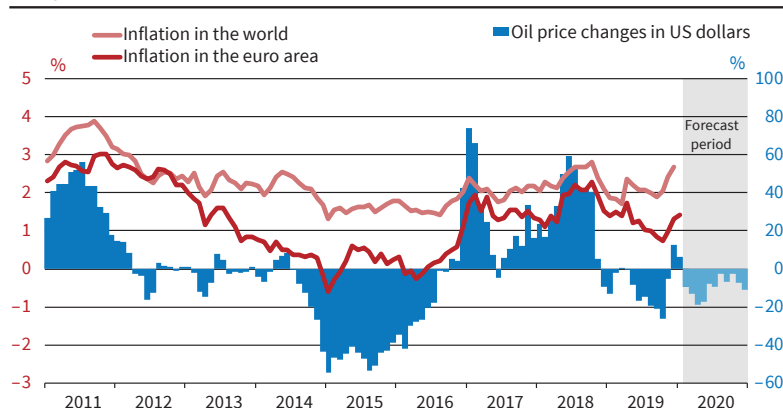
Forecast based on the assumption that oil prices remain steady from January 2020 onwards.
Source: Eurostat; National Statistics; Energy Information Administration;
last accessed on 2 February 2020; EEAG calculations.   © CESifo

1.2.2 United States

After five quarters of GDP growth of around 3 percent during the second half of 2017 and most of 2018, growth

rates have since decreased to a level of about 2 percent (see Figure 1.8). The quite strong expansion at the beginning of 2018 thereby compensated for the disappointing performance estimated for the last quarter of 2018.

The economic stimulus induced by the tax reform in late 2017 has faded out and investment demand descended into a cyclical downturn (see Figure 1.9). Strong increases in public spending throughout 2019, especially at the federal level on defense, together with a further robust expansion in private consumption stabilized economic growth last year. In contrast, both imports and exports stagnated during 2019. The intensification of the trade conflict with China and the economic slowdown in many advanced economies had a negative impact on exports. In addition, exports of aircraft declined because Boeing suspended delivery as a result of the flight ban on the Boeing 737 MAX. Higher costs of imports from China and reduced demand for intermediate goods in the production of US export goods dampened import demand.

The US labor market is still going strong with the unemployment rate at a record low of 3.7 percent on average in 2019. In addition, a historically high number of job openings fostered nominal wage growth of around 3 percent last year. The scarcity in the labor market, which is also caused by demographic changes such as an aging and slower-growing population, has so far hardly been visible in the labor force participation rate. According to OECD data, it has been hovering around 66 percent since 2011.

Dynamic growth in wages put upward pressure on consumer prices and kept core inflation mostly above 2 percent. The decline in oil prices last sum-

Figure 1.7

Core Inflation Rates
Change over previous year's month
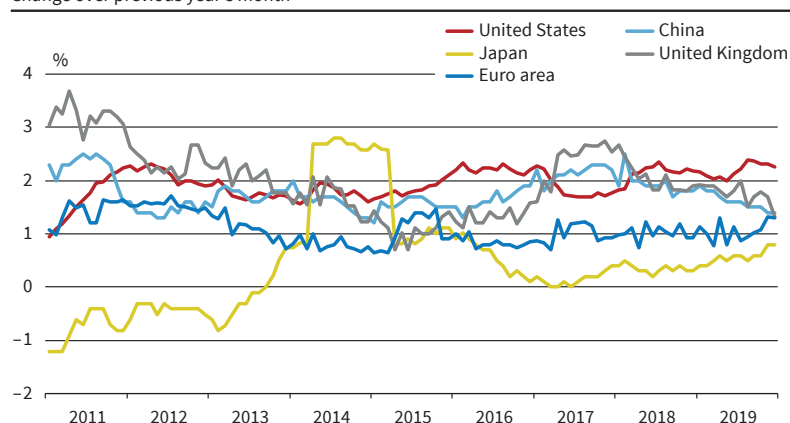
Source: US Bureau of Labor Statistics, Statistics Bureau of Japan, National Bureau of Statistics of China, Eurostat; last accessed on 2 February 2020.

Figure 1.8

Contributions to GDP Growth[a] in the United States
Seasonally adjusted data
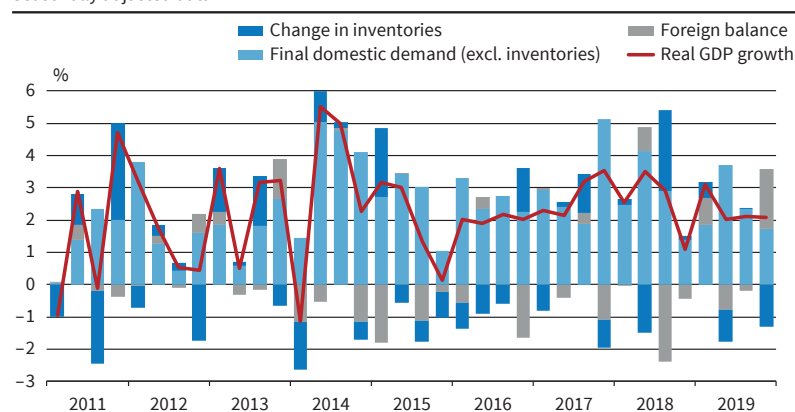
[a] Annualized quarterly growth.
Source: US Bureau of Economic Analysis; last accessed on 2 February 2020; EEAG calculations.   © CESifo

mer, however, dominated the development of headline inflation. It has reduced inflation to 1.8 percent last year, as compared to 2.4 percent in 2018.

1.2.3 Asia

The economy in *China* remains subdued, but stabilized over the course of last year due in part to economic policy stimuli. Both imports and exports were extremely weak throughout 2019 due to the escalation in the trade dispute with the United States. The industrial production figures for 2019 show the smallest year-on-year increase since 2002. However, corporate sentiment has not deteriorated further. According to the Caixin-Markit survey, the purchasing managers' index for the manufacturing sector has been above the expansion threshold of 50 points since August last year. The extensive tax cuts that were passed at the beginning of 2019, as well as infrastructure investments and a loosened credit policy, are having a supporting effect.

Although the government is probably managing to avoid an economic slump, the gradual slowdown in the pace of expansion of the Chinese economy is likely to continue in its basic trend. Overall, the Chinese economy is expected to have expanded by 6.2 percent last year.

Whereas core inflation has steadily declined from 1.9 percent at the beginning of 2019 to 1.4 percent at the end of it, the opposite has happened with actual inflation. The latter has risen sharply from 1.7 percent to 4.5 percent during the same period. This increase is due to soaring hog prices caused by the African swine fever taking its toll on the country's pig population.

In *Japan*, the domestic economy remained clearly in an upswing last year, despite declining exports. Private and public consumption as well as investment have been driving the expansion. Despite the positive development of non-residential private investment, industrial production declined noticeably as a result of weaker foreign demand. Exports to China and South Korea in particular fell as a result of increasing international trade tensions. Anticipation effects of the VAT hike from 8 to 10 percent in October have been pushing GDP in the third quarter of 2019. In turn, a slump is expected for the last quarter. The rise in employment has weakened in the past few months, probably also because labor has become increasingly scarce during the past few years. The unemployment rate recently declined to levels last seen in 1991. Although wage growth has picked up somewhat, it is still decidedly moderate. The small increase in the inflation rate as a result of the VAT hike does not obscure the fact that the underlying trend in consumer prices is still substantially lower than the Japanese central bank's target. Monetary policy remains expansionary in order to come closer to the inflation target of 2 percent.

In *India*, growth slowed significantly in 2019. Stress and bankruptcies in the non-bank financial sector increased uncertainty and constrained loan supply for households and small enterprises. This, together with corporate and environmental regulatory uncer-

Figure 1.9

Business Cycle Developments in the United States
In constant prices, seasonally adjusted and work-day adjusted

Private consumption
— Level   ■ Annualized quarterly growth rates

Government consumption and investment
— Level   ■ Annualized quarterly growth rates

Gross fixed capital formation (GFCF)
— Level   ■ GFCF, annualized quarterly growth rates
— Gross capital formation, level

Foreign trade
— Imports   ■ Trade balance
— Exports
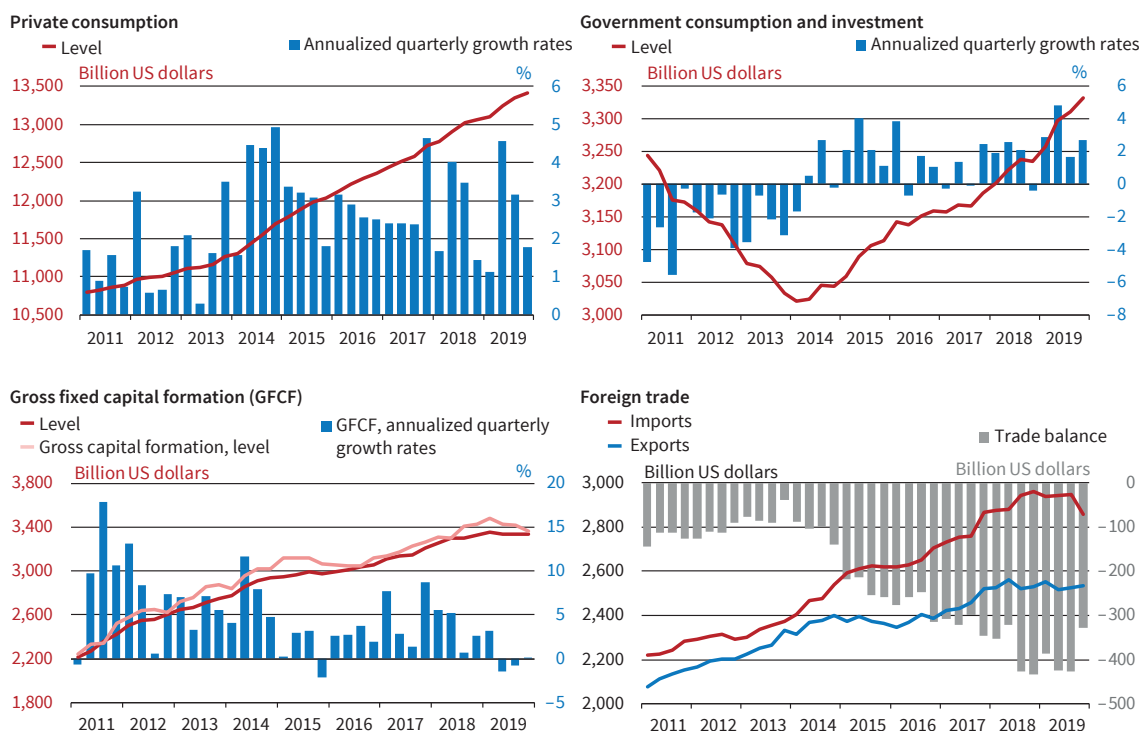
Source: US Bureau of Economic Analysis; last accessed on 2 February 2020.   © CESifo

Figure 1.10

Unemployment Rates and Labor Force Participation Rates

— United States   — Japan   — United Kingdom   — Euro area

Unemployment Rates
% of labor force

Labor Force Participation Rates
% of working-age population

Source: OECD Main Economic Indicators; OECD Economic Outlook; last accessed 2 February 2020.   © CESifo

tainty, weighed on demand leading to sector-specific weaknesses in the automobile and real estate sector. The Reserve Bank of India cut its key policy rate five times throughout 2019 for a total of 135 basis points. Despite these cuts, a sharp moderation in bank lending growth weighed on fixed investment. On the other hand, private consumption and in particular government consumption grew at a high and stable pace. In India, growth is projected at 4.5 percent in 2019 and is thereby well below its growth rate of 6.8 percent in 2018.

In the other East Asian economies (*Indonesia, Korea, Malaysia, Taiwan, Thailand, Philippines, Singapore,* and *Hong Kong*), economic momentum slowed down as well. Except for Taiwan, most central banks of these countries have cut policy rates last year as a reaction. The slowdown is mainly due to a decline in demand from the Chinese industry for intermediate and capital goods. In addition, the slowdown in China has exerted downward pressure on international commodity prices, and commodity exporters like Indonesia have suffered as a result. In Hong Kong,

social unrest has put additional strains on the economy, even moving it into recession. All in all, real GDP is expected to have grown by 2.9 percent in these East Asian countries last year.

1.2.4 Latin America and Russia

Growth in Latin America (*Brazil, Mexico, Argentina, Colombia, Chile*, and *Venezuela*) was gravely subdued at 0.5 percent in 2019. This was mainly due to exceptional circumstances in some of the largest economies. Despite weak global trade, regional export growth actually picked up in the first half of 2019. Trade was boosted by diversion especially to Mexico caused by bilateral tariffs imposed by the United States and China, as well as by continued solid growth in the United States. As these effects faded and world trade continued to slow down, export growth in the region also slowed in the second half of the year. The economic slowdown prompted the central banks in Brazil, Mexico, and Chile to lower key interest rates. While interest rates in *Colombia* remained stable throughout the year, in *Argentina* they were more of a roller-coaster ride. Primary elections in August triggered a sharp rise in government bond yields amid a wider sell-off of Argentine assets. In *Mexico*, investment remained weak and private consumption slowed, reflecting uncertainty over key policy decisions by a new government and higher borrowing costs. Also a mining disaster in early 2019 could not stop *Brazil's* slow recovery. The deep socioeconomic and humanitarian crisis in *Venezuela* continued to have a devastating effect on the welfare of the general public, leading to massive emigration waves. With the exception of Argentina and Venezuela, where large currency devaluations or acute shortages of essential goods have led to higher inflation, the economic slowdown has led to a decline in inflation.

In *Russia*, growth rose to a six-year high of 2.3 percent in 2018, despite tighter international economic sanctions and pressure from the financial markets. The acceleration in activity was supported by the rise in oil prices, a solid contribution from net exports and special factors such as energy-related construction projects and the hosting of the World Cup. Industrial activity slowed in early 2019 as compliance with agreed cuts in oil production as a non-OPEC partner became effective. Retail sales growth also slowed due to a VAT increase at the beginning of 2019. In the first half of 2019, inflation in Russia was trending upward, driven in part by rising oil prices but also by the VAT hike. Subsequently, while facing softening trade prospects amid slowing industrial production growth, inflation dynamics reversed, allowing the central bank to cut interest rates by a total of 150 basis points. Private investment remained low due to political uncertainty and the prospects of a longer term slowdown in potential growth due to intensifying demographic pressures. Overall, Russian growth slowed significantly in 2019 to a four-year low of 1.2 percent.

1.2.5 European Economy

1.2.5.1 Cyclical Situation

Aggregate economic production in the euro area has been expanding only moderately since the second quarter of 2019 (see Figure 1.11) and has hence shifted down another gear from the relatively high rates in 2017. It has since remained below potential growth. On the expenditure side, the economic weakness is particularly evident in foreign trade and gross fixed capital formation.[2] Private consumption spending proved to be a robust pillar of the economy. Public spending also expanded strongly (see Figure 1.12).

On the production side, the weakness is mainly found in the manufacturing sector, where value added has been declining for over a year now (see Figure 1.13). Business services and in particular the provision of scientific and technical services have also lost considerable momentum since the economic peak at the beginning of 2018. Consumer-related ser-

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[2] The unusual peaks in the second quarter of 2017 and 2019 shown in Figure 1.11 are related to developments in Ireland, where national accounts recorded strong growth in fixed capital formation and imports. The unusual investment and import data for the second quarter of 2015 are related to a purchase of intellectual property from abroad by a Dutch resident subsidiary of a large international enterprise (see Statistics Netherlands, 2018). These one-off events are not considered relevant for describing the cyclical developments in the euro area.

Figure 1.11

Contributions to GDP Growth in the Euro Area
In constant prices, seasonally adjusted and work-day adjusted
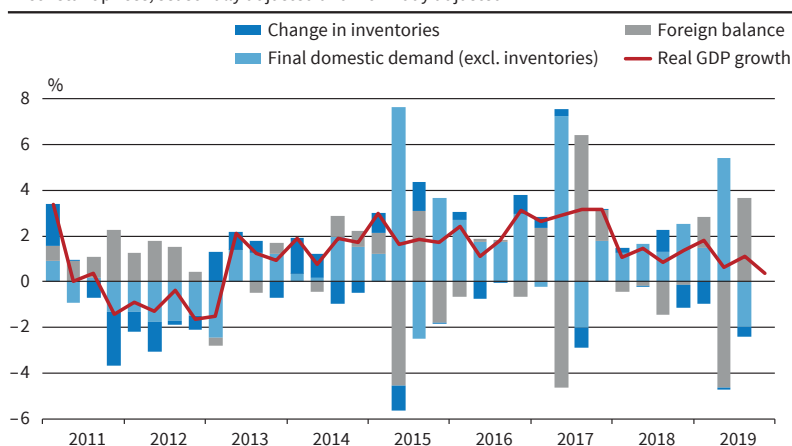
Source: Eurostat; last accessed on 2 February 2020; EEAG calculations.   © CESifo
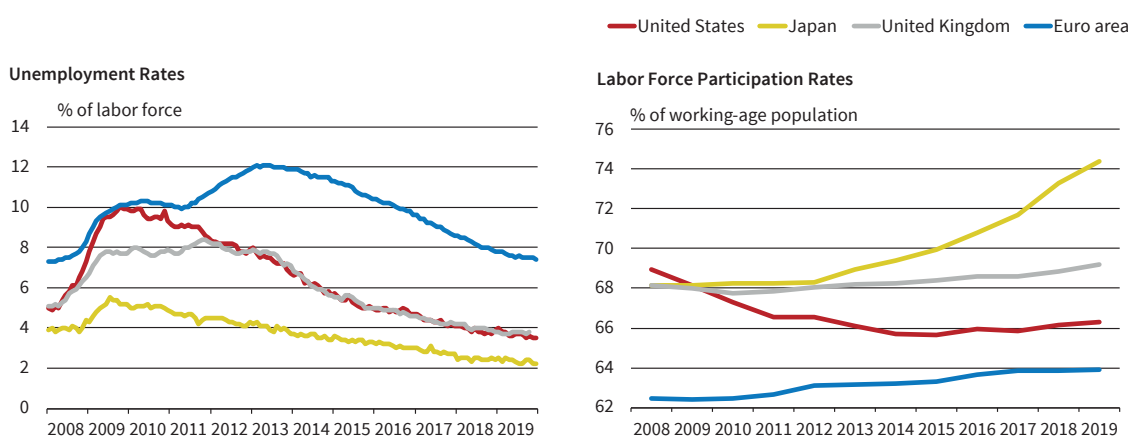
Figure 1.12

Business Cycle Developments in the Euro Area
In constant prices, seasonally adjusted and work-day adjusted

Source: Eurostat; last accessed on 2 February 2020.

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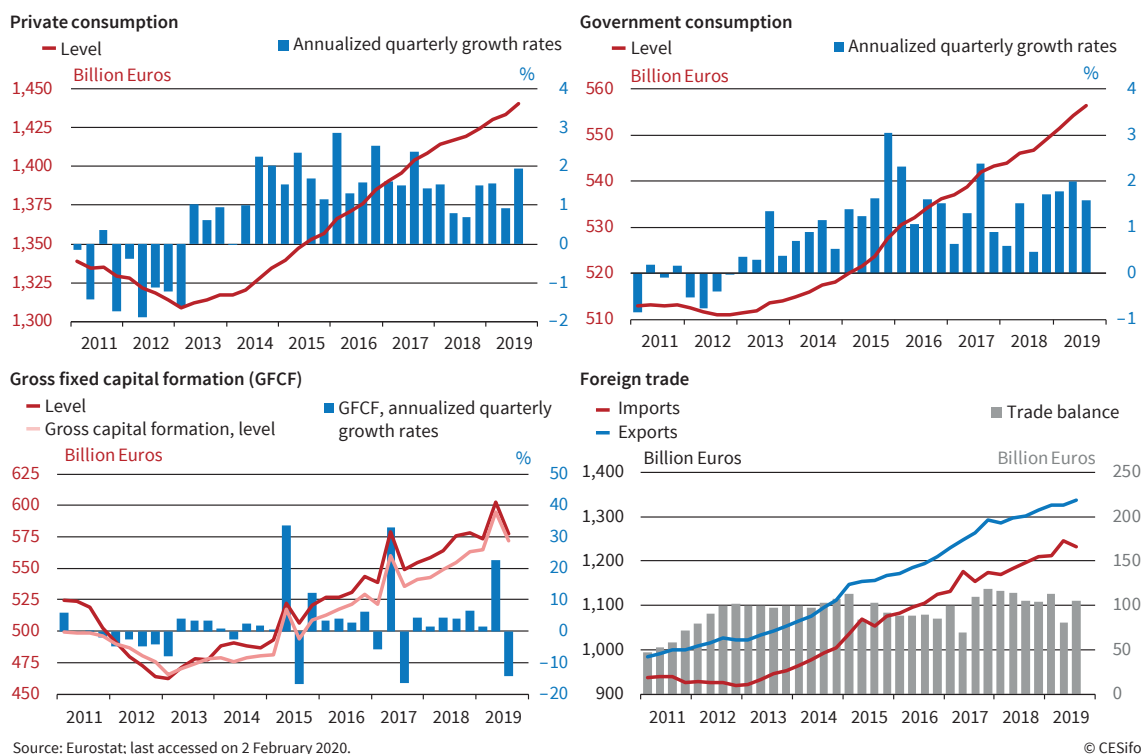
vices, on the other hand, have so far proved robust and construction has continued to expand strongly, including last year.

However, the weak phase in manufacturing does not affect all countries and economic sectors equally. A country comparison shows that the sentiment is currently particularly gloomy where capital and intermediate goods account for a large share of industrial production. This is particularly the case in Germany, which only narrowly escaped a technical recession last year. By contrast, countries with comparatively high consumer goods pro-

duction currently have a more positive industrial sentiment. These countries benefit from the robust consumer demand in many advanced economies, which have been driven by strong but gradually slowing employment growth and by relatively high wage dynamics. In France and Spain in particular, industrial sentiment deteriorated less than in Germany, and the increase in overall economic production was higher. Italy also has a comparatively high share of consumer goods in industrial value added. However, production activity in the domestic economy remains weak due to structural problems. This divergence between consumer goods producers on the one hand and investment and intermediate goods producers on the other is also evident in the euro area as a whole.

There are several reasons for the weakness of capital and intermediate goods producers. One is that these industrial sectors are usually export-oriented and integrated into global value chains. Accordingly, they are also more affected by political uncertainties than service providers or producers of consumer goods. Uncertainties are currently arising from

Figure 1.13

Sector Contributions to GDP Growthᵃ in the Euro Area
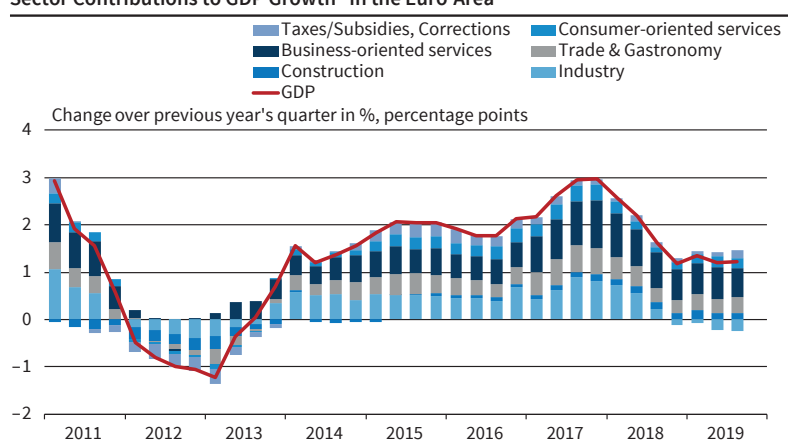
ᵃ Gross domestic product at market prices (prices of the previous year). Annual percentage change and growth contributions.
Source: OECD; last accessed on 2 February 2020; EEAG calculations.

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Figure 1.14

Unemployment Rates and Participation Rates in Selected Euro Area Countries

Germany — France — Italy — Spain — Greece — Portugal — Ireland — Cyprus

Unemployment Rates
% of labor force

Participation Rates
% of working-age population

Source: Eurostat; OECD Economic Outlook; last accessed on 2 February 2020.

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global trade conflicts and from the political confusion surrounding Brexit. Furthermore, China's demand for investment and intermediate goods fell sharply in the wake of its current economic weakness, which also has an effect on Europe due to China's importance as a global demand engine. At the same time, structural factors related to the automotive industry play a role as well. Efforts are currently being made to implement large-scale production of electric vehicles, which is likely to go hand in hand with a reorientation of established value chains among automobile manufacturers. In many countries, the transition to new

driving technologies is also being politically enforced or at least strongly debated in society. In this environment, customers will initially remain cautious. This can explain the weak development of new car registrations in an otherwise strong consumer market. Furthermore, the crisis in the capital and intermediate goods sectors is in part also a cyclical phenomenon following the boom phase in 2017.

Since early 2019, the unemployment rate in the euro area has not fallen any further and hovers around 7.5 percent. This pattern more or less holds for all large economies in the euro area and the Unit-

Table 1.1

Labor Costs[a]

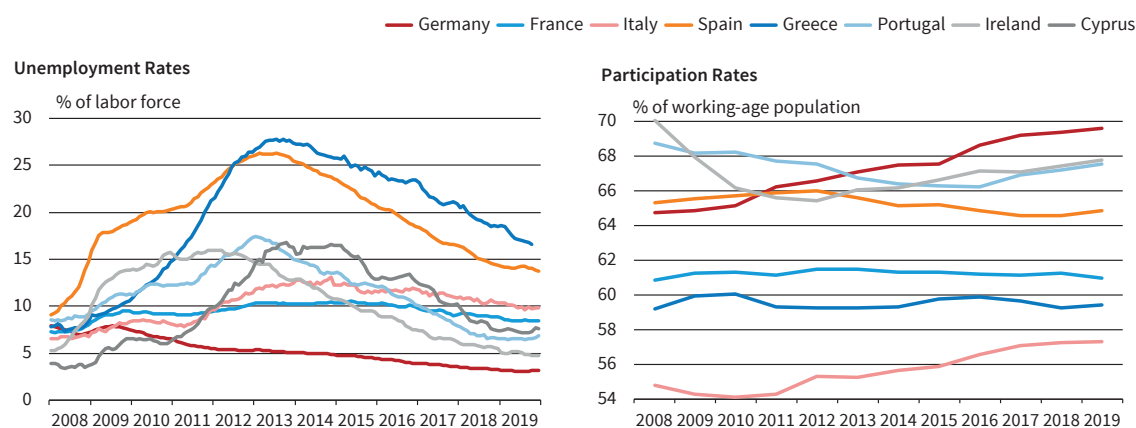|	Compensation per employee[b]			Real compensation			Labor productivity			Unit labor costs			Relative unit labor costs[d]			Export performance[e]		
	1999–2013	2014–2019	2019	1999–2013	2014–2019	2019	1999–2013	2014–2019	2019	1999–2013	2014–2019	2019	1999–2013	2014–2019	2019	1999–2013	2014–2019	2019
Germany	1.4	2.7	1.5	0.5	1.2	0.8	0.5	0.7	– 0.3	0.9	2.3	3.5	– 1.2	0.9	0.1	0.4	– 0.1	– 0.7
France	2.4	1.3	0.3	1.0	0.4	– 0.2	0.7	0.7	0.5	1.6	0.6	0.3	– 0.1	– 0.9	– 3.1	– 1.4	– 0.3	0.8
Italy	1.8	1.0	0.9	– 0.1	0.1	0.4	– 0.3	0.0	– 0.4	2.3	1.4	2.2	0.2	0.3	– 1.1	– 2.9	– 0.1	1.3
Spain	2.3	0.9	1.1	0.1	0.1	– 0.7	0.6	0.4	0.1	1.9	0.8	2.7	0.1	– 0.5	– 0.2	– 0.7	0.3	– 0.3
Netherlands	2.5	1.4	1.3	0.7	0.1	– 1.4	0.8	0.7	0.0	1.8	0.8	3.0	– 0.3	– 0.3	– 0.8	– 0.3	0.6	0.4
Belgium	2.5	1.3	0.9	0.9	– 0.2	– 0.4	0.9	0.5	– 0.1	1.8	0.7	2.0	0.3	– 0.6	– 1.4	– 1.3	0.1	– 0.8
Austria	2.0	2.3	1.4	0.5	0.5	0.6	0.7	0.5	0.5	1.4	2.1	2.9	– 0.3	0.1	– 0.7	– 0.5	0.2	1.4
Finland	2.7	0.8	0.9	1.1	– 0.6	– 1.3	0.8	0.7	0.5	2.0	0.2	1.4	– 0.6	– 0.3	– 1.7	– 1.3	– 0.4	1.5
Greece	2.6	– 0.5	0.2	0.5	– 0.4	– 1.3	0.7	– 0.4	– 0.2	2.7	0.5	2.8	0.3	– 0.6	– 0.5	– 0.9	1.3	2.9
Ireland	3.3	2.1	1.7	1.3	0.5	1.2	1.7	6.4	3.0	1.8	– 3.5	1.1	0.7	– 5.0	– 2.6	1.7	10.3	8.5
Portugal	2.5	1.1	1.0	0.3	– 0.4	0.0	1.1	0.3	1.1	1.8	1.5	1.6	– 0.1	0.3	– 1.2	– 0.3	1.4	1.1
Slovakia	6.0	4.3	3.5	3.0	3.5	1.7	3.3	1.4	1.7	2.2	3.4	6.0	1.4	1.5	2.4	4.5	0.0	– 0.8
Slovenia	5.3	3.0	2.5	1.9	1.6	0.3	1.8	1.4	1.0	3.4	1.9	4.8	– 0.2	0.1	1.6	0.9	3.3	5.7
Estonia		7.0	4.3	– 5.0	4.1	3.6	3.5	2.1	2.8	4.7	4.5	6.0	1.7	3.4	2.1	1.4	– 0.1	1.9
Sweden	3.4	2.7	1.6	2.0	0.6	– 0.1	1.4	1.0	1.1	2.1	1.9	2.2	0.3	– 2.8	– 4.2	– 0.7	0.7	1.9
Denmark	2.9	1.7	0.8	0.9	0.8	0.3	0.9	0.8	0.6	2.1	0.9	1.0	0.1	– 0.3	– 1.9	– 0.6	– 0.1	1.8
Poland	4.9	5.2	4.2	1.9	3.9	2.2	3.2	3.1	4.5	2.1	2.4	4.5	– 0.7	0.6	0.2	2.3	3.5	2.4
Czech Republic	4.5	5.0	3.1	2.8	3.0	1.9	2.3	2.2	1.9	2.0	3.1	5.0	2.3	1.5	1.3	3.3	1.3	– 0.4
Hungary	6.4	4.3	4.0	1.5	1.1	0.0	1.9	1.3	2.9	4.9	2.9	4.5	1.4	– 0.6	– 1.1	3.6	1.8	2.7
United Kingdom	3.5	2.4	1.6	1.6	0.6	0.3	1.1	0.4	0.1	2.3	1.8	2.7	– 1.2	– 0.1	– 0.2	– 1.9	– 2.1	– 3.3
Switzerland	1.4	0.2	0.4	0.7	0.5	– 0.5	0.6	0.5	– 0.2	1.0	– 0.1	1.3	0.9	0.1	1.2	– 1.1	– 2.7	– 1.4
Norway	4.6	2.5	1.6	0.0	1.7	3.1	0.6	0.6	– 0.4	4.1	2.0	3.8	2.6	– 2.9	– 1.5	– 3.6	– 2.0	– 0.8
Iceland	6.2	6.7	1.3	1.3	3.6	2.1	1.6	1.5	– 0.8	4.8	4.5	2.7	– 1.5	6.2	– 7.7	0.7	0.6	– 6.8
United States	3.1	2.7	1.8	1.2	1.0	0.9	1.6	0.8	1.0	1.5	2.0	2.8	– 1.8	3.5	2.7	– 1.2	– 1.1	– 0.6
China													3.9	1.0	– 1.6	9.0	0.7	3.6
Japan	– 0.7	0.7	0.2	0.4	0.0	0.1	0.9	0.0	0.2	– 1.2	1.0	0.5	– 2.5	– 0.4	2.4	– 2.7	0.2	– 1.5

[a] Growth rates for the total economy; [b] Compensation per employee in the private sector; [c] Compensation per employee in the private sector deflated by the GDP deflator; [d] Competitiveness: weighted relative unit labor costs; [e] Ratio between export volumes and export markets for total goods and services. A positive number indicates gains in market shares and a negative number indicates a loss in market shares.

Source: OECD Economic Outlook, November 2019.

Figure 1.15

Price Developments in the Euro Area
Change over previous year's month
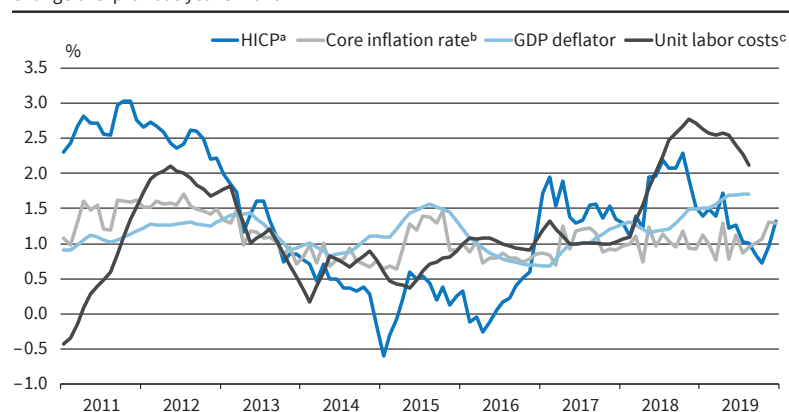
ᵃ Harmonized Index of Consumer Prices (HICP). ᵇ HICP excluding energy, food, alcohol and tobacco.
ᶜ Nominal compensation of employees per unit of real GDP.
Source: Eurostat; last accessed on 2 February 2020.   © CESifo

ed Kingdom (see Figure 1.14). Employment growth in the euro area has also slowed since the end of 2018. This development is mainly driven by the manufacturing industry. And here, too, is a divergence across countries, which can be explained by different production structures. The share of capital and intermediate goods in industrial value-added correlates negatively with employment growth in the period from 2018 to late 2019, while a high share of consumer goods was accompanied by strong growth. Overall, the slowdown in the labor market is therefore primarily due to the slowdown in economic activity, which is particularly pronounced in manufacturing.

Even though the dynamics softened at the end of the year, unit labor costs rose quite sharply in almost all European countries last year (see Table 1.1). Up until the end of 2019, this had hardly any spillover into core inflation (see Figure 1.15). Until October, core inflation had been hovering around 1 percent for more than two years. The rise to 1.4 percent in November is probably partly due to fading base effects of past accounting changes of German package holidays. Headline inflation, on the other hand, has declined significantly since the beginning of 2019 due to the decline in energy prices and has risen again only recently. In the euro area as a whole, the year-on-year change in the Harmonised Index of Consumer Prices (HICP) was 1.3 percent at the end of last year. In Germany and France, HICP inflation was slightly higher than the euro-area average. Spain and Italy recorded below-average rates.

1.2.5.2 Developments in Selected European Countries

Last year, *Germany* barely managed to avoid a technical recession. After gross domestic product (GDP) fell by 0.2 percent in the second quarter, it stabilized

in the third one. Strong consumer and government spending, construction activity, and high net exports were the main contributors to the increase. Although employment growth slowed over the course of the year, private household income growth remained high. In addition to noticeably rising collective wages, other factors have also strengthened purchasing power: tax relief and an expansion of state transfer payments, such as pensions and child benefits. Furthermore, brisk consumption and investment by the public sector supported domestic demand. Finally, mortgage interest rates have fallen once again, and the granting of housing loans has accelerated.

However, the German economy remains divided. While the value added of domestically oriented services and construction companies continues to increase, the manufacturing sector is in recession. Manufacturing employment started falling in autumn, and the share of industrial companies with short-time work has increased significantly. The trade conflict originating in the United States is having a negative impact on the global exchange of goods and global investment activity. This hits the German manufacturing sector particularly hard, as its production specializes in intermediate inputs and capital goods. Moreover, the automotive industry – one of Germany's key industries – is facing special challenges. In addition to a worldwide reluctance to buy, which is reflected above all in declining new registration figures, the automotive industry is in a technological transition phase toward the production of vehicles with non-conventional drive systems. The realignment of existing value chains is leading to significant production losses and relocations.

All in all, the German economy cooled significantly last year and expanded by only 0.5 percent in 2019. The over-utilization of production capacities from the boom years 2017–2018 has largely been reduced, so that the degree of utilization currently roughly corresponds to its long-term average. The main drivers of the slowdown include supply-side changes in the production technology of the German economy. Domestic demand, on the other hand, is having a supporting effect. This distinguishes the current downturn from that of the years 2011 to 2013, when Germany was hit by the euro crisis and plunged into a recession in which the value added of domestically oriented economic sectors also fell.

Against the backdrop of Brexit-related uncertainties, the economy of the *United Kingdom* is expanding

only slowly. GDP in 2019 was 1.3 percent higher than in the year before. The low growth rate partly reflects the continuing weakness in productivity. Despite the lack of productivity growth, real wages increased significantly, partly due to a tight labor market with unemployment below 4 percent and some relatively high wage increases in the public sector. This supports consumer spending. On the other hand, companies have postponed investment projects in anticipation of greater clarity about future trade relations with the European Union, and some have moved their activities abroad in anticipation of higher trade barriers. According to Hantzsche and Young (2019), business investment is about 15 percent lower than it would have been without the EU Brexit vote in 2016. At the same time, GDP levels are estimated to be 2.5 percent lower, reflecting lower investment and associated lower productivity. This is despite the fact that economic activity and GDP have been boosted to some extent by Brexit-related contingency planning and stockpiling. However, weak growth also partly reflects a slowing global economy, affecting British companies that are engaged in international trade.

Although growth has also slowed down in *France*, the economy is still growing slightly above potential. On the one hand, French exports have been stagnating since the beginning of 2019 due in part to sluggish car deliveries and weak exports of services. Furthermore, investment is likely to have cooled off in view of the deteriorating business situation, especially in the manufacturing sector. On the other hand, the purchasing power of households has risen sharply. In addition to dynamic employment and wage dynamics, other factors have also contributed to this increase. These include the housing tax reduction, the increase in the activity allowance, the exemption from taxes and social security contributions on overtime for employees, and the reduction in social security contributions for certain categories of households. As a result, consumer confidence improved significantly in 2019, reaching a 12-year high in November. The nationwide strikes in response to the recent pension reform plans at the end of last year have led to lower spending on energy and transport services, thereby dampening consumer spending and possibly also tourism exports. However, this will be somewhat counteracted by an acceleration in exports at the end of last year in the wake of large deliveries from the aeronautics and shipbuilding sectors.

Employment growth has slowed somewhat over the past year, but the overall unemployment rate continues to decline, averaging 8.6 percent last year, down from 9.1 percent in 2018. Inflation slowed to an average of 1.3 percent last year.

After a technical recession in the summer of 2018, economic growth in *Italy* returned to positive, albeit low, levels in 2019. GDP is projected to have risen by 0.2 percent in real terms in 2019, after 0.7 percent in 2018, and thus almost stagnated. Economic growth

was dampened by an unfavorable global environment and a weak domestic economy. On the other hand, higher public spending on construction projects supported gross fixed capital formation, which is in line with increasing bank loans to non-financial companies. The ratio of non-performing loans to outstanding loans continued to decline last year. Nevertheless, at the end of last year, the government rescued a troubled cooperative bank in the south of the country due to its high stock of non-performing loans.

Compared to the EU average, *Spain* continued to record strong growth in 2019, based on a stable domestic economy as well as strong foreign demand, in particular for services. In the rest of Europe, there were slightly above-average GDP growth rates in Denmark, Portugal, Greece, the Netherlands, and Austria. Furthermore, growth was significantly above average in Ireland, Luxembourg, and the Central and Eastern European countries, although there too, with the exception of Bulgaria and Croatia, economic momentum slowed last year.

1.3 FISCAL AND MONETARY POLICY

1.3.1 Fiscal Policy

Fiscal policy is expansionary in most economies. As a major exception, in the United States, the economic stimulus provided by a tax reform at the beginning of 2018 is gradually coming to an end (see Figure 1.16). While this has widened the government deficit significantly, debt levels of the general government as a percentage of GDP have increased only slightly. Fiscal policy in the euro area is again likely to be slightly expansionary this year. The positive fiscal stimuli are likely to be distributed fairly evenly across the major member states. Fiscal policy in the United Kingdom is becoming increasingly expansionary after several years of consolidation. Following the increase in tax allowances for private households and higher public expenditure in the health sector, additional expenditures for the next fiscal year were announced in September, which is likely to increase GDP by about 0.2 percentage points (see OECD, 2019b). In Japan, the value-added tax (VAT) was increased from 8 to 10 percent in October last year, with restrictive effects on growth expected in this year as well. However, fiscal policy is likely to be significantly loosened again from the start of the new fiscal year in April 2020, as an economic stimulus package of JPY 13.2 trillion (1.8 percent of GDP) will be implemented over a 15-month period. China's fiscal policy is also providing positive impetus, among other things as a result of the agreed reduction in VAT and income tax.

According to estimates of the European Commission, the general government fiscal balance in the euro area fell from − 0.5 percent of GDP in 2018 to − 0.8 percent in 2019. In Germany, France, and Belgium in particular, fiscal balances deteriorated

Figure 1.16
Government Structural Primary Budget Balances
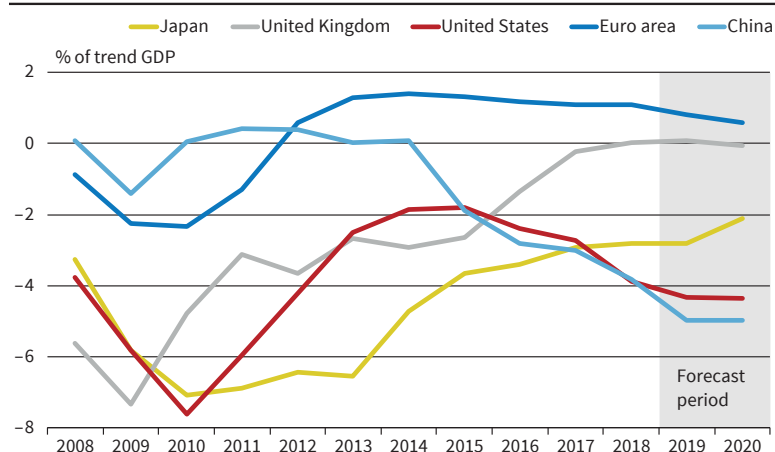
Source: IMF World Economic Outlook, October 2019; last accessed on 2 February 2020. © CESifo

reduce the interest burden. This will especially hold for some southern European countries. The aggregate euro area fiscal deficit is expected to widen slightly to 0.9 percent of GDP in 2020.

With regard to the sign of the fiscal balance, there is still a significant discrepancy among the large euro area countries. While the fiscal balance has been positive for many years now in Germany and more recently also in the Netherlands, it remained negative in France, Italy, and Spain. As a result, the debt ratio in the latter three countries is expected

(see Table 1.2). In the former crisis countries Italy, Spain, Greece, Ireland, and Portugal, however, they remained constant or even improved. In the coming year, fiscal balances are expected to decline further. In Germany and the Netherlands in particular, surpluses are expected to shrink, while deficits are expected to widen in Italy and Belgium. This is due both to cyclically induced lower revenues and an increase in discretionary expenditures. In contrast, financing conditions continue to be very favorable, which will further

to remain high and fiscal room to maneuver low. In Germany and the Netherlands, the positive balances will further reduce the debt ratio. While the Netherlands has been below the threshold value defined by the Fiscal Compact since 2017, Germany is likely to have achieved this last year, or otherwise will do so this year (see Box 1.2).

The change in the structural primary fiscal balance – which adjusts the overall balance for cyclical effects, one-offs, and interest expenditures – reflects

Table 1.2
Public Finances

	Gross debt[a]			Fiscal balance[a]			Primary fiscal balance[a]			Cyclically– adjusted primary fiscal balance[a]		
	2009–2012	2013–2018	2019	2009–2012	2013–2018	2019	2009–2012	2013–2018	2019	2009–2012	2013–2018	2019
Germany	81.1	70.5	59.2	– 1.8	1.0	1.2	0.7	2.3	2.1	1.3	2.3	2.0
France	87.9	96.4	98.9	– 5.7	– 3.4	– 3.1	– 3.1	– 1.5	– 1.6	– 2.3	– 0.8	– 1.2
Italy	121.8	134.5	136.2	– 3.6	– 2.6	– 2.2	1.1	1.6	1.3	1.9	2.8	1.3
Spain	72.2	98.5	96.7	– 10.0	– 4.7	– 2.3	– 7.5	– 1.7	– 0.1	– 2.9	0.6	– 0.8
Netherlands	62.4	61.9	48.9	– 4.5	– 0.7	1.5	– 2.8	0.5	2.2	– 1.5	1.0	1.5
Belgium	102.9	104.1	99.5	– 4.2	– 2.1	– 1.7	– 0.7	0.7	0.2	– 0.2	0.3	– 0.1
Austria	82.4	80.9	69.9	– 3.1	– 1.3	0.4	– 0.3	0.9	1.9	0.3	1.5	1.5
Ireland	105.7	84.4	59.0	– 17.7	– 2.1	0.2	– 14.2	0.7	1.6	– 4.7	– 0.1	0.5
Finland	49.6	60.3	59.2	– 1.9	– 1.9	– 1.1	– 0.5	– 0.8	– 0.3	0.4	0.3	– 0.6
Portugal	114.6	129.2	119.5	– 8.4	– 3.7	– 0.1	– 4.4	0.6	3.0	– 2.3	2.6	2.7
Greece	159.3	178.0	175.2	– 10.1	– 3.4	1.3	– 3.8	0.2	4.3	2.3	8.1	6.0
Slovakia	45.4	52.1	48.1	– 5.4	– 2.2	– 0.9	– 3.9	– 0.5	0.3	– 3.3	– 0.2	– 0.4
Luxembourg	20.2	22.0	19.6	0.1	1.6	2.3	0.5	2.0	2.6	2.3	2.4	1.9
Slovenia	46.1	76.0	66.7	– 5.4	– 4.0	0.5	– 3.6	– 1.3	2.1	– 1.5	1.7	0.7
Lithuania	37.8	39.2	36.3	– 6.3	– 0.4	0.0	– 4.5	1.0	0.8	– 0.9	0.5	– 0.8
Latvia	44.0	38.7	36.0	– 4.7	– 0.9	– 0.6	– 3.0	0.3	0.1	0.3	0.0	– 0.9
Estonia	7.5	9.8	8.7	0.3	– 0.1	– 0.2	0.4	– 0.1	– 0.2	– 0.1	– 0.7	– 1.6
Cyprus	67.6	103.1	93.8	– 5.3	– 3.0	3.7	– 2.9	– 0.1	6.0	– 1.8	4.7	4.0
Malta	68.5	56.8	43.3	– 2.8	0.2	1.2	0.3	2.4	2.5	0.8	1.8	1.8
Euro area	**89.0**	**92.2**	**86.4**	**– 4.7**	**– 1.7**	**– 0.8**	**– 1.8**	**0.5**	**0.9**	**– 0.3**	**1.4**	**0.7**
Sweden	37.8	41.9	34.6	– 0.4	0.1	0.3	0.6	0.7	0.8	1.2	0.8	0.7
Poland	53.6	51.9	47.4	– 5.3	– 2.4	– 1.0	– 2.8	– 0.6	0.3	– 3.2	– 0.5	– 0.9
Denmark	44.5	39.2	33.0	– 2.8	0.2	2.2	– 0.9	1.4	2.9	1.4	1.2	2.9
Czech Republic	40.6	38.5	31.5	– 3.6	– 0.1	0.2	– 2.3	0.9	0.9	– 1.2	1.2	0.5
Romania	33.5	37.0	35.5	– 5.3	– 2.0	– 3.6	– 3.7	– 0.5	– 2.4	– 2.2	– 0.1	– 2.3
Hungary	80.0	74.8	68.2	– 3.9	– 2.3	– 1.8	0.3	1.1	0.6	1.8	0.9	– 0.9
Bulgaria	15.8	24.5	21.1	– 1.8	– 0.8	1.1	– 1.1	0.0	1.7	– 0.9	0.8	1.5
Croatia	64.0	80.7	71.2	– 6.6	– 2.3	0.1	– 3.9	0.7	2.3	– 2.7	1.6	1.4
United States	**99.5**	**105.1**	**106.2**	**– 9.6**	**– 4.4**	**– 5.6**	**– 7.4**	**– 2.4**	**– 3.6**	**– 5.9**	**– 2.5**	**– 4.3**
China	33.9	43.3	55.6	– 0.3	– 2.8	– 6.1	0.2	– 2.1	– 5.0	0.3	– 1.9	– 5.0
Japan	219.6	234.8	237.7	– 9.2	– 4.6	– 3.0	– 8.1	– 3.9	– 2.9	– 6.8	– 4.0	– 2.8
United Kingdom	79.3	86.0	85.2	– 8.3	– 4.0	– 2.2	– 5.4	– 1.4	0.0	– 3.5	– 1.4	– 0.2
Switzerland	43.0	42.3	38.6	0.5	0.5	1.0	0.9	0.7	1.2	1.0	0.7	1.1

[a] As a percentage of (potential) gross domestic product (in case of cyclically adjusted (primary) fiscal balances). For countries of the European Union and the United Kingdom, definitions are according to the Excessive Deficit Procedure. For the United States, China, Japan and Switzerland, definitions are according to the IMF.

Source: European Commission, Autumn 2019; IMF World Economic Outlook, October 2019.

BOX 1.2   FISCAL RULES IN THE EUROPEAN UNION

Since the beginning of the economic downturn, public debate has increased regarding fiscal rules in the European Union. Different levels are often mixed with each other. At the EU level, there is a multitude of co-existing fiscal rules. Two of the most important rules are the Maastricht deficit and the limit on the structural fiscal balance, which is laid down in the Fiscal Compact. For both, the fiscal balance of the general government is relevant, i.e., the balance of revenue and expenditure of the federal government, states or provinces, municipalities, and social security funds. These limits cannot be circumvented by the formation of reserves, as they are constrained by definitions used in the system of national accounts. The Maastricht deficit limits the fiscal balance of the general government to 3 percent in relation to GDP, irrespective of the economic situation. The Fiscal Compact, on the other hand, takes into account the economic situation and one-off effects and thus refers to the structural fiscal balance, which must not fall below − 0.5 percent of GDP. This limit shall serve to stabilize the debt situation of the general government in the individual EU countries. If the debt ratio is well below 60 percent of GDP and public finances are sustainable in the long term, the structural fiscal balance can be as much as − 1 percent of GDP.

the orientation of fiscal policy. In Germany, the Netherlands, and Italy, this balance will deteriorate further, implying that fiscal policy will become more expansionary this year (see Figure 1.17). By contrast, the structural primary fiscal balance in France is expected to remain almost unchanged. Fiscal policy in Spain will remain expansionary, albeit less so than last year. All in all, fiscal policy in the euro area is expected to be slightly expansionary this year. Overall, the euro area debt ratio is expected to continue to decline, albeit at a slower pace than in previous years.

In Germany, the general government fiscal balance rose to a record level of 1.9 percent in relation to GDP in 2018. Last year, it decreased to 1.2 percent and is expected to further decline to 0.6 percent this year.

The structural primary balance, i.e., the fiscal balance adjusted for the business cycle and excluding one-offs and interest payments, shows a similar pattern: it declined 0.4 percentage points last year and will decline by the same amount this year. The change in the structural primary balance can also be interpreted as the degree of orientation of fiscal policy. Last year, German taxpayers were relieved by increases in the pension and children's allowance, the postponement of the basic tariff values, and the Retirement Income Act. The reduction of the contribution rate to unemployment insurance by 0.5 percentage points and the adjustment of the assessment basis for self-employed persons in the statutory health insurance system relieves the private sector further. Conversely, these

Figure 1.17

Fiscal Impulses in EU Member Countries[a]
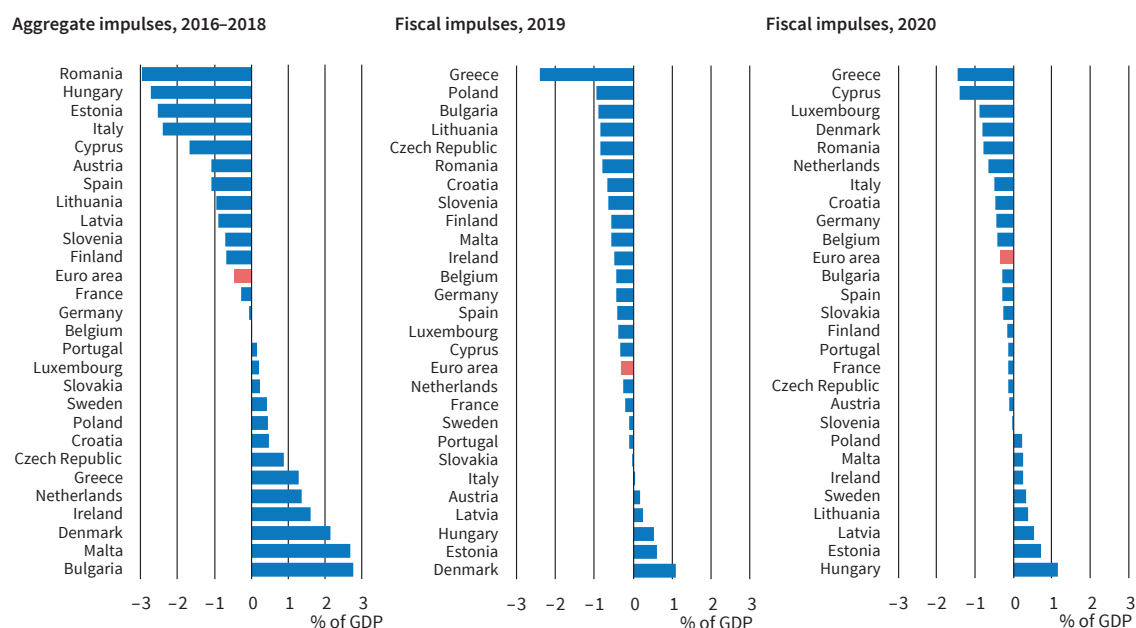
a Defined as changes in structural primary fiscal balances. A negative value implies a deterioration of the structural primary fiscal balance position and thereby a positive fiscal impulse for the economy.
Source: European Commission; last accessed on 2 February 2020; EEAG calculations.   © CESifo

measures contribute to a further reduction of the fiscal balance. On the expenditure side, the expansion of the maternal pension, the increase in child benefits, and other measures related to childcare have had an expansionary effect. However, there was an additional burden because of the 0.5 percentage point increase in the contribution rate to social long-term care insurance. This year, the fiscal policy measures are also expected to provide a significant expansionary impulse. Numerous tax relief measures are making themselves felt here. In particular, the compensation for the so-called 'cold progression' will have an expansionary effect.

In France, the yellow vest protests during the winter of 2018–2019 prompted the government to adopt expansionary fiscal measures. On the one hand, the measures adopted in the wave of reforms in 2018, such as the increase in VAT on fuels and the planned increase in taxes on pension entitlements of less than EUR 2,000 per month, were reversed. On the other hand, the minimum wage was increased by EUR 100 per month and tax relief was granted for income from overtime and some bonus payments. With the deficit widening from 2.5 to 3.1 percent in relation to GDP, the situation of public budgets is therefore likely to have deteriorated significantly last year. However, taking the business cycle as well as the further reduced interest rate payments into account, the fiscal impulse was not that large. The structural primary balance deteriorated by 0.2 percentage points last year. In June 2019, the government passed a second wave of reforms with the so-called 'Act II'. Among other things, the measures included a reduction in unemployment benefits for recipients with benefits of more than EUR 4,500 per month and a restriction of the conditions for receiving unemployment benefits. In addition, incentives are to be provided for employees to remain in employment after the end of the 62nd year of life. These measures should, in principle, improve the fiscal balance. However, subsequent strikes this winter will lead to a softening of these measures causing the structural primary balance to more or less stay the same as last year.

In Italy, last year's budget deficit is likely to have been lower than expected in spring 2019. On the one hand, revenues from taxes and social security contributions are likely to have increased. On the other hand, the former government adopted measures to reduce the budget deficit to 2 percent in relation to GDP. The previous target had been 2.4 percent. These measures are likely to have helped to

reduce government spending last year. In addition, the former government committed itself to a spending limit. Overall, the government deficit is likely to have been around 2.2 percent last year, as in 2018. A slight increase to 2.3 percent is expected for this year. However, there is a high degree of uncertainty about the fiscal policy stance of the government that has been in office since September.

In Spain, favorable economic developments have supported the public finance situation in recent years. The budget deficit has fallen steadily from around 6 percent in 2014 to 2.3 percent last year. After the draft budget for 2019 was rejected at the end of 2018, the 2018 budget remained in force for most of last year. Measures on the revenue side, such as higher taxation of large companies and diesel fuel, came into force in the second half of last year and led to higher tax revenue of around 0.3 percent of GDP in 2019. Because it required several months of negotiations to form a new coalition government early this year, a budget for 2020 has not yet been approved and the future fiscal policy direction in Spain is quite uncertain. Nevertheless, we expect a slightly expansionary fiscal policy stance this year.

1.3.2 Monetary Conditions and Financial Markets

The economic slowdown prompted many central banks in industrialized and emerging markets to become more expansionary last year. Between the end of July and the end of October, the US Federal Reserve lowered its key interest rates in three steps to between 1.5 and 1.75 percent (see Figure 1.18). The Bank of England remained on its accommodative course. The European Central Bank adopted a comprehensive package of monetary easing measures in September. It includes a further cut into the negative of its deposit rate, which effectively has functioned as its main policy rate since the financial crisis and now stands at − 0.5 percent. Although the Bank of Japan

Figure 1.18

Central Bank Interest Rates
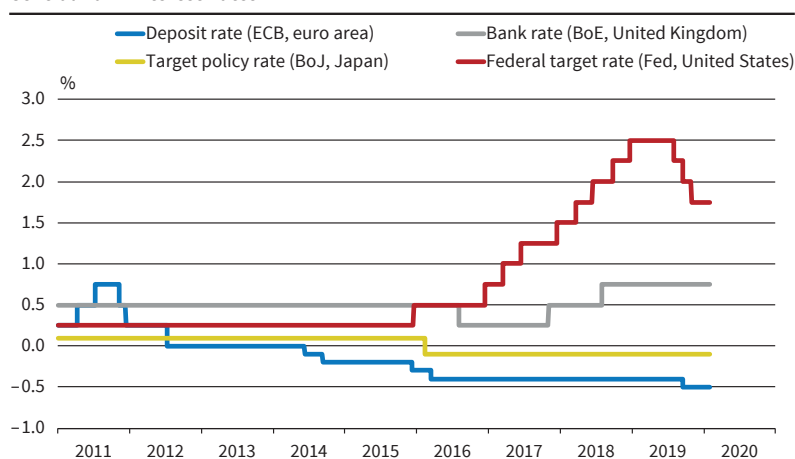
Source: European Central Bank; Federal Reserve Bank of St. Louis; Bank of England; Bank of Japan; last accessed on 2 February 2020.

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decided to keep its already very loose monetary policy unchanged, it did hint that it would be willing to cut interest rates further. And while headline inflation did rise in China and the government remains worried about excessive credit growth, the weakening of the economy and the decline in core inflation triggered the Chinese central bank to loosen monetary policy further by lowering minimum reserve ratios, which in turn reduced commercial loan rates.

The US Federal Reserve was confronted with unexpected turmoil experienced in money markets in September last year when a deadline for the payment of corporate taxes and the settlement of recent Treasury bond issues led to a temporary spike in cash demand that increased overnight rates to 10 percent. To prevent this from happening again, the Federal Reserve has since been flooding the system with liquidity in the form of short-term loans. The Federal Reserve also announced in autumn that it would continue its program for buying Treasury debt at an initial pace of USD 60 billion a month into the second quarter of 2020, a program the central bank had tried to wind down between mid-2018 and mid-2019. As a consequence of all of this, the balance sheet of the US Federal Reserve has started to increase again (see Figure 1.19).

In the wake of the economic slowdown, the European Central Bank (ECB) decided in September last year to lower the interest rate for the deposit facility by 10 basis points to – 0.5 percent. The interest rates on the main refinancing operations and the marginal lending facility were left unchanged at 0.0 and 0.25 percent, respectively. At the same time, the ECB announced that key interest rates would remain at their current or lower levels until the ECB's projections show a clear convergence of inflation forecasts to levels that are sufficiently close to but below 2 percent, and that this convergence is also reflected in the dynamics of core inflation. In addition, it was decided to resume the net purchases of assets under the Asset Purchase Programme (APP) by EUR 20 billion per month from November 2019 onward and to continue to do so until the ECB starts raising key interest rates.

The degree of monetary expansion was thus once again increased last year, after the ECB had already decided in March last year to resume its quarterly targeted longer-term refinancing operations for the period from September 2019 to March 2021. By indicating the duration of the new measures, the ECB made clear that the exit from the low-interest policy, which had long been expected by the financial markets for the second half of 2019, had been postponed and that a turnaround in interest rates could be expected only once inflation had visibly accelerated. As a result, the financial markets have revised their interest rate expectations significantly downward. For example, EONIA futures at the end of last year indicated a first interest rate hike only by the end of 2022. The increased expansionary stance of ECB and the revision in expectations about the monetary policy stance have led yields on government bonds to fall further in the euro area over the course of 2019 (see Figure 1.20). Yields on bonds in particular with longer maturities witnessed a substantial decrease over the course of last year.

Worldwide as well, the more expansionary course of the central banks in conjunction with more pessimistic economic expectations led to significant declines in yields on government bonds during most parts of last year (see Figure 1.20). Japanese bonds and bonds of several European countries even returned to negative yields. More than 20 percent of the total bond portfolio worldwide has been traded with negative yields according to the OECD (2019b). However, bond yields have been rising again since late autumn. On the one hand, this could be explained by the temporary easing of the trade conflict; on the other hand, many sentiment indicators for the manufacturing sector have been stabilizing lately. As a result, financial market participants now attach less importance to the economic downside risk and are shifting their portfolios back from government bonds to equities.

Interest rate differentials in the euro area have narrowed further (see Figure 1.21). Financial market participants say that the uncertainties surrounding Italian politics, which materialized in summer 2018 due to the unclear fiscal stance of the then new government, partly disappeared last summer. Also, the risk premium on Greek government bonds has fallen back to levels last seen in 2009, i.e., before the start of the euro crisis.

Figure 1.19

Balance Sheet Sizes of Major Central Banks
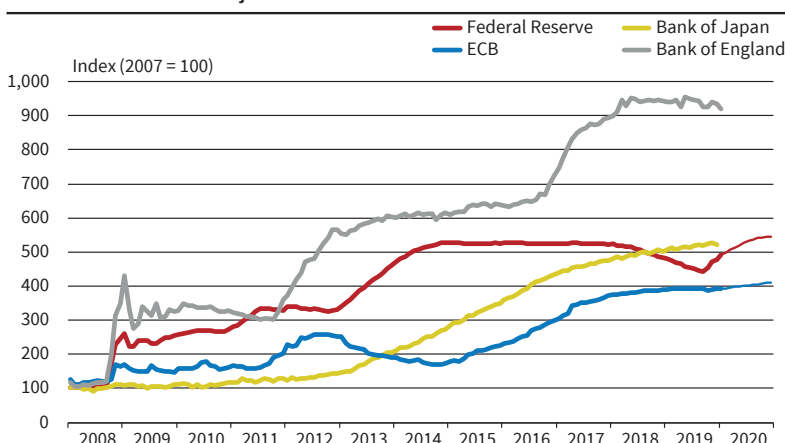
Source: Federal Reserve; Bank of Japan; European Central Bank; Bank of England; last accessed on 2 February 2020; EEAG calculations and forecast.

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Figure 1.20
10-Year Government Bond Yields
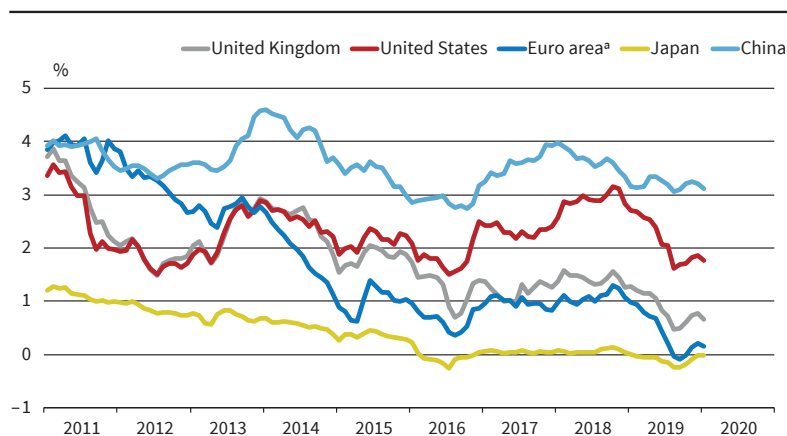
ª The synthetic euro area benchmark bond refers to the weighted average yield of the benchmark bond series from each Economic and Monetary Union member.
Source: Datastream; last accessed on 2 February 2020.
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Figure 1.21
Regional Disparties in Government Bond Yields in the Euro Area
Differences between 10-year national and synthetic euro area benchmark bond yields
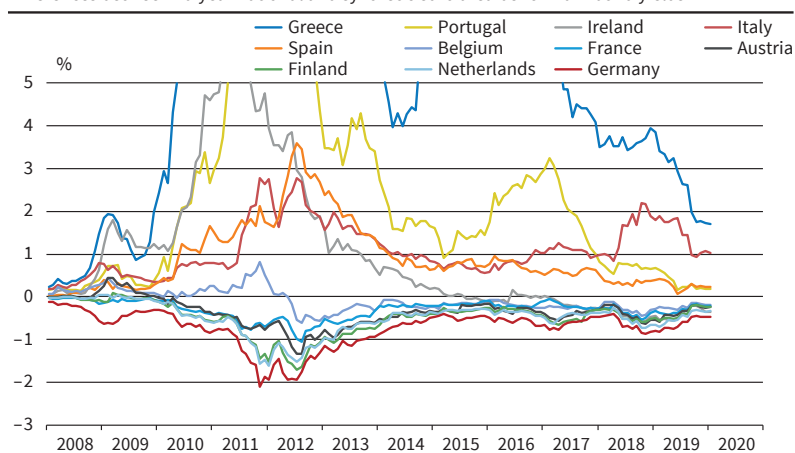
Source: Datastream; last accessed on 2 February 2020.
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While the overall funding costs of the banking sector continued to fall even further last year, as reflected by the Euribor rate, this was not necessarily the case for credit rates to the non-financial private sector (see Figure 1.22). For interest rates on firm loans, the improvement was quite limited. The clearest exception was Greece, where lending rates to corporates continued to fall. Average interest rates for newly granted real estate loans to private households fell to an extent similar to that of money market rates.

A clear increase in rates, however, has been observed for personal lending rates on new consumer credit loans with a maturity of less than one year. The loan rates may have been triggered to some extent by the stronger growth of consumer credit in 2018 compared to other credit components in 2018. Consumer credit growth, however, slowed down over the course of last year. At the aggregate level, total credit growth in the euro area remained at around 2 percent last year driven by the increased dynamism of mortgage loans (see Figure 1.23). Unlike in previous years, banks

did not relax their lending conditions any further last year. According to the Bank Lending Survey of the ECB, one explanation for this is that banks pursued a more stringent risk assessment method, especially with respect to companies, probably due to the economic slowdown.

Financing conditions are likely to remain favorable over the forecast period. Against the backdrop of a moderate economic expansion, the inflation rate is likely to accelerate only very slowly and will still be well below 2 percent by the end of 2021. The ECB is therefore likely to continue its loose monetary policy in line with its announcement. The present forecast therefore includes the projection that the purchases of securities will continue and that key interest rates will remain at their current levels.

In contrast to the slowdown in the real economy, stock markets generally performed very strongly over the past year (see Figure 1.24). Not least due to the dent that occurred at the end of 2018, all major stock markets recorded double-digit price gains last year compared with the previous year and performance differences across countries have been relatively low. For instance, when measured in euros, the Euro STOXX 50 and Dow Jones Industrial were up around 25 percent last December as compared to the year before. Also, the Shanghai Stock Exchange Composite and the Nikkei 225, like the major American and European stock market indices, were able to exceed 20 percent last year. In view of the relatively stable development of the euro last year, the stock market returns calculated in local currencies are also quite similar to the returns calculated in euros. An exception was the United Kingdom where the FTSE 100's return of 12 percent was significantly lower than that of other indices worldwide. From a euro area perspective, the almost 6 percent appreciation of the British pound compensated for some of this difference.

The importance of the stock market low at the end of 2018 for the calculation of the returns is illustrated by looking at the returns of stock market indices within the euro area. While the German FAZ index, which tracks the 100 largest German stock corpora-

Figure 1.22

Interest Rates on Loans in the Euro Area[a]

Consumer and Business Rates

Consumer Credit Rate
Mortgage Rate
Corporate Credit Rate
Euribor

Business Rates in Selected Countries

France — Germany — Greece
Ireland — Italy — Portugal
Spain — Euribor
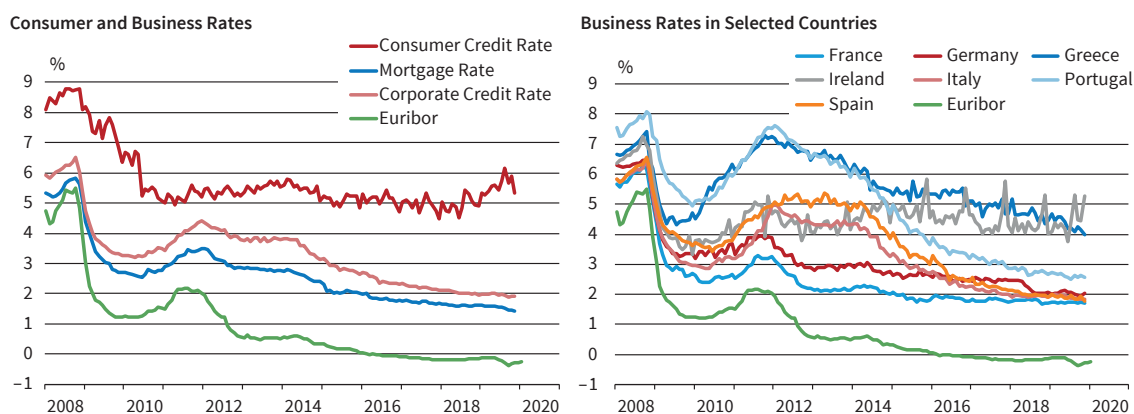
[a] New loans to households and non-financial corporates up to one million euros using floating rates or up to 1 year initial rate fixation. The Euribor rate is based on secured interbank loans with a maturity of one year.
Source: European Central Bank; last accessed on 2 February 2020.   © CESifo

Figure 1.23

Credit Developments in the Euro Area[a]

Consumer credit
Mortages   Corporate credit   Total credit growth
Index (2010 = 100)
Change over previous year's month in %
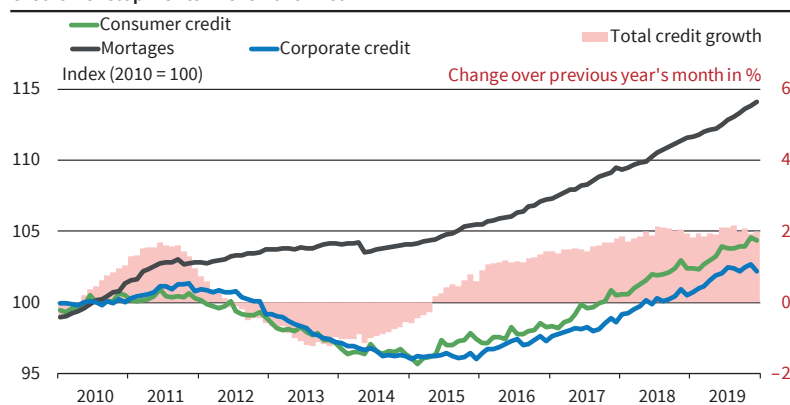
[a] These indexes of adjusted outstanding amounts are calculated according to $I_t = I_{t-1}(1+F_t/L_{t-1})$, where L stands for the outstanding nominal amount of credit and F the amount of transactions (credit granted). The transactions F are calculated from differences in outstanding amounts adjusted for reclassifications, other revaluations, exchange rate variations and other changes which do not arise from transactions (see European Central Bank, 2010, for details). A specific securitisation operation in France has led to a downward level shift in mortgages in May 2014.
Source: European Central Bank; last accessed on 2 February 2020.   © CESifo

Figure 1.24

Developments in International Stock Markets from a Euro Area Perspective[a]

DJ Industrial Average   FTSE 100
Euro STOXX 50   Nikkei 225
Shanghai SE Composite

Index (2010 = 100)
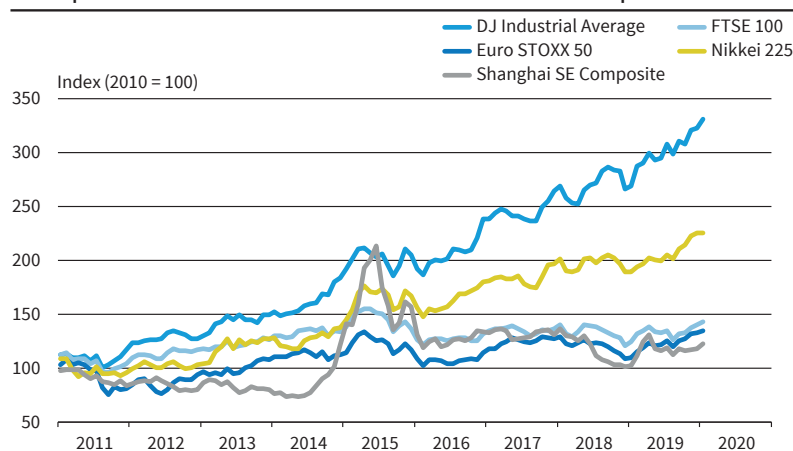
[a] Stock market indices outside the euro area are first converted into euros.
Source: Datastream; last accessed on 2 February 2020.   © CESifo

cent last year when comparing year-end values, its annual average last year fell by 5.7 percent compared to 2018. Of the stock market indices shown in Figure 1.25 and regardless of the calculation of the annual return, the Greek Athex has improved the most. In a year-end comparison, it grew by around 50 percent during the past year. Nevertheless, it is still almost 50 percent below its value for 2010 and even more than 80 percent below its average for 2007. The indices shown for Italy, Spain, Portugal, and even Ireland are also still below their respective values for 2007.

The currencies of the major economies remained largely stable in 2019. The one with overall largest, albeit historically still small, movement was the Japanese yen. In real effective terms, it appreciated by less than 2 percent over the course of the year (see Figure 1.26). From a purchasing power parity perspective, the euro has now been undervalued against the US dollar for five consecutive years (see Figure 1.27). This is largely due to differences in the output gap and the monetary policy stance between the United States and the

tions traded on the German stock exchange in terms of market capitalization, showed a return of 20 per-

euro area (see Projektgruppe Gemeinschaftsdiagnose, 2019).

Figure 1.25
Developments of Selected Stock Markets within the Euro Area

Source: Datastream; last accessed on 2 February 2020.

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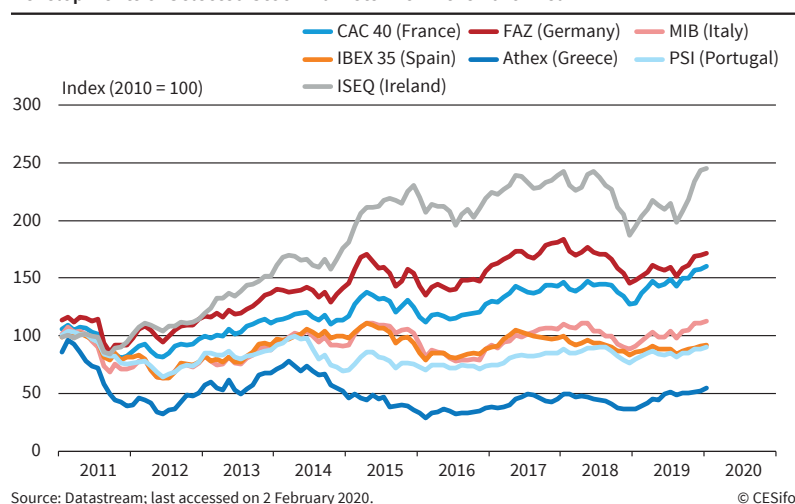
Figure 1.26
Real Effective Exchange Rates around the World

Source: Bank for International Settlements; last accessed on 2 February 2020.

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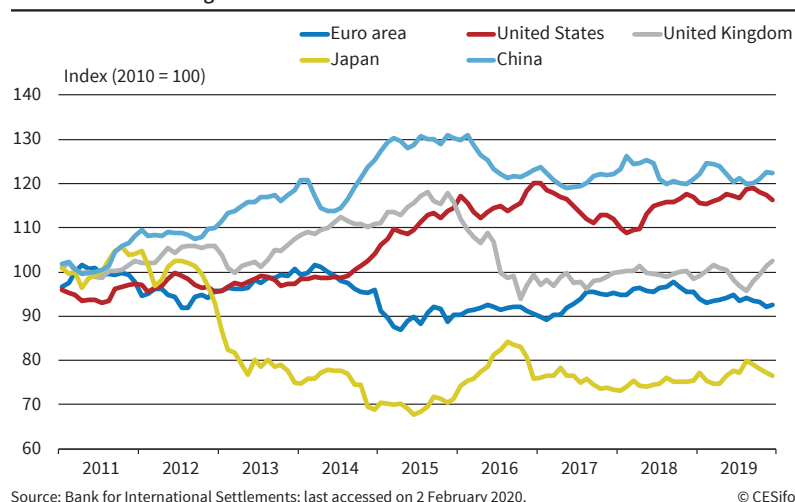
Figure 1.27
Exchange Rate of the Euro against the US Dollar and PPP ª
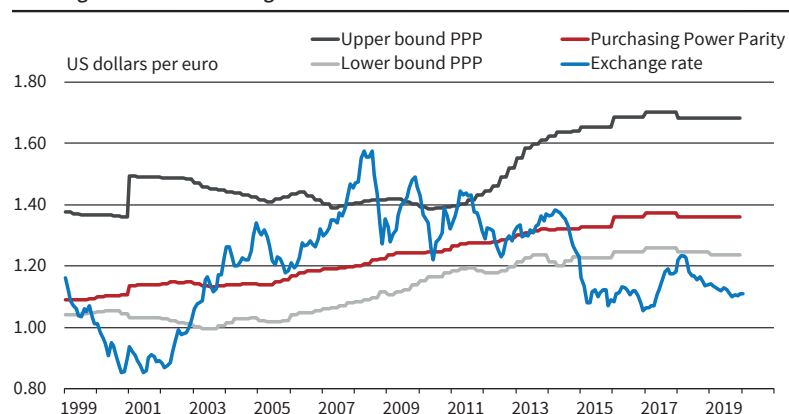
ª The nominal exchange rate is based on monthly data, while the exchange rate based on purchasing power parity (PPP) is given at a quarterly frequency. The US dollar-euro PPP rate is calculated as the GDP-weighted average of the euro country-specific PPP estimates vis-à-vis the US dollar. The PPP upper bound represents the 90th percentile of the euro country-specific PPP estimates vis-à-vis the US dollar; the lower bound the 10th percentile. In calculating these bounds the 11 euro area member countries with the largest GDP weights are used.

Source: OECD, OECD Economic Outlook; European Central Bank;
last accessed on 2 February 2020.

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1.4 MACROECONOMIC OUTLOOK[3]

1.4.1 Assumptions, Risks, and Uncertainties

This forecast is based on the assumption that the price of a barrel of Brent crude oil and the euro-US dollar exchange rate will remain relatively stable throughout the year. This implies that we do not assume the US-Iran crisis will escalate and thereby endanger the supply of oil, or the Corona virus will further reduce fuel demand for a longer period of time.

The downside risks to global economic development continue to dominate the upside ones. It should be noted, however, that the trade conflict between the United States and China entails downside as well as upside risks. On the one hand, the temporary easing of tensions last autumn has shown that a compromise between the two countries does not seem impossible after all. Clarity about the future relationship might lift the ban on many investment decisions and trigger a swifter recovery than expected. On the other hand, the risk of a further escalation is at least as great and an extension of the conflict to other countries and regions is also conceivable. The signing of the "phase one" trade agreement should not obscure the fact that the incumbent US President has so far been unable to push through essential demands against China regarding its subsidy policy and infringement of intellectual property rights. Tariff rates could be further increased and companies could be encouraged to stop trading with produc-

[3] The forecasts presented are updates of Wollmershäuser et al. (2019) and Abberger et al. (2019).

ers of intermediate goods from the other side. In addition, non-tariff barriers to trade could be introduced for subsidiaries located in the respective other country. This is where China's lever is particularly long: sales of companies in China that are largely owned by a US subsidiary are considerably higher than total US exports to China (see OECD, 2019b). As these companies generate only a small part of China's value added, such measures are unlikely to be very costly for China.

China's financial stability is also fraught with significant risks. Experience in recent years has shown that attempts to curb the expansion of the shadow banking sector have quickly slowed down the Chinese economy. As a result, China has reduced these restrictive measures again. However, this increased both lending by the non-regulated shadow banking sector and the risk appetite of creditors and debtors. The current monetary policy measures are again initiating an expansionary phase, which could lead to a further increase in the already high debt of the non-financial sector. This would make a reassessment of risks more likely and could result in sudden sales of certain financial assets on a larger scale.

All over the world, prolonged loose monetary policy is having negative consequences for financial stability. Although to some extent counteracted by increased regulation and other measures to keep the financial system sound, financial investors are being pushed toward taking up more and more risk in search of returns. This has, for instance, led to a significant increase in the indebtedness of non-financial corporations in many advanced economies over the past ten years (see OECD, 2019a). The increase in debt was mainly due to the issue of bonds. An ever-increasing proportion of these bonds are still being valued at investment grade (see Çelik and Isaksson, 2019). If the economy and thus the earnings prospects of these companies weaken more than expected, many of these bonds could be devalued to non-investment grade. Institutional investors would have to dispose of them on the basis of regulatory requirements, which could lead to price falls on bond markets and possibly revaluations of other asset classes.

The economic forecast for the euro area is subject to several political and economic risks. At the political level, the modalities of the United Kingdom's withdrawal from the European Union by the end of this year remain uncertain. In addition, there is political uncertainty related to disputes within the governing coalition in Italy, the newly formed Spanish government's lack of a majority in parliament, and the survival chances of the grand coalition in Germany. Different policy scenarios could be reflected in different fiscal policy orientations. France, especially, has another risk: the strikes in local and long-distance transport and in other areas of the public sector since early December have had a negative impact on

the economy. It is possible that further strikes will follow.

A further spread of the Corona virus, or the future development of the manufacturing sector in the euro area also pose risks. If the weakness of the intermediate and capital goods industries persists, it could have a stronger impact on the labor market than projected and thus adversely affect private consumption, which has been a stabilizing factor so far.

1.4.2 Global Economy

The outlook for the global economy has stabilized. After having declined for two years, the coincident Global Economic Barometer has stabilized at historically low levels (see Figure 1.28). It indicates that the results of those economic tendency surveys that are highly correlated with world GDP growth have stopped deteriorating. The leading Global Barometer even has seen some improvements in recent months, and in all three regions (see Figure 1.29). Nevertheless, these aggregated economic tendency survey results are still to be considered pessimistic from an historical perspective.

Even though the expectations of households have also deteriorated in recent months, they are still more optimistic than firms. This should be seen against the backdrop of continued good labor market conditions in many countries and the associated positive income developments. However, the initial signs of a deterioration in consumer sentiment show that the economic weakness in the manufacturing sector is starting to spread to the service sectors, albeit only to a small extent so far.

Global output will expand at rates slightly below average this year. The advanced economies are expected to grow at rates below potential growth, while production in the emerging markets will probably continue to grow at around potential. Trade restrictions between the United States and China are dampening trade activity and reducing the willingness to invest. The uncertainty about the introduction of further trade barriers between the two countries and an extension of the trade conflict to Europe also contribute to this. As long as the transition to electromobility has not progressed significantly further, motor vehicle production is likely to expand only weakly. The positive effects of the US tax reform ended last year, with the result that US spending on investment and consumption will remain subdued. This should further dampen US demand for foreign goods and services. Despite the fact that the United Kingdom has left the European Union, it is still unclear what the arrangement between the two will look like from 2021 onward. This is putting a particular burden on the UK economy.

The continued strong income growth in the advanced economies is likely to provide positive momentum for consumer spending. This will support

Figure 1.28

World Economic Growth and the Global Economic Barometers

Annual perspective

- Coincident Global Economic Barometer[a]
- Leading Global Economic Barometer[a]
- Real GDP growth[b]

Quarterly perspective

- Emerging (contribution to world growth)
- Advanced (contribution to world growth)
- World (annualized[b c] quarterly growth rates)

[a] 3-month moving averages of indicators with an in-sample average of 100 and a standard deviation of 10.
[b] Countries are weighted according to previous year's nominal GDP in US dollars and market exchange rates.
[c] Growth contributions of advanced and emerging economies thereof.
Source: National statistical offices; KOF/FGV; EEAG calculations; GDP 2019 and 2020: EEAG forecast.

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especially those parts of the service sector that are detached from the manufacturing sector. Overall economic momentum in China is likely to slow further. The distortions in international trade, slower credit growth, and structural change in China are contributing to this. The other emerging markets will probably expand somewhat more strongly than last year. The

Figure 1.29

Global Economic Barometer
Leading composite indicator

- Asia and Pacific
- Europe
- Western Hemisphere
- World

3-month moving averages of indicators with an in-sample average of 100 and a standard deviation of 10.
Source: KOF/FGV.

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recovery of the Brazilian economy should gradually progress, supported by the already adopted pension reform.

Overall, the world's GDP is expected to grow by 2.6 percent this year, the same value as last year (see Table 1.A.1). Whereas the growth contribution from North America and Western and Central Europe is slightly declining further, this is compensated for to quite some extent by a moderate recovery in Latin America and Russia (see Figure 1.30). The strongest contribution will continue to come from Asia, which will again be larger than the combined contributions of the other three regions identified. Focusing on the euro area and the four economically largest countries outside of it reveals that only for the euro area we forecast growth to stabilize at a low level of 1.2 percent (see Figure 1.31). The remaining countries will see a further, albeit moderate, decline in their year-on-year GDP growth rates.

At 1.6 percent, the inflation rate in the advanced economies is likely to accelerate slightly this year as compared to 2019 (1.4 percent). On the one hand, the effects of declining crude oil prices are gradually coming to an end, as oil prices are assumed to increase at the same pace as general inflation this year. On the other hand, economic developments no longer suggest an acceleration in wage growth. In the emerging markets, consumer prices are probably going to increase at a more moderate pace than last year. It is assumed that the effects of the swine fever on pork prices in China will abate. Following very high rates in 2018 and 2019, inflation in Turkey is likely to move slowly back toward the central bank target of 5 percent.

Global trade is likely to have shrunk, or at best stagnated, during the winter of 2019–2020, according to several leading indicators. Both the WTO World Trade Outlook Indicator and the RWI/
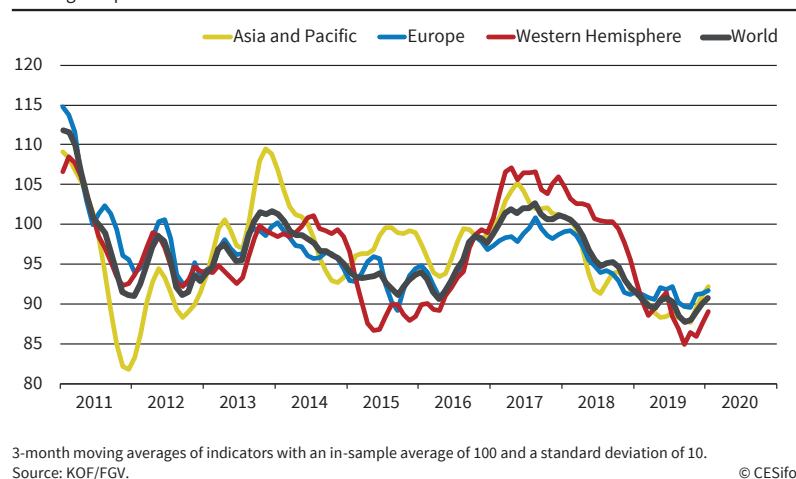
Figure 1.30

Regional Contributions to World GDP Growth [a]

Legend: Latin America and Russia · Asia · North America · Western and Central Europe · World GDP Growth

[a] Based on market weights.
Source: National statistical offices; EEAG calculations and forecast.
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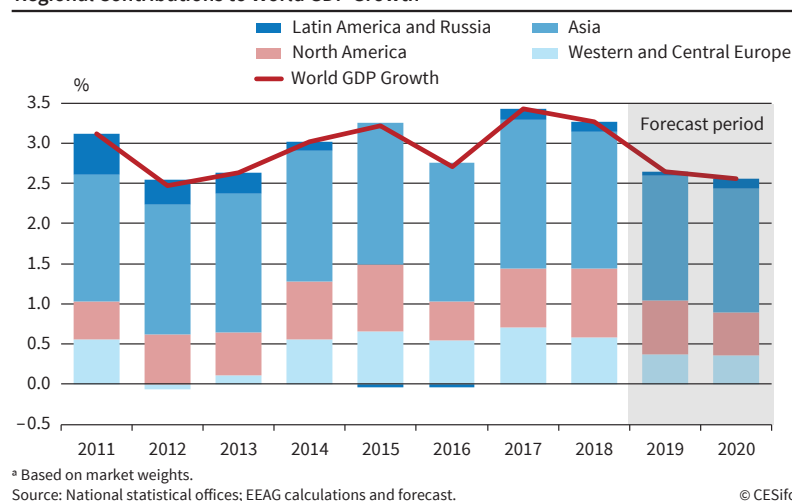
Figure 1.31

Economic Growth by Region
Real GDP percentage change from previous year

Legend: Euro area · United Kingdom · United States · Japan · China (right-hand scale)

Source: US Bureau of Economic Analysis; Eurostat; ESRI; National Bureau of Statistics of China;
last accessed on 2 February 2020; EEAG forecast.
© CESifo
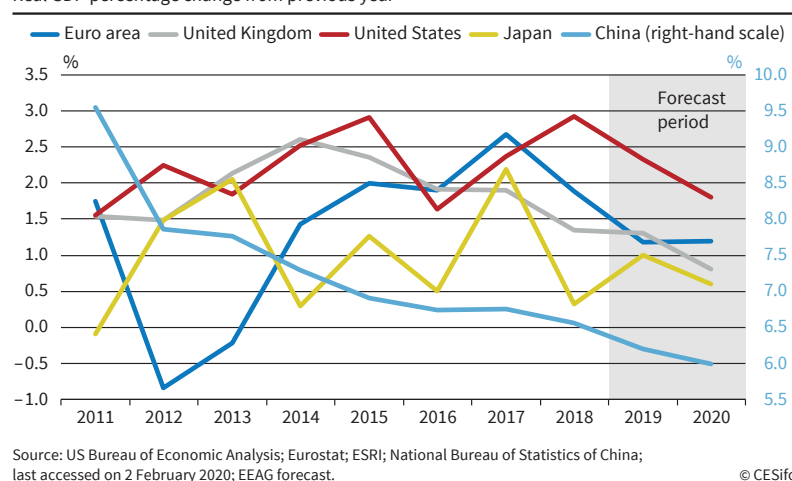
ISL Container Throughput Index have been deteriorating. New foreign orders also continued to decline worldwide. In the further course of the year, world trade should increase slightly in line with the expansion of world production. In total, international trade has declined by 0.4 percent last year in price-adjusted terms. This year it will increase by 0.8 percent. The elasticity of world trade, defined as the relationship between the growth rates of world trade and overall world production, was slightly negative last year. In 2020, the elasticity is projected to be 0.3. These, in absolute terms, low elasticities are a consequence of the trade conflict between the United States and China. Over time, the international value chains will adapt to the conditions of the new trade policy framework and the elasticities are likely to pick up again. The low elasticities are also supported by the fact that the current dynamic in many countries is primarily explained by consumption, which is fed more by domestically produced goods and services than by the more internationally produced capital goods,

which are more reliant on global supply chains.

1.4.3 United States

The United States is now in an election year. Simultaneously, the current administration is in a trade war with China and several other countries. Whereas average US tariffs on Chinese exports were about 3 percent at the beginning of 2018, they rose to approximately 21 percent by autumn last year. On the Chinese side, the increase has been from 8 percent to about 21 percent as well. Given the size of the measures taken, the effects are noticeable all around the world and in particular in the two countries most directly involved. The possibility of further escalations is significantly hampering trade and investment and thereby economic development around the world. Although the upcoming US elections could further soften the tone, the trade war will continue to have an impact on foreign trade. In light of this, we forecast a further economic weakening, especially in the manufacturing sector during the first half of the year. Although not impossible, it appears unlikely that further noteworthy fiscal stimulus measures are to be implemented until the autumn elections. After three interest cuts during the second half of 2019, only monetary policy is expected to be loosened again in the coming months to counteract a further economic slowdown. GDP growth of 1.8 percent is expected for this year.

By the end of 2019, the unemployment rate had reached a historically low level of 3.5 percent. The weakening economy is not expected to induce further falls. As the effects of lower energy prices abate, the inflation rate will initially increase slightly before the effects of the economic slowdown start to dominate. The inflation rate should increase to an average of 2.1 percent this year.

1.4.4 Asia

China is troubled by the political unrest in Hong Kong, the structural slowdown in economic growth, the Corona virus, and the strained relationship with

the United States. Although progress has been made regarding the latter, a substantial trade agreement between the United States and China is not expected until 2021 at the earliest and the existing tariffs are likely to remain in place throughout this year. The reduction in bank reserve requirements last year and the tax cuts adopted at the beginning of 2019 together with increased infrastructure investments will continue to stabilize the economy. Should the economy unexpectedly deteriorate sharply, it is highly likely that both monetary and fiscal policy will provide additional impetus. The current worldwide weakness in manufacturing and the changing international production chains triggered by environmental concerns, general anti-globalization tendencies, and the current trade war, foster the ongoing transition toward a more service-oriented economy. Overall, real GDP is expected to rise by 6.0 percent this year. With the swine fever likely to be under control, pork prices will slowly normalize again and inflation is forecast to fall to 1.8 percent this year, after 2.9 percent in 2019. The spread of the Corona virus at the beginning of 2020 has so far had only a limited negative impact on the economy, as many companies were closed down anyway because of the Chinese New Year break. This forecast assumes that the negative effects will be offset during the rest of the year. However, if the virus continues to spread, Chinese GDP growth will this year be lower than forecast.

In *Japan*, the economic expansion temporarily stopped during the winter months of 2019–2020. The anticipatory effects of the VAT increase that supported the domestic economy in autumn last year have led to a temporary decline in demand. Stable employment, somewhat stronger wage increases, and higher social security spending will, however, support private consumption and, together with additional public spending, cushion the dampening effects of the introduced VAT increase. In addition, demand will be boosted by the 2020 Olympic Games in Tokyo. In contrast, export prospects remain gloomy for the time being. All in all, the economy should grow by 0.6 percent this year, after 1.0 percent in 2019.

Economic growth in *India* should modestly accelerate this year, due to accommodative fiscal and monetary policy. Bank lending is picking up, suggesting that the interest rate cuts of last year are feeding into lending. Growth will furthermore be supported by a reduction in corporate income tax rates, recent measures to address corporate and environmental regulatory uncertainty, and government programs to support rural consumption. However, consumer confidence and business confidence in the manufacturing sector both decreased in recent months, pointing to modest private consumption and fixed investment readings. Furthermore, high levels of bad debt in the banking sector could impede lending and restrain consumption growth, while the political protests against the government's citizenship amend-

ment act and recently against privatization of public enterprises, tense relations with Pakistan, and global trade protectionism are downside risks. India's economy is set to grow at 5.5 percent this year, thereby staying below potential but picking up from 4.5 percent last year.

The outlook for the remaining East Asian economies *(Indonesia, Korea, Malaysia, Taiwan, Thailand, Philippines, Singapore*, and *Hong Kong*) is slightly more optimistic compared to last year. A common factor for the countries in this region is that they are exposed to the slowdown in growth in China, the impact of trade tensions and restrictions between the United States and China, and tensions between Japan and Korea. While the latter have had limited effects so far, an escalation of tensions could affect both economies significantly, with regional repercussions through technology sector supply chains. Overall, however, trade tensions are expected to ease and fiscal policy is projected to be expansionary in many of these countries. All in all, real GDP is expected to grow by a moderate 3.1 percent in this region this year.

1.4.5 Latin America and Russia

Increasing momentum in *Brazil* and *Mexico* as well as the bottoming out of a deep recession in Argentina are expected to contribute to some acceleration of growth in the Latin American region (*Brazil, Mexico, Argentina, Colombia, Chile,* and *Venezuela*) to 1.5 percent in 2020. The Argentine economy is expected to continue to contract in 2020, but less than last year. In Mexico, political uncertainty is gradually easing, and in *Venezuela*, the persistent slump in production is expected to continue, albeit less dramatically than in 2019. The regional recovery will be driven primarily by private consumption. Despite somewhat higher growth, the region remains well below its potential as structural rigidities, unfavorable terms of trade, and fiscal imbalances weigh on the outlook, especially for Brazil. Inflation in the region is expected to decline somewhat this year.

In *Russia*, although business confidence in the manufacturing sector has been declining for almost a year, the situation in the service sector has improved significantly, pointing to a recovery. Low unemployment and falling inflation rates are improving purchasing power. The ongoing reduction in the key monetary policy interest rate, the CBR base rate, will further reduce the cost of debt financing. This should stimulate private investment. However, weak industrial production combined with political uncertainty and demographic structural changes that adversely affect growth potential will lead to only a moderate recovery. Growth of 2.0 percent is forecast for this year. However, much will depend on the geopolitical situation, so the downside risks therefore remain high.

Figure 1.32
Confidence Indicators^a for Different Sectors in the Euro Area

—Construction —Consumers —Industry —Retail trade —Services
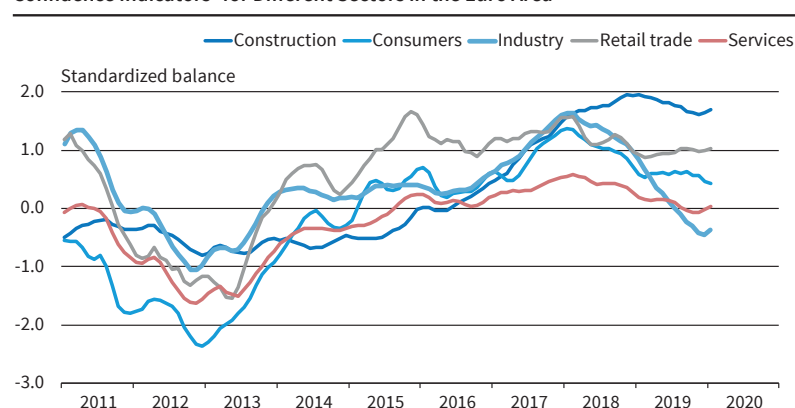
^{a} 3-month averages of arithmetic means of selected (seasonally adjusted) balances on business and consumer tendency survey questions. Balances are the differences between the percentages of positive and negative replies. These are subsequently normalized to have an average of 0 and variance of 1 for the period from 1985 onward.
Source: European Commission; last accessed on 2 February 2020; EEAG calculations.   © CESifo

Figure 1.33
Demand Contributions to GDP Growth in the Euro Area^a
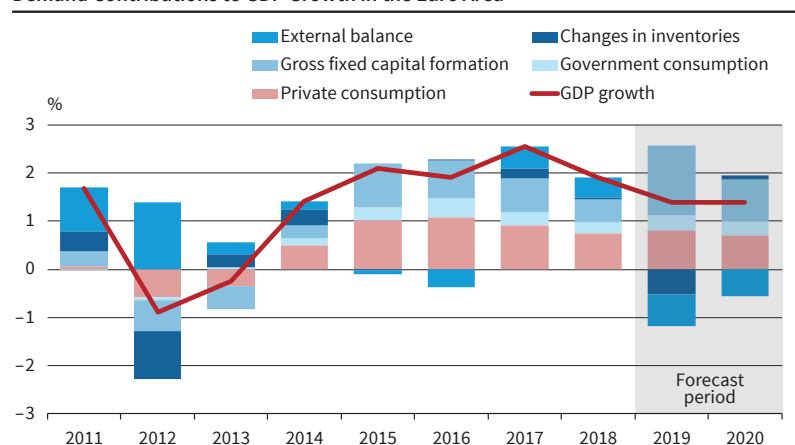
■ External balance   ■ Changes in inventories
■ Gross fixed capital formation   ■ Government consumption
■ Private consumption   — GDP growth

^{a} Gross domestic product at market prices (prices of the previous year). Annual percentage change.
Source: Eurostat; last accessed on 2 February 2020; EEAG calculations and forecast.   © CESifo

Figure 1.34
Real GDP in the Euro Area
Seasonally adjusted data

— Level
— Annual growth   ■ Annualized quarterly growth
Index (2015 = 100)
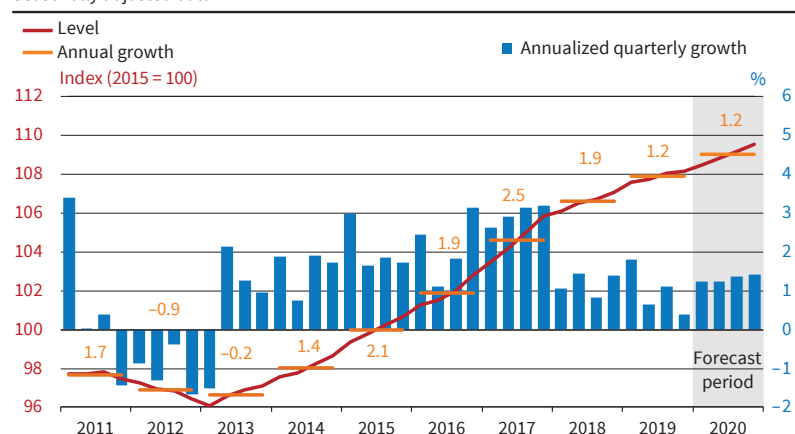
Source: Eurostat; last accessed on 2 February 2020; EEAG calculations and forecast.   © CESifo

1.4.6 European Economy

1.4.6.1 Cyclical Situation

Although economic momentum in the euro area is unlikely to deteriorate further, a noticeable recovery will probably still take several quarters. The uneven development in the various economic sectors is also likely to continue for some time. Recently, less negative signals have come from the manufacturing sector. For example, the purchasing managers' index stabilized at a low level. However, the industrial confidence survey conducted by the European Commission as well as incoming orders (especially from abroad), point to a continued decline of value added in the manufacturing sector, which is likely to place an increasing burden on business service providers (see Figure 1.32).

The ongoing period of weakness is likely to have an increasing impact on the labor market in the form of lower employment and wage dynamics. This also has a dampening effect on the production of consumer goods and consumer-related services. The economy, on the other hand, is supported by expansionary fiscal policy in many euro area countries (see Figure 1.33). In addition, distortions caused by Brexit or a further escalation of the trade conflict initiated by the United States have decreased. This should help stimulate foreign trade; however, in view of the moderate dynamics of the global economy, this will probably grow only at below-average rates. As last year, the price-adjusted GDP is projected to grow by 1.2 percent this year (see Figure 1.34). Growing again below potential should lead to a slightly under-utilized economy by the end of the year.

After unemployment rates in Germany, France, and

Figure 1.35
Employment in the Euro Area
Seasonally and work-day adjusted data
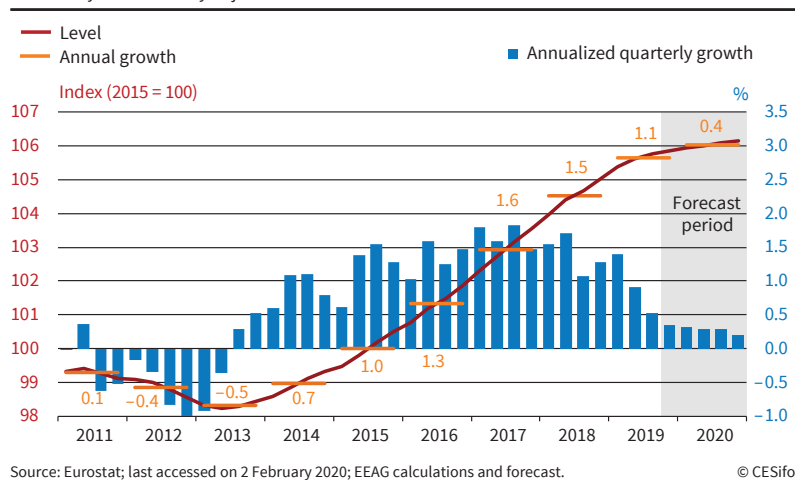
Source: Eurostat; last accessed on 2 February 2020; EEAG calculations and forecast.   © CESifo

Figure 1.36
Unemployment Rates in the Euro Area and the United Kingdom
Seasonally adjusted data
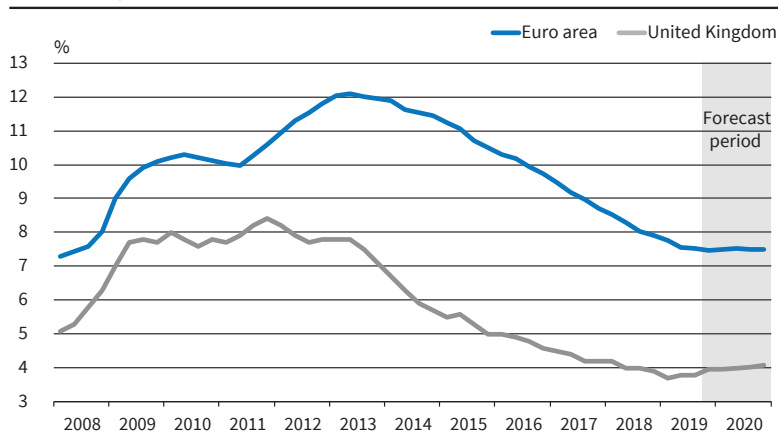
Source: Eurostat; last accessed on 2 February 2020; EEAG calculations and forecast.   © CESifo

Spain stopped declining last year, the economic slowdown is likely to have the same effect on Italy. Job creation will stay subdued throughout the year (see Figure 1.35). As a result, the unemployment rate in the euro area as a whole will probably reach a level of 7.5 percent (see Figure 1.36), only 0.1 percentage points below the level of last year. This represents a marked slowdown in labor market dynamics compared with the annual average decrease in the unemployment rate of 0.8 percentage points since 2014.

After an average inflation of 1.2 percent in 2019, inflation will initially pick up somewhat in 2020 due to a base effect of past energy price movements. Annual inflation in 2020 will slightly increase to 1.3 percent.

1.4.6.2 Developments in Selected European Countries

The economies in Europe are likely to continue to show marked differences (see Figure 1.37). In particular Germany and Italy, but also the United Kingdom,

will continue to put the brakes on European growth.

Even though there is currently no reason to fear that *Germany* will fall into recession, value added in its industry is likely to have shrunk further this winter. However, the manufacturing sector should gradually leave its recessionary phase behind over the course of this year. Uncertainty remains high regarding the future relationship between the European Union and the United Kingdom, the further development of the trade conflict and the consequences of technological change in the automotive industry. However, the possibility of a hard Brexit this year has vanished and the likelihood of a further escalation of the trade conflict emanating from the United States has decreased. In addition, the present forecast assumes that German automobile manufacturers will make progress in the transition to electromobility and gradually ramp up their domestic production again. Recent order intake, business expectations in manufacturing, and a renewed increase in goods exports indicate that the free fall has stopped.

The weakness in manufacturing is most likely to be felt in corporate investment, which has at best stagnated this winter. A moderate expansion is likely to take place again in the further course of the year. The continuing uncertainty is likely to have a dampening effect on equipment investment. In the case of commercial construction investments, on the other hand, slight impetus is expected as a result of investment projects in rail infrastructure and broadband expansion.

The spillover of the weakness in the manufacturing sector has so far been limited to industry-related services, whose value-added and employment are growing more slowly as a result of the poor order situation. An indirect transfer to consumption- and construction-related economic sectors via the labor market has so far failed to materialize. The instrument of short-time work, which more than 10 percent of industrial companies in Germany are now likely to have taken up, and which stabilizes the incomes of employees, may also have contributed to this. Finally,

Figure 1.37

Economic Growth in EU Member Countries

Average real GDP growth, 2011–2018

Real GDP growth, 2019

Real GDP growth, 2020
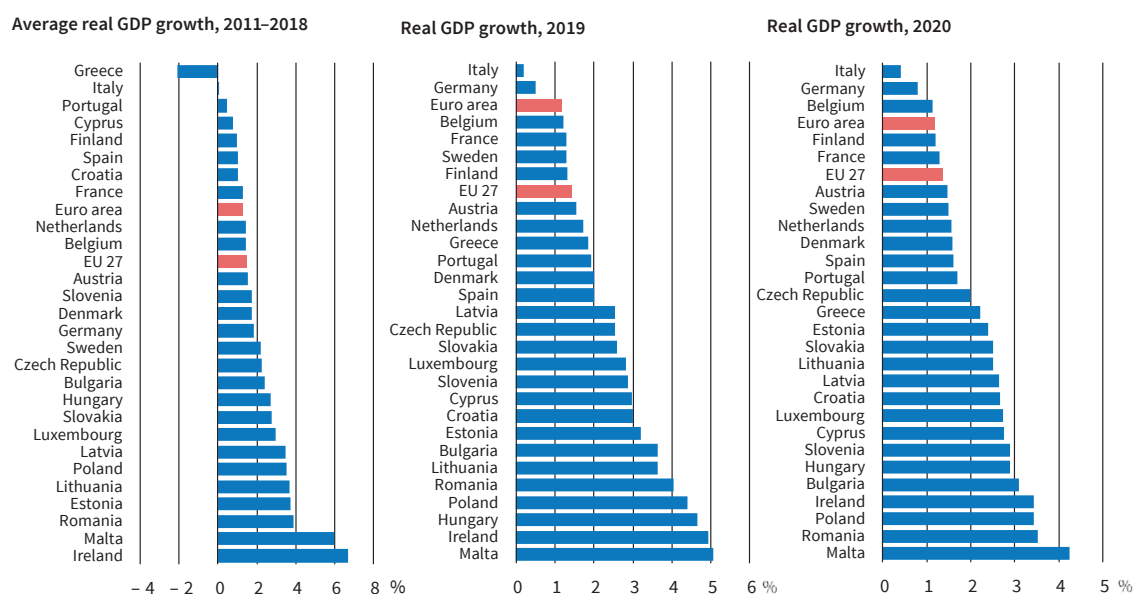
Source: Eurostat; last accessed on 2 February 2020; 2019 and 2020: EEAG forecast.

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strong employment growth in the public sector also stabilizes the economy. Hence, irrespective of the weakness in industry, the prospects for a continuation of the dynamic consumer economy remain good. Although there is a slowdown in private consumption in the winter half of the year, during the rest of the year, private consumption will be stimulated by fiscal impulses. Even though the peak in the current construction cycle has already passed and the pace of expansion will slow down somewhat, investments in residential construction should remain a pillar of the German economy. A main contributor to the recovery is fiscal policy. It already had an expansionary effect last year and will continue to do so this year through tax and social contribution relief, an expansion of state transfer payments, and an increase in public consumption and investment expenditure. This should allow overall economic production in Germany to expand at the slightly accelerated rate of 0.8 percent this year after 0.5 percent last year.

Employment growth is expected to continue at a subdued pace. In particular, the willingness of companies in the manufacturing sector to recruit has deteriorated considerably. The reduction in unemployment is also likely to continue at a noticeably slower pace. The unemployment rate was 3.3 percent last year and is expected to remain at 3.3 percent this year. Inflation is expected to rise from 1.3 percent last year to 1.5 percent in 2020. In addition to the somewhat improving economy, which opens up scope for some price increases, rising electricity prices caused by changes in government policy are also contributing to this. In addition, because the labor shortage is likely to increase due to demographic factors, effec-

tive earnings are expected to increase by 2.5 percent in 2020 (after 2.8 percent in 2019).

Although the *United Kingdom* has just completed its formal withdrawal from the European Union, the outlook for the British economy remains bleak.[4] The UK economy crucially depends on good trade relations with the European Union and other countries, but the rules that will govern trade in the future remain unclear. In particular, it is doubtful that a free trade agreement will be negotiated by the end of 2020, when the transitional period of the exit agreement expires. This means that the high level of uncertainty surrounding Brexit, which has hampered future planning over the past three or more years, is likely to persist in the medium term and will further weaken the dynamism of the economy. This is particularly true for decision-making in the corporate sector. There are clear signs that investment spending is being postponed while managers focus on contingency planning, which may ultimately prove to be wasteful. But it also applies to the public sector, where the fiscal framework is in disarray. Hantzsche and Young (2019) estimate that a Brexit that provides for a smooth transition to a free trade agreement with the European Union would ultimately shrink the UK economy by about 3.5 percent compared to a situation in which the United Kingdom had remained in the European Union. The loss in GDP

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[4] Regarding the European Union, the United Kingdom is currently in a transitional phase which, if not extended before June 30, 2020, will end on December 31, 2020. Until then, the United Kingdom will remain de facto part of the EU customs union and internal market, but outside the political institutions. This time should be used to negotiate an agreement with the European Union that will cover not only future trade relations but also future cooperation with the European Union in areas such as security and law enforcement. If no deal is agreed and ratified by the end of the year, the United Kingdom faces tariffs on exports to the European Union.

so far has been due to the fact that companies have generally not invested, while the loss in the future will be due to the fact that certain types of economic activity in the United Kingdom will no longer be profitable. This year we expect economic conditions to remain comparable to last year's, implying that companies will refrain from investing given the continuing uncertainty about future trade relations. In such a scenario, GDP will grow by 0.8 percent in 2020, again largely driven by household and government consumption. Corporate investment will remain weak.

In *France*, the overall economy should develop similarly to last year. Household confidence recovered significantly last year, and with the acceleration in purchasing power (partly as a result of further income tax cuts), private consumption should continue to make good progress. Private household investment is also likely to continue growing in 2020, maintaining its momentum from last year. On the other hand, aggregate business investment is projected to continue its slowdown. While the service sector is likely to hold up, industrial production is likely to come to a standstill or even decline. Furthermore, strikes against the pension reform are likely to dampen growth in the first quarter. All in all, GDP growth is expected to reach 1.3 percent in 2020. The possibly protracted strikes and protests against the pension reform, the risks of a fiscal slippage, and a slowdown in the pace of reform remain downside risks to this outlook.

Employment is likely to slow further, but the unemployment rate is expected to remain on a downward trend, falling to an average of 8.4 percent this year, down from 8.6 percent in 2019. The average inflation rate this year will be similar to last year, at 1.3 percent. The price increases triggered by indirect taxation of tobacco products, the tightening of the car bonus system, an eco-tax on flights from France, and the shortening of the final sales period should be offset by the weak development of core inflation.

Despite expansive fiscal policy, economic growth in *Italy* is likely to remain well below 1 percent this year. Growth is picking up somewhat, mainly thanks to slightly stronger domestic demand and some recovery in industrial activity. However, weak foreign demand and investment activity, as well as subdued productivity and wage growth, will weigh on the economy. In addition, a volatile political environment and the problematic budgetary situation further cloud the outlook. Growth of 0.4 percent seems most likely in 2020. Inflation in Italy is likely to remain low due to the weak economy and the comparatively high, albeit still slowly falling, unemployment rate.

Following the strong expansion of recent years, the pace of growth in *Spain* is likely to slow down slightly. The growth rate in 2020 is projected to be 1.6 percent, which is still high in comparison with Germany, France, and Italy. Of the smaller Western European countries, only *Belgium* and *Finland* are growing below the EU average. *Ireland* and *Luxembourg* will continue to lead the growth list within this group. In the Central and Eastern European EU member states, the growth rate in the current year will be between 2 and 4.2 percent. These countries are currently experiencing a decline in economic dynamism.

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APPPENDIX 1.A
Forecasting Tables

Table 1.A.1

GDP Growth, Inflation, and Unemployment in Various Countries

	Share of total GDP in %	GDP growth			CPI inflation			Unemployment rate[a]		
		in %								
		2018	2019	2020	2018	2019	2020	2018	2019	2020
Industrialized countries:										
United States	27.7	2.9	2.3	1.8	2.4	1.8	2.1	3.9	3.7	3.5
EU 27	21.4	2.1	1.4	1.4	1.8	1.4	1.4	6.9	6.5	6.4
Euro area	18.3	1.9	1.2	1.2	1.8	1.2	1.3	8.2	7.6	7.5
Japan	6.7	0.8	1.0	0.6	1.0	0.5	1.0	2.4	2.4	2.4
United Kingdom	3.8	1.4	1.3	0.8	2.5	1.8	2.2	4.0	3.9	4.0
Canada	2.3	1.9	1.7	1.8	2.2	2.0	2.0	5.8	5.7	5.9
Switzerland	0.9	2.8	0.9	1.8	0.9	0.4	0.1	4.7	4.5	4.5
Norway	0.6	1.3	1.5	2.4	2.8	2.3	1.9	3.9	3.5	3.3
Industrialized countries (total)	**63.4**	**2.2**	**1.7**	**1.4**	**1.9**	**1.4**	**1.6**	**5.1**	**4.8**	**4.7**
Newly industrialized countries:										
China	18.0	6.6	6.2	6.0	2.1	2.9	1.8			
East Asia[a]	7.1	3.7	2.9	3.1	2.0	1.4	1.7			
Latin America[b]	5.7	1.2	0.5	1.5	7.6	9.3	8.7			
India	3.7	6.8	4.5	5.5	3.9	3.5	4.2			
Russia	2.2	2.3	1.2	2.0	2.9	3.8	4.0			
Newly industrialized countries (total)	**36.6**	**5.0**	**4.2**	**4.4**	**3.2**	**3.7**	**3.5**			
Total[d]	**100.0**	**3.3**	**2.6**	**2.6**	**2.5**	**2.3**	**2.4**			
World trade growth in %[e]		**3.4**	**-0.4**	**0.8**						

[a] Weighted average of Indonesia, Korea, Malaysia, Tawain, Thailand, Philippines, Singapore, and Hong Kong. Weighted with the 2017 levels of GDP in US dollars; [b] Weighted average of Brazil, Mexico, Argentina, Colombia, and Chile. Weighted with the 2018 level of GDP in US dollars; [c] Weighted average of the listed groups of countries; [d] Standardized unemployment rate; [e] Trade of goods.

Source: EU; OECD; IMF; ILO; National Statistical Offices; CPB. 2019 and 2020: EEAG forecasts.

Table 1.A.2

GDP Growth, Inflation, and Unemployment in EU Countries

	Share of total GDP in %	GDP growth			Inflation[a]			Unemployment rate[b]		
		in %								
		2018	2019	2020	2018	2019	2020	2018	2019	2020
Germany	24.9	1.5	0.5	0.8	1.9	1.3	1.5	3.4	3.3	3.3
France	17.6	1.8	1.3	1.3	2.1	1.3	1.3	9.1	8.6	8.4
Italy	13.3	0.7	0.2	0.4	1.2	0.7	0.7	10.6	10.0	9.8
Spain	8.9	2.4	2.0	1.6	1.7	0.7	1.2	15.3	14.2	13.9
Netherlands	5.7	2.6	1.7	1.6	1.6	2.6	1.5	3.8	3.4	3.5
Belgium	3.4	1.5	1.2	1.1	2.3	1.4	1.3	6.0	5.5	5.5
Austria	2.8	2.3	1.6	1.5	2.1	1.5	1.7	4.9	4.9	4.8
Ireland	2.3	8.5	4.9	3.4	0.7	1.0	1.3	5.8	5.3	5.1
Finland	1.7	1.7	1.3	1.2	1.2	1.2	1.3	7.4	6.6	6.5
Portugal	1.5	2.4	1.9	1.7	1.2	0.6	1.2	7.0	6.2	5.7
Greece	1.4	1.9	1.9	2.2	0.8	0.6	0.8	19.3	17.6	16.1
Slovakia	0.6	4.0	2.6	2.5	2.5	2.7	2.3	6.5	5.9	5.8
Luxembourg	0.6	3.2	2.8	2.7	2.0	1.7	1.7	5.5	5.2	5.2
Slovenia	0.3	4.2	2.9	2.9	1.9	1.8	1.9	5.1	4.4	4.4
Lithuania	0.3	3.7	3.6	2.5	2.5	2.3	2.2	6.2	6.2	6.1
Latvia	0.2	4.8	2.5	2.6	2.6	3.0	2.5	7.4	6.6	6.6
Estonia	0.2	4.8	3.2	2.4	3.4	2.5	2.2	5.4	4.9	5.0
Cyprus	0.2	4.1	3.0	2.8	0.8	0.7	1.2	8.4	7.1	6.1
Malta	0.1	7.0	5.0	4.2	1.7	1.6	1.8	3.7	3.7	3.8
Euro area[c]	**85.9**	**1.9**	**1.2**	**1.2**	**1.8**	**1.2**	**1.3**	**8.2**	**7.6**	**7.5**
Sweden	3.7	2.3	1.3	1.5	2.0	1.8	1.8	6.3	6.8	7.0
Poland	3.6	5.2	4.4	3.4	1.2	2.3	3.0	3.9	3.5	3.5
Denmark	2.2	2.4	2.0	1.6	0.7	0.8	1.0	5.1	5.1	4.9
Czech Rpublic	1.5	3.0	2.5	2.0	2.0	2.6	2.3	2.2	2.1	2.2
Romania	1.4	4.0	4.0	3.5	4.1	4.1	3.4	4.2	4.1	4.4
Hungary	1.0	5.1	4.7	2.9	2.9	3.4	3.2	3.7	3.4	3.3
Bulgaria	0.4	3.2	3.6	3.1	2.6	2.5	2.0	5.2	4.7	4.5
Croatia	0.4	2.6	3.0	2.7	1.6	1.0	1.3	8.4	8.0	6.9
Non-euro area Members[c]	**14.1**	**3.5**	**2.9**	**2.4**	**1.9**	**2.2**	**2.3**	**4.3**	**4.1**	**4.1**
EU 27[c]	**100.0**	**2.1**	**1.4**	**1.4**	**1.8**	**1.4**	**1.4**	**6.9**	**6.5**	**6.4**

[a] Harmonized consumer price index (HICP); [b] Standardized unemployment rate; [c] Weighted average of the listed countries.

Note: GDP growth rates are based on the calender adjusted series except for Ireland, Slovakia and Romania for which Eurostat does not provide working day adjusted GDP series.

Source: Eurostat; 2019 and 2020: EEAG forecast.

Tab 1.A.3

Key Forecast Figures for the European Union (EU 27)

	2018	2019	2020
	Percentage change over previous year		
Real GDP	2.1	1.4	1.4
Private consumption	1.7	1.5	1.3
Government consumption	1.2	1.6	1.5
Gross fixed capital formation	2.9	7.0	4.0
Exports of goods and services	3.5	2.7	1.9
Imports of goods and services	3.2	4.5	3.3
Net exports[a]	0.3	− 0.7	− 0.5
Consumer prices[b]	1.8	1.4	1.4
	Percentage of nominal GDP		
Government fiscal balance[c]	− 0.7	− 1.0	− 1.1
	Percentage of labor force		
Unemployment rate[d]	7.0	6.5	6.3

[a] Contributions to changes in real GDP (percentage of real GDP in previous year); [b] Harmonized consumer price index (HCPI); [c] 2019 and 2020: forecasts of the European Commission; [d] Standardized unemployment rate

Source: Eurostat; 2019 and 2020: EEAG forecasts.

Table 1.A.4

Key Forecast Figures for the Euro Area

	2018	2019	2020
	Percentage change over previous year		
Real GDP	1.9	1.2	1.2
Private consumption	1.4	1.3	1.3
Government consumption	1.1	1.6	1.4
Gross fixed capital formation	2.4	7.4	4.3
Exports of goods and services	3.3	2.4	1.9
Imports of goods and services	2.7	4.7	3.3
Net exports[a]	0.4	− 0.9	− 0.6
Consumer prices[b]	1.8	1.2	1.3
	Percentage of nominal GDP		
Government fiscal balance[c]	− 0.5	− 0.8	− 0.9
	Percentage of labor force		
Unemployment rate[d]	8.2	7.6	7.3

[a] Contributions to changes in real GDP (percentage of real GDP in previous year); [b] Harmonized consumer price index (HCPI); [c] 2019 and 2020: forecasts of the European Commission; [d] Standardized unemployment rate

Source: Eurostat; 2019 and 2020: EEAG forecasts.

Digital and Technical Transformation

We are witnessing a profound change in the way we live, perceive the world, and participate in it. At the core of this transformation is an immense increase in global connectivity, which allows, in principle, for more efficient use of both physical and human resources. On the other hand, the near-zero marginal cost of production, storage, sharing, and analysis of information enables fast growth of digital platforms that may become a new type of global information monopoly. Leading platforms add large value for customers and complete markets in many innovative ways. Through platforms, even small companies and individuals from all over the world can have global reach for their products and services. Along with the growth in the quantity of data, our ability to process and analyze these enormous information flows increases exponentially. The promise of Artificial Intelligence (AI) and automation is likely to be transformative for the way we live and work.

Such processes also raise important challenges from the European perspective. None of the largest global platforms are European but rather American and Chinese. These companies rely strongly on Intellectual Property (IP), which is more mobile than physical capital. Their services can be provided in markets where they have no physical presence. This raises issues of how to regulate and tax them. Europe is lagging behind the United States and China in part due to a trade-off that exists between data and privacy protection, the latter advocated in Europe, and the time it takes to amass large quantities of cheap data needed for fast development of AI and other key technologies (as in the United States and China). As Europe develops policies regarding privacy in the digital world, its policymakers should keep this trade-off in mind.

The changing nature of globalization presents a potential challenge to the European economic model. Whether the European welfare state model can be sustained in the future may depend on the fiscal consequences of digitalization, among other things. In addition, digitalization creates both winners and losers. Inequality may be rising not only on the individual but also on the company level, with winning platforms becoming a new type of global monopoly (at least for a while). There is a risk that American and Chinese platforms can increasingly capture the lion's share of the value added in the emerging global economy. This view seems to be supported by the enormous market valuation of leading platforms. Relatively low profitability of most of these platforms (Apple is an exception) indicates that each player pays a premium for their current market domination. But low profitability is also a sign of their potential fragility. Preventing domination of American and Chinese platforms in Europe should be a matter of industrial and competition policy. To the extent that the development cannot be stopped, European interests in international tax policy may need to change. An additional important issue is that the gig economy, enabled by new technologies and global connectivity, puts pressure on the worker/employee relationship traditionally prevalent in developed Europe.

In this chapter, we present some of the core issues related to the digital transformation of the global economy and how Europe can potentially respond to these momentous changes. In the chapters that follow, we specifically focus on problems and potential solutions related to fair taxation in the mobile and digitalized world.

2.1 MAJOR TRENDS

Since 1990, the world has become dramatically more connected, but the character of that connection has changed, and in recent years its physicality diminished. A McKinsey Global Institute study in 2016 estimates that the global cross-border flows of goods, services, and finance amounted to USD 5 trillion, or 24 percent of global Gross Domestic Product (GDP) in 1990, compared with USD 30 trillion, or 39 percent of global GDP in 2014. At the same time, global tourism increased from 435 million international tourist arrivals in 1990 to 1.1 billion in 2014. The public internet, which was just starting in 1990, has become a global network connecting billions of people, companies, and public entities. An increasing number of people work remotely part- or even full-time.

Flows of physical goods and finance drove globalization in the 20th century. However, after a 20-year period of growing roughly twice as fast as the world economy and peaking at 53 percent of global GDP in 2007, the patterns of traditional global trade flows have shifted. Growth in goods trade, traditionally driven by large multinational value chains, has flattened, while financial flows driven by large financial groups have fallen sharply, and trade in services grew only modestly. In the recovery period after the global financial crisis, total flows have regained their pre-recession levels in terms of dollar value, but by 2014 they represented just 39 percent of world GDP (McKinsey Global Institute, 2016), a smaller fraction than in 2007.

Part of this relative decline has been in response to the global financial crisis and was thus cyclical in nature. But there are reasons to believe that the stagnation in traditional global trade driven by large multinational value chains is likely to be structural. Namely, the makers of many finished goods are now placing less importance on labor costs and more on speed to market and non-labor costs. As a result, part of global production is moving closer to end consumers. Massive introductions of industrial robots and 3D printers may further facilitate this process. Trade is also declining for many intermediate goods such as chemicals, paper, textile fabrics, and communications and electrical equipment. This suggests that global value chains may be shortening. Managing complex, lengthy supply chains is costly and potentially risky (on risk management of global supply chains, see Lessard, 2013). The risks are heightened by the ongoing US-China trade war. Europe may be significantly impacted by all of these processes. On one hand, nearshoring may bring some previously outsourced man-

Figure 2.1a

Top 10 Global Companies by Market Capitalization in 2019

Company	Bn. US Dollar
Microsoft	1,062
Apple	1,012
Amazon	859
Alphabet	838
Berkshire Hathaway	509
Facebook	508
Alibaba	435
Tencent	399
Visa	385
JP Morgan Chase	376

Source: Financial Times Global 500. All figures from 2019 Q3.
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Figure 2.1b

Fortune 10 Global Companies by Profits in 2019

Company	Bn. US Dollar
Saudi Aramco	110
Apple	59
Ind. & Com. Bank of China	45
Samsung Electronics	39
China Constr. Bank	38
JP Morgan Chase	32
Bank of America Corp.	30
Agric. Bank of China	30
Alphabet	30
Bank of China	27

Source: Fortune 500.
© CESifo

ufacturing back to developed Europe. On the other hand, automation may prevent significant job gains from materializing. In addition, if the trade war(s) continue, they may threaten European export prospects.

In the past few years, globalization has entered a new era driven by data flows that transmit information, ideas, and innovation. This has enabled the creation of digital platforms. They create more efficient global markets in which geographically distant buyers and sellers find each other with a few clicks. The near-zero marginal costs of digital communications and ease of digital transactions open up new possibilities for conducting business across borders, even for small companies and individuals. This potentially sets the stage for more inclusive globalization than what we had in the past. On the other hand, there are no natural bounds on growth of successful platforms. Therefore, they can become information-based monopolies, a new type of (temporary) monopoly with the power to influence our lives in ways that were previously not possible. This is reflected in the market valuation of
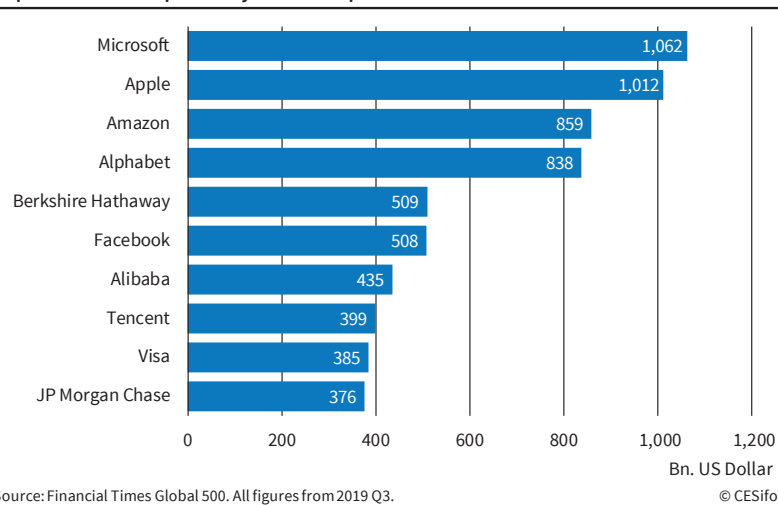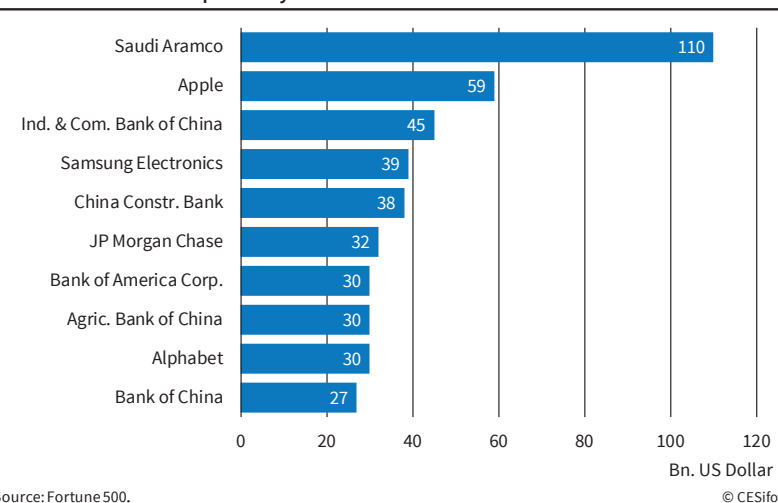
leading platforms. In the top ten global companies by market capitalization, the vast majority are American and Chinese digital platforms (see Figure 2.1, Panel a).

As a result of their vast capitalization, internet giants have not only information power but also financial power. They can easily purchase potential competitors and spread their power both vertically and horizontally, entering and potentially dominating industries that were previously a domain of traditional companies. Importantly, no leading platform (currently, at least) has originated in Europe.

Yet with the exception of Apple, none of the leading platforms are in the top ten most profitable companies (Figure 2.1, Panel b). High valuation, therefore, likely stems from investors' perceptions of the degree of platforms' market dominance. Another important characteristic of these firms is their strong reliance on IP rather than on physical capital. This is reflected in part in their high price-to-book (P/B) ratio with respect to more traditional production companies. In 2019, while Amazon had a P/B ratio of 15.50 and Apple

12.85, Deutsche Telekom had a ratio of 2.33. Furthermore, traditional European manufacturers Volkswagen and Daimler had ratios below 1 (0.74 and 0.87, respectively). Heavy reliance on IP and relatively low profitability make global platforms vulnerable to change in market sentiment and the emergence of new competitors.

While the digital economy and digital trade are increasingly important and the leading players are gaining power, governments and international institutions are having a hard time handling new developments. At present, for example, there is no full agreement even on how to define or measure the 'digital economy'. A Organisation for Economic Co-operation and Development (OECD) study from 2013 argues that most existing industrial classification systems are too broad to identify relevant digital trade-related activities. The OECD has developed a framework for more comprehensive measurement of digital trade adopted by, among others, the United Nations Conference on Trade and Development (UNCTAD). The OECD defines an electronic or e-commerce transaction as the sale or purchase of goods or services conducted over computer networks by methods specifically designed for the purpose of receiving or placing orders. Payment and delivery do not have to be conducted online.
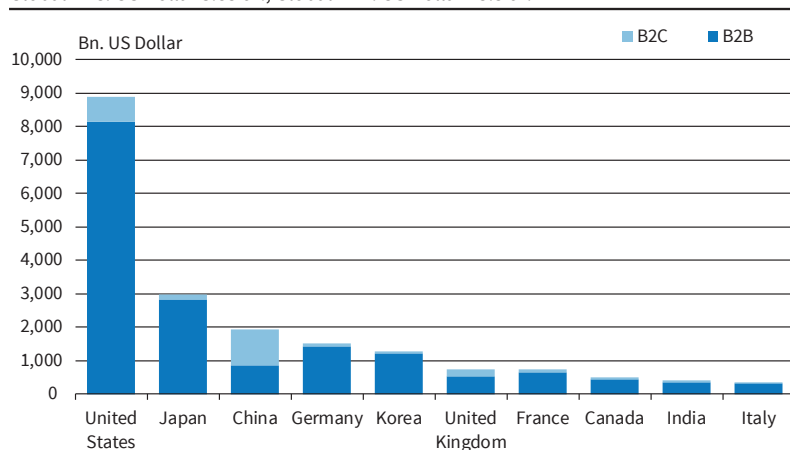
Here we present UNCTAD (2019) estimates of global e-commerce (the estimates are for 2017). They consider primarily Business-to-Business (B2B) and Business-to-Customers (B2C) trade. B2B e-commerce is the sale of goods or services between businesses via an online sales portal. In general, it is used to improve the efficiency and effectiveness of a company's sales efforts. B2C e-commerce refers to online transactions between a business and a consumer, where an e-commerce website enables customers to shop like they do in stores but by using an online catalog, selecting items for purchase, and checking out virtually. C2C commerce, which is arguably on the rise, is not part of that report.

UNCTAD estimates the volume of global B2B and B2C commerce (domestic and cross-border) to be around

USD 25.5 trillion and USD 3.85 trillion, respectively, for a total of around USD 29.4 trillion (see Figure 2.2).

As expected, the United States is, overall, a dominant force in e-commerce, followed by Japan and China. In the top ten globally, there are four large European countries. The best-placed European country, Germany, is in fourth place, not too far behind China. But there is a significant difference: while Germany's position is mostly due to B2B, China has made serious strides in B2C, the area which the UNCTAD (2019) report says is growing stronger than B2B. It is in B2C and C2C that digital platforms are traditionally the most active.

While B2B is dominating the world's e-commerce overall, there is no data that allows us to reliably separate how much of it is due to cross-border transactions (see the discussion below, though). The situation is slightly better in that respect with B2C. UNCTAD (2019) estimates that cross-border B2C sales amounted to USD 412 billion in 2017, of which around USD 270 billion were due to the top ten countries (see Figure 2.3).

Figure 2.2

Global E-Commerce in 2017: Top 10 Countries
Global B2C: US Dollar 3.85 tn., Global B2B: US Dollar 25.5 tn.

Source: UNCTAD (2019); EEAG calculations.   © CESifo

Figure 2.3

Top 10 Countries by Cross-Border B2C Sales in 2017
Global B2C Cross-Border Trade: US Dollar 412 bn.
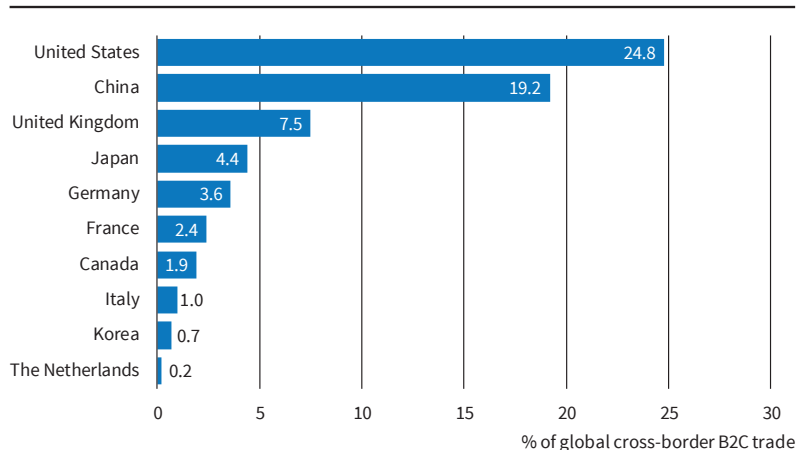
Source: UNCTAD (2019); EEAG calculations.   © CESifo

Note that China, while lagging behind the United States in 2017, had a strong lead in B2C crossborder trade with respect to the leading continental European countries. The best-ranked European country in this category was the United Kingdom.

How important are B2C cross-border sales for these ten countries (and the world as a whole) as a fraction of merchandise (goods) exports? This is shown in Figure 2.4.

Overall, B2C cross-border sales are only around 2.3 percent of the global merchandise sales. But this channel is the most important for the United Kingdom and the United States, followed by China. On the other end of the spectrum, only 1 percent of German merchandise (goods) exports is realized through B2C cross-border sales.

As platforms cut out the middleman in an ever increasing number of industries, the key question for Europe is whether it shall become primarily just a producer of commodity products, leaving the lion's share of the value-added to the American and perhaps Chinese platforms. If this were the situation that develops over time, a legitimate response by Europe would be to tax global platforms based on destination and consumption.

The total B2C market (domestic plus cross-border) is around USD 3.8 billion (Figure 2.5). Of that amount, B2C cross-border sales were around 10.7 percent in 2017. Note that when the domestic B2C market is included, China is clearly ahead of the United States, reflecting a very large domestic Chinese market in this segment of the digital economy.

Figure 2.5
Cross-Border B2C Sales as Share of Total B2C Sales (Domestic and Foreign) in 2017

% of national total B2C

Source: UNCTAD (2019); EEAG calculations.   © CESifo
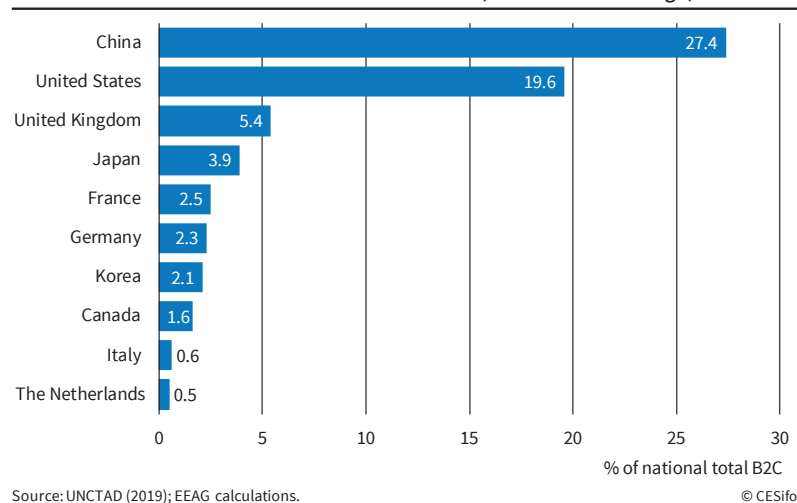
Interestingly, when the domestic B2C market is included, Germany is lagging behind both the United Kingdom and France.

The UNCTAD B2C e-commerce Index measures an economy's preparedness to support online shopping. Countries are scored on the access to secure internet servers, the reliability of postal services and infrastructure, and the portion of the population that uses internet and has an account with a financial institution or mobile money-service provider. In terms of e-commerce readiness, Europe dominates the rest. For the second year in a row, the Netherlands led the index in 2018, followed by Switzerland. In fact, the only non-European countries (out of 151) on the top ten list were Singapore (third) and Australia (tenth). Thus, the potential for fast development of B2C in Europe clearly exists. Nevertheless, there is a danger that Europe may be missing out on the expanding global opportunities in that market. This is reflected in the fact that among the leading platforms, not a single one is European. At the same time, the number of online shoppers is on the rise globally. Based on UNCTAD (2019) estimates, the number of online shoppers grew in 2015–2017 overall by 24 percent to reach 1.34 billion shoppers in 2017 (see Figure 2.6). Importantly, the growth was driven primarily by an increase in cross-border shoppers of almost 70 percent in that period. By 2017, an estimated 277 million people were shopping online across borders. These numbers are expected to rapidly expand as contractors gain confidence in cross-border transactions.

As we have stated before, UNCTAD (2019) does not pro-

Figure 2.4
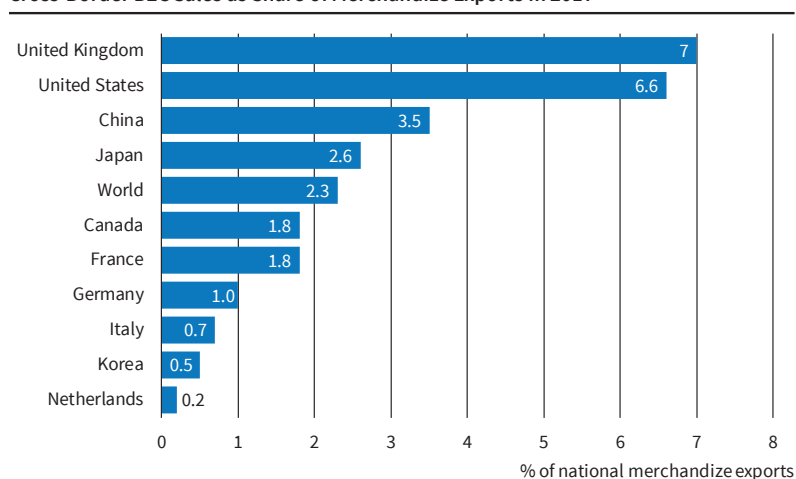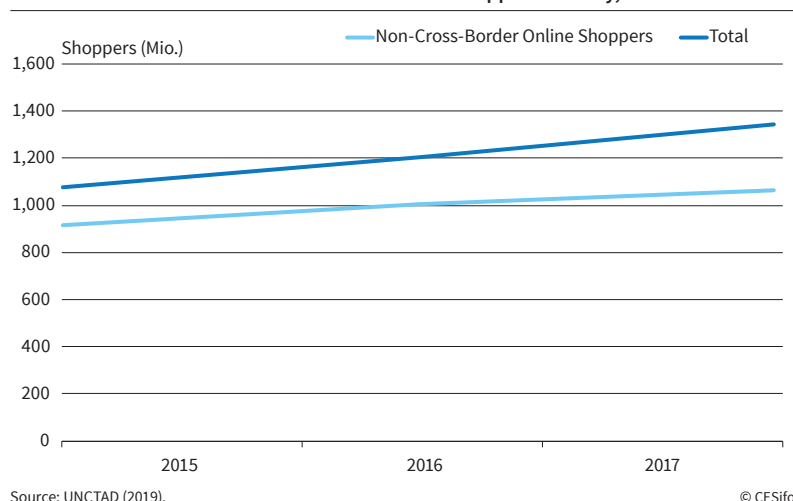**Cross-Border B2C Sales as Share of Merchandize Exports in 2017**

% of national merchandize exports

Source: UNCTAD (2019); EEAG calculations.   © CESifo

Figure 2.6

Global Cross-Border vs. non-Cross-Border Online Shoppers Globally, 2015–2017

Shoppers (Mio.)

— Non-Cross-Border Online Shoppers — Total

Source: UNCTAD (2019).

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Internet of Things and other business applications are gaining in importance.[1]

Beyond e-commerce, digital platforms such as UpWork are starting to change the way people work, making the job market for certain skilled labor truly global. On the flip side, digitalization is putting pressure on traditional employment patterns and facilitates growth in the gig economy. In developed European countries, up to 5 percent of the working people are deriving more than 50 percent of their labor income in the gig economy (see Figure 2.7). This number is likely going to increase as more of the economy goes digital.
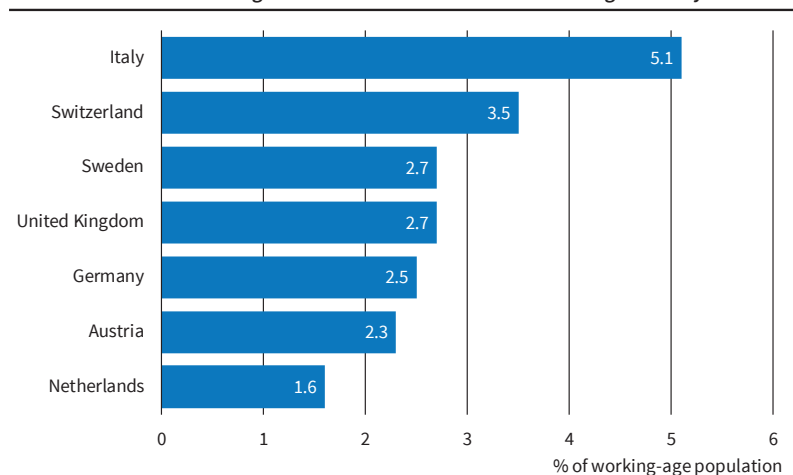
A large part of the growth in the flow of data stems from communication between individuals (Lund and Manyika, 2016). As transmission costs fall and internet speed increases, people and companies are using digital and mobile connections to share ideas, collaborate, and make social connections, both within countries and across borders. Voice over Internet Protocol (VoIP) has generated a surge in global cross-border telephone calls increasing from 162 billion call minutes in 2002 to 570 billion call minutes in 2014. Since 2004, the number of call minutes on VoIP has increased by 24 percent per year, while traditional analogue call minutes have grown by less than 8 percent. In addition to VoIP calls, cross-border computer-to-computer calling through Skype amounted to 44 percent of traditional international calls in 2014 in terms of the number of minutes.

[1] Castro and McQuinn (2015) find that around 50 percent of the world's traded services are already digitized.

vide an estimate of cross-border B2B trade. One way to estimate it is to use the same fraction as in the case of B2C cross-border trade, i.e., around 10.7 percent. This would lead to an estimate of USD 2,730 billion for cross-border B2B. Together with USD 412 billion for the cross-border B2C estimate, we obtain around USD 3.2 trillion as an estimate for B2B and B2C cross-border sales. As a proxy for cross-border digital trade, this estimate is likely to be too low for several reasons. Assuming the same ratio as B2C may be unrealistically low since companies have incentives to use digitization to lower costs when trading with each other. Since much of the trade is between various parts of supply chains, trade frictions in B2B are likely to be smaller than in the case of B2C. In addition, the estimate does not take into the account the C2C component of cross-border trade. We show later that, at least in Europe, people are very actively using the internet to augment their labor income. Part of these transactions is certainly cross-border.

Perhaps most importantly, the estimate is unlikely to fully account for the value of global data flows simply because they are too difficult to measure. Digital flows primarily consist of information, searches, communications, transactions, video, and intra-company traffic. Importantly, they enable virtually every other kind of cross-border flow. For example, container ships move products to markets around the world, but now customers order them online, track their movement using wireless trackers, and pay for them via digital transactions. Although videos use a majority of internet bandwidth, the

Figure 2.7

Share of Individuals Earning at Least Half of Their Income in the Gig Economy in 2016

Country	% of working-age population
Italy	5.1
Switzerland	3.5
Sweden	2.7
United Kingdom	2.7
Germany	2.5
Austria	2.3
Netherlands	1.6

% of working-age population

Source: Huws et al. (2018).

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Most of these changes have happened in the past decade. Prior to that it was not obvious that the internet and internet-enabled communication were going to be so transformative. For example, in his article titled "Why Most Economists' Predictions Are Wrong," Nobel Laureate and New York Times columnist Paul Krugman made the following prediction (Krugman, 1998): "The growth of the internet will slow drastically" as it "becomes apparent [that] most people have nothing to say to each other! By 2005 or so, it will become clear that the internet's impact on the economy has been no greater than the fax machine's."

Apart from the rapid increase in global communication and the creation of global internet platforms, there are two other important factors impacting digital globalization.

The first is transformation of many goods that used to be traded in physical form into purely digital goods delivered through the internet, thus eliminating all distribution and transportation costs. Consumers can now choose from a near-endless supply of games, movies, music, books, magazines, and newspapers from anywhere in the world. A growing share of customers is now in foreign countries. For instance, in the case of Netflix, by the end of 2014, nearly one-third of its streaming customers lived outside the United States (Netflix, 2014). In the future, 3D printing technologies may further alter the flow of physical goods. Rather than producing goods in one location and shipping them around the world, firms may send digital design files across the internet and then use 3D printers to produce the goods in small batches locally. Some replacement parts, medical prosthetics, and industrial components are already being produced this way. The range of goods thus produced is likely to expand and may include complex industrial parts. Analysts from the Dutch bank ING estimate that 3D printing may substantially negatively impact traditional global trade in goods (ING, 2017). Furthermore, the results of their survey of relevant market players indicate that currently the key impediment for a much broader use of 3D printers is mostly psychological (the lack of stakeholder trust in this new technology) and not technological. Even education has become an increasingly digital good that can be globally traded, through the rise of online training and educational courses. For example, more than three-quarters of Coursera users come from outside the United States, and almost one-third of them from India, Brazil, Russia, and China (Lund and Manyika, 2016).

As the volume of trade in digital goods expands, their value grows as well. But it is often not captured in statistics on trade. For example, user-generated content on blogs and on YouTube is driving very high volumes of internet traffic both within countries and across borders, but very little of this content is paid for by consumers. As it does not involve a monetary transaction, the significant value that this content generates does not show up in economic or trade statistics but instead reveals itself as 'consumer surplus.' Another important way in which digitization impacts physical flows is through the so-called 'digital wrappers' around traditional products. Radio-frequency identification (RFID) technology uses wireless radio communications to uniquely identify objects or people and collect information about a product, place, time, or transaction. RFID has a variety of uses, including access management, payments, and logistics. In logistics, this has improved inventory management in long global supply chains, helping reduce inventory costs by up to 70 percent while improving the service offered (Sarac, Absi, and Dauzere-Peres, 2009). Digital tracking of physical shipments reduces the volume of goods lost in transit, enabling trade in larger volumes and higher value goods. RFID increasingly enables trade with emerging economies with underdeveloped infrastructure. Last but not least, this type of sensor is a key component in the Internet of Things (IoT), which is supposed to seamlessly connect billions of different pieces of equipment and machines and thus further dramatically increase the connectivity of our global world. A Cisco study (2015) estimated that machine-to-machine connections will account for more than 40 percent of global devices and connections by 2019.

A very different but also very important type of digital wrapper are the websites that provide customers with the ability to add reviews on e-commerce platforms in order to help others choose the right product and/or provider. These reviews can help reduce ambiguity and uncertainty about a product's quality and help increase sales.

In summary, the patterns of globalization and global trade are rapidly changing as a result of the digital transformation of the world economy and the introduction of advanced new technologies. While some of these changes tend to have a negative impact on traditional global trade, others have the opposite effect. What is clear, however, is that the new type of organization, digital platforms, is increasingly displacing traditional multinational value chains as the key players in the global economy. This shift in the way we do business is perhaps even more profound than the technology shift that is enabling it. This is what we address next.

2.2. PLATFORMS AND THE REMODELING OF THE CORPORATE WORLD

Digital platforms play a transformative role in the global economy, but Europe is lagging behind in this arena. In order to better understand the role of platforms in the 21st century economy, as well as their salient characteristics, let us first briefly review the 20th century corporations. Until quite recently, a typical model of a business has been the one-directional business model. In the one-directional model (some-

times also called a linear model) value flows in one direction through the company's supply chain.

There are two main types of one-directional businesses. The first one is the standard product company. It builds physical assets, such as factories and distribution centers, in order to make its products and get them to consumers. Almost all manufacturing has worked in this fashion over the last century. So have distributors and resellers, which are companies that build or lease physical assets or technologies in order to distribute and sell physical products. Many of today's software companies are also of this type. Even though their products are digital, these companies still function in a single direction, with value flowing from the companies to their customers. The only difference is that software companies benefit from the low marginal cost of digital distribution. The second type of one-directional business model is a services company that hires employees who provide services to customers. Services can be physical (car repairs, construction, plumbers), or based on intangible assets (attorneys, consultants, bankers). Either way, using the top-down planning and hierarchical organization, one-directional companies can create and distribute value efficiently to the target customers.

The efficiency is achieved through the supply chain. For example, an automobile manufacturer like BMW buys parts from its suppliers, which in turn may have bought parts or raw materials from another supplier. BMW then uses these parts to create a finished product, a car. It sells it to a dealership, which finally sells it to a consumer. In this chain, value flows through the suppliers to the manufacturer and eventually down to the end consumer. At each step in the supply chain, someone adds value to the product or service and moves it to the next link in the chain. Information in this process has a similarly one-directional flow, with top-down forecasting. Each part of the chain can, in principle, be optimized, leading to efficiency gains.

However, the efficiencies of the supply chain approach come at a cost. One-directional businesses require large factories and/or investments in human capital and elaborate distribution channels in order to create products and move them to market. For these companies, the resources a business owns and controls internally are its most valuable assets.

It turns out that in the digital age, when a sufficient level of global interconnectedness is reached, what a company owns matters less than the resources to which it can connect. Today's most valuable businesses are those that can build and orchestrate large networks, not those that can aggregate and centralize large amounts of resources under one roof (see Figure 2.1, Panel a, and the discussion around it). In the one-directional business model, scale was a result of investing in and growing internal resources. But in a networked world, scale comes from cultivating an external network built on top of your business.

In order to see how different these two business models are, consider a hotel chain like Holiday Inn and compare it with Airbnb. Holiday Inn operates physical assets (hotels). In order to add capacity, it needs to build or purchase more hotel rooms (i.e., acquire more physical assets). Airbnb, in contrast, owns no rooms or apartments for rent. Instead, it 'just' connects people that own apartments or rooms to rent to potential renters. In order to add capacity, Airbnb can simply add another listing to its website. Note that Airbnb has in fact created a new market, not just taken over part of the old one. A lot of people that have previously never rented their properties before are now getting economic value from that otherwise 'dead capital.' And, importantly, this is happening not only in the United States and developed European countries, but increasingly in emerging markets as well. Finally, Airbnb is making affordable foreign visits possible for people with limited financial means, furthering global connectivity.

Similarly, eBay does not own any goods sold on its network. However, it creates a significant value to both buyers and sellers by connecting them and enabling them to transact. On that platform, anyone can buy unique and hard-to-find goods from all over the world while also accessing detailed information about these goods. As a result, businesses that had been geographically limited can suddenly have global distribution at almost no cost. The same is true for individuals (eBay is a pioneer of the online C2C market). In emerging markets with relatively underdeveloped traditional retail outlets, the impact of a platform like Alibaba has been great. Through Taobao, Alibaba's subsidiary, close to 10 million Chinese merchants sell their products. There are whole villages created around members of the Taobao network (called 'Taobao villages'). And in all that, Alibaba has only 35,000 employees. In contrast, Walmart, a very successful but traditional (one-directional) retailer of comparable revenue size, has around 2 million employees (Moazed and Johnson, 2016).

It is important to understand the difference between digitalization and digital platforms. Consider encyclopedias, for example. For a very long time, the market was dominated by the famous Encyclopedia Britannica. The company had a great tradition of producing the most complete sets of encyclopedias, carefully researched and edited, beautifully printed, and distributed all over the world through their vast and expensive sales force. To recoup the cost and make a profit, Britannica sold for anywhere between USD 1,500 and USD 2,000 per set. Then Microsoft introduced Encarta, which contained a more or less comparable information set. However, it was sold on CDs for USD 50 apiece. This put a lot of pressure on Britannica as many price-sensitive people switched to the new medium. Note that Microsoft had a significant advantage in terms of the distribution cost (no expensive salespeople) but still faced a significant

cost in terms of producing the information that was placed on CDs. In fact, both of these businesses were one-directional even though one used digital delivery. Then came Wikipedia. Not only is it delivered over the internet free of charge, but after the initial system was set up, its marginal production costs are close to zero since it relies on human creators of content that create and edit that content for free. Wikipedia is an example of a very successful digital network. As the network of contributors and users grew, no one-directional business model could compete. Consequently, Microsoft exited the encyclopedia market, while Britannica is now available online only.

After providing these examples, let us now define what exactly a digital platform is. According to Moazed and Johnson (2016), it is a business model that facilitates the exchange of value between two (or more) user groups, consumers, and producers. Typically, this is done over the internet. In order to make these exchanges happen, platforms harness and create large, scalable networks of users and resources that can be accessed on demand. They create communities and markets that allow users to interact and transact. We have mentioned some platforms. Other very successful platforms are, for example, Google (now part of the holding Alphabet), Apple, Amazon, Facebook, etc. In fact, most of us are users and/or contributors to at least some of the most successful platforms on a daily basis. Note that Microsoft, which was a very successful company in the desktop era before getting into trouble with the advent of the internet, is making a concerted effort under its new leadership to transform itself, at least partially, into a digital platform. In an unprecedented move, it has opened up its development platform .NET Core and its key programming language C# to all major operating systems, not just to its own, Windows. And it has offered access to these technologies free of charge. The effort has been paying off in terms of market valuation (Figure 2.1, Panel a).

A platform enables value creation by facilitating transactions. Uber does not deliver a ride, but it facilitates the connection and exchange of value between drivers and passengers. The transaction that is at the heart of the platform is called the core transaction. It is the process that turns potential connections into transactions and creates value for its users. Getting the core transaction right is the key to a successful platform design, as the platform will need its users to repeat this process over and over to generate and exchange value. However, although a platform enables the core transaction, it does not directly control its users' behaviors. Thus, the challenge of growing a platform is to convince a critical mass of users to join (both 'producers' and 'customers' at the same time) and create incentives for everyone to behave in a way desirable for the platform. In other words, one needs to match the appropriate parties of the transaction together, provide the technology to facilitate the transaction, and establish the rules that govern the network in order to build trust and maintain quality. These are the core functions of a platform (Moazed and Johnson, 2016).

For example, on YouTube, people posting the videos are producers while people watching the videos are consumers. Of course (and this is in sharp contrast with a traditional media company), the same person can be both a consumer and a producer at different points in time. The core transaction is enabled when a person watches a particular video. In the case of YouTube, the key for success is to attract star producers, those whose videos are watched by large numbers of people. For eBay, on the other hand, the key is to have as many reliable sellers and buyers as possible. Here, the equivalent of a star producer would be somebody with a high rating signaling good behavior. Only platforms that get core transactions right can have a chance to become successful. And very many platforms that try to scale up simply do not succeed.

Now that we have explained what platforms are, let us consider the preconditions for the rise of this novel business model. First, advances in technology have made computing a commodity. Computers are now cheap and widely available. They are embedded in all aspects of our lives whether we are conscious of it or not. Furthermore, technological progress and increasing competition are driving down cloud processing and storage prices. This allows start-up companies to quickly start and scale up their business using the external cloud services provided by companies such as Amazon, Google, or Alibaba instead of purchasing and managing expensive servers on their own. The second major factor is the declining cost of transmitting and collecting information. Activities that typically happened within the bounds of one organization can now take place in a decentralized manner through networks. The third factor is a rapid growth in connectivity and data production. In a smartphone, typically, there are over half a dozen tiny sensors that transmit data via connected technology. This data is collected and processed. Companies collect data automatically as a by-product of the business itself. This is in sharp contrast with the situation not more than ten years ago when companies had to create distinct processes to measure and collect information on a business. All this leads to an exponential growth in available data (see, however, our discussion on privacy violations in the last section of this report).

Yet another precondition for the creation of digital platforms are enormous improvements in our ability to process and make sense of this flood of data. As more and more data is collected, new increasingly powerful algorithms are created that can analyze this data on a large scale. AI is fundamentally based on this: collecting and processing large amounts of data through deep machine learning algorithms. One of most notable successes in AI of recent times is the realization that a large number of different types of pat-

terns (images, sounds, videos, stock price patterns, texts) can all be embedded into vectors of dimensions numbering no more than a few hundred (Mikolov et al., 2013). Remarkably, vectors in this vector space are close to each other, in terms of the standard Euclidean distance, precisely when the meaning of the embedded features are close to each other. Mapping problems of understanding real-life data patterns and their relationships (a hard problem) onto a problem of manipulating vectors in finite dimensional vector space (something that machines know how to do very well) increases the likelihood that significant progress in AI is going to be faster than previously expected.

With all of these four factors in place, platforms have become the center of information exchange and integrators of economic activity. In this new budding economic system, the areas where businesses could create and add the main economic value have shifted away from production and toward the curation and management of networks. These networks do not form and grow all by themselves, however. It takes an organization acting as the primary node to facilitate network growth and coordinate all network activity on a large scale. Thus, platforms combine characteristics of traditional organizations and markets. Such firms primarily invest in building the infrastructure and tools to support and grow a networked marketplace or community. What these platforms are creating are, in essence, centrally planned markets. Consider the product marketplaces created by eBay and Alibaba, the content networks created by Facebook, Twitter, and YouTube, or the information and software marketplaces created by Google and Apple. All of these networks enable millions of individuals and companies to interact, but they are built and coordinated by a central entity.

Platforms are also likely to revolutionize financial intermediation, with the creation of new payment mechanisms and new forms of currency or money. There already exist a wide variety of private payment mechanisms, many but not all of them linked to traditional currencies. There are currently an estimated USD 1.6 billion held on Starbucks customer cards; and USD 20 billion in PayPal accounts. One reason that this development is likely to proceed at an increasingly rapid pace – and make for a tipping point in comparison to both the use of traditional cash and of old-style banking facilities – is that the cost of e-transactions is falling rapidly, while many banking services have increased considerably in price. This is a development analogous to the widespread replacement of managed funds in the investment world by low-cost Exchange-Traded Funds (ETFs). The development of both new kinds of money and of new investment practices brings clear regulatory challenges. The use of private payment platforms raises financial stability questions – might they be subject to runs? – as well as the question of whether AliPay or PayPal might contemplate their own monetary policy. Many such financial and monetary stability concerns will be fanned and played up by existing institutions, which rightly perceive themselves to be under threat from a radically different replacement technology.

While traditional one-directional companies have a classical U-shaped economies of scale curve (i.e., after reaching a certain size, the firm further becomes uneconomical because of increased coordination costs), platforms face decreasing marginal costs which, after the critical mass of users is reached, virtually drops to zero. As a result, there is no natural boundary to how large a successful platform could optimally be. In theory, it can take the entire market. Since the value of the network grows nonlinearly with an increase in its membership, this monopoly status may be good for the users at the early to medium stages of the near-monopoly status, i.e., before the platform reaches a state where it primarily tries to stifle the competition instead of innovating (Moazed and Johnson, 2016).

In contrast to the monopolies of the past that were based on the one-directional business model (such as AT&T or Standard Oil), platform monopolies are not based on the ownership of assets, but rather on the consent of the users/customers. The users can,

Figure 2.8

Bank-Centric vs. Payment-Centric Financial Intermediation
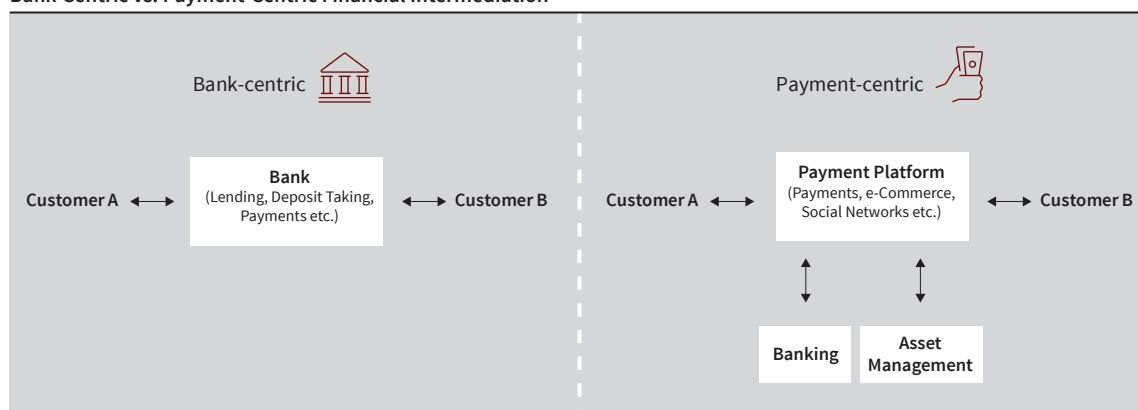
Source: Brunnermeier et al. (2019).

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in principle, switch to a competing platform any time they want, as long as they get higher value from doing so than from remaining. Having said that, the information and financial might of platform giants makes it relatively easy for them to purchase potential competitors and thus reduce the competition. They are also trying to expand into ever broader areas of the economy (not always successfully, as Apple's abandoned foray into the driverless cars market clearly demonstrated).

Having said all this, there is a good chance that the near-monopoly status of a particular platform is not likely to last too long. First, there is great competitive pressure from successful platforms to enter into the territory of other platforms. Second, new start-ups that can challenge the dominance of the existing players are cheaper than ever to create, provided that one has the right ideas and an excellent core transaction. However, potential competitors have to grow very fast and reach the critical mass of users, otherwise they stand no chance. Thus, in the platform economy the rule of the game is: "get big or go home!" Not surprisingly, therefore, many new successful start-up platforms become unicorns (billion dollar startups) in a very short time. Or they lose out before they even get off the ground.

In order to illustrate how a monopoly position in the technology market can be lost, consider Microsoft. Not that long ago, everybody was worried about its near-monopoly status in PCs. The move to mobile changed everything and now Microsoft is just a small player in this huge market. In response, Microsoft is now making a comeback by adopting a platform strategy. Similarly, Google – a dominant player in desktop searches and in ad revenues related to that – is not as successful as, say, Facebook, in monetizing in the mobile environment. Advances in AI may bring a competitor along who can substantially improve upon the search process (e.g., enabling the so-called semantic search). This would have the potential to seriously challenge and perhaps displace Google from the throne of the search engines. As we can see, given the breakneck speed of technological and scientific progress, none of these new monopolies is guaranteed to last very long.

In summary, platforms are adding value and completing markets – but the enriching is concentrated in a very few entities, usually located far away from Europe. These platforms can rise fast but also lose out fast, and dominance of any particular platform may not last too long. Thus, while they might be future monopolies, their valuation can also be the result of hype and wild speculations by investors. Many companies heavily rely on Google, yet even that company is very fragile – there is always the possibility that some new entrant comes and reaches a significant market share in a very limited time. To what extent is a failure of a global platform a potential source of concern for the global economy? Probably not too much. Namely,

if an internet giant fails it will be most likely because it has been replaced by some company that is even more efficient in what it does. Thus, consumers are likely to gain in the process.

In the next section, we explore how new technology and new business organizations impact the way we work.

2.3. TECHNOLOGICAL PROGRESS, DIGITAL PLATFORMS, AND THEIR IMPACT ON LABOR

There is an interesting dichotomy in the way we perceive technology. On one hand, we get used to carrying our cell phones and laptops everywhere we go, 'googling' information that we need or using the latest drugs and medical treatments that we can afford. On the other hand, there is also a deep discomfort and worry in many people whether all these changes are happening too fast and, in particular, whether machines are going to take over our jobs. A cursory look at the airports in many European countries shows that machines that facilitate check-in and baggage handling processes have done two things: they have reduced the check-in times as well as the number of people working in the check-in process. Importantly, though, there are still people in the check-in process, but their roles have somewhat changed. Instead of actually doing the check-in or baggage drop-offs, the human agents are now primarily there to guide us and reduce skepticism of people who may not be comfortable trusting the machine to do the job. This may be a preview of things to come. Namely, as machines get increasingly sophisticated, some of the jobs previously done by humans will be done by machines. However, humans will, most likely, be needed to work along with them and provide those distinctly human qualities that machines do not and cannot possess.

Nowhere is the dichotomy of attitudes towards technology better seen than in Europe. In the recent Eurobarometer special survey entitled "Attitudes towards the Impact of Digitization and Automation on Daily Life" (European Commission, 2017), around 52 percent of the citizens surveyed from European Union countries expressed belief that their work moderately benefits from digitization and automation, while 23 percent thought that it very much benefits from it. Only 3 percent of the people rated impact of technology on their work as very negative. Around two-thirds of the people rated impact of technology on their quality of life and society as a whole as fairly good or very positive.

However, as elaborated in the recent World Development Report (WDR, 2019), despite the overall positive attitude about the role of digitalization and automation in their work and daily life, people living in advanced economies are often anxious about the sweeping impact of technology on employment. Many worry in particular that they may lose their jobs as a result of automation. Also, rapid but uneven adoption

of new technology may increase inequality. In addition, the development of communication technology and the advent of digital platforms allows for more jobs to become non-permanent, creating the so-called gig economy. Many fear that it encourages a race to the bottom in working conditions. In this section, we try to address these and some related concerns.

Worries that machines would take over our jobs are not new. From the time of Luddites who destroyed machines during the early stages of the Industrial Revolution, to Keynes who has argued that use of new technology may eventually lead to massive unemployment, and Stephen Hawking, who warned about the dangers of AI, these concerns have been part of our everyday life. Fears of 'rogue technology,' in particular robots and AI, have been the subject of many Hollywood blockbusters. At the same time, our ability to innovate has been dramatically improving living standards and the quality of life in most parts of the world. And so far, it has not led to massive unemployment, rather the opposite. Machines have been replacing workers in many tasks for more than a century. Technology has brought higher labor productivity to many sectors by reducing the demand for workers performing routine tasks. At the same time, technology has also been constantly opening up new possibilities. New jobs are created that were previously technologically unfeasible, or even impossible to imagine. For example, who could have imagined just 20 years ago that someone might make a career as an 'internet influencer'? Some individuals make an exceptionally good living by posting YouTube videos on how to play popular video games or how to play with Lego bricks. In addition, many old jobs are now done better and faster. Perhaps most importantly, we have learned how to live and work with technical innovations and take advantage of them. Over time, they become part of our life, and to some extent, part of our identities.

As technology advances, firms are managed more efficiently while consumers enjoy a wider range of products and services at lower prices. Being the first to embrace new technology often gives companies a competitive edge, increasing their incentives to adopt it. For example, Danish firms strengthened their lead on the global market for hearing aid products in the 2000s by being the first to introduce the use of 3D printers in the production process in this industry (Freund, Mulabdic, and Ruta, 2018). The number of industrial robots operating worldwide is rising quickly. According to the International Federation of Robotics, a total of 2.6 million should be in operation worldwide by 2019. Is the introduction of robots reducing employment? So far the evidence is not clear-cut. In 2018, the number of robots per worker was the highest in Germany, Korea, and Singapore, countries that despite the high levels of robot penetration also have high employment rates at the same time. However, introduction of robots does not impact every category of

workers the same way. While overall, the adoption of robots has not so far had any substantial net effect on employment in Germany, it has reduced the hiring of young entrants into the labor market (Dauth et al., 2017). Thus, the effects of automation can be different in countries that are aging compared with those that have young populations and anticipate large numbers of new labor market entrants. This bodes rather well for aging developed countries, including most of Europe. While 3D printers can reduce manufacturing jobs in lower-income countries by moving the production aimed at high-income markets close to end customers, people in emerging markets can start printing products for their own markets based on 3D designs instead of purchasing end products from the developed countries. Even individuals can learn to do it, especially if they are interested in customization. Thus, changes in employment and opportunities can cut both ways.

Recent evidence from Europe shows that although technology replaces workers in some jobs, overall it raises the demand for labor (Gregory, Salomons, and Zierahn, 2016). Technological progress leads to an increase in demand for jobs in the tech sector. There are more opportunities in mobile app development and virtual reality design, development of AI systems, design of 3D blueprints, and programming and/or controlling industrial robots. Instead of hiring traditional loan officers, JD Finance, a leading fintech platform in China, created more than 3,000 risk management and data analysis jobs to sharpen algorithms for digitized lending. Andela, a US company that specializes in training software developers, has built its business model on the digitization of Africa. It has trained 20,000 software programmers across Africa using free online learning tools. Once qualified, programmers work with Andela directly or join other Andela clients across the world. The company aims to train 100,000 African software developers by 2024. 90 percent of its workers are in Lagos, Nigeria, with other sites in Nairobi, Kenya and Kampala, Uganda.

As mentioned before, technology enables the gig economy, also known as crowd work. It cannot be distinguished precisely from other forms of work. Rather, it is part of a continuum of casual, on-call, temporary, or other forms of contingent work. Producing the EEAG report, a process done mostly by electronic communication across countries and even continents, might be an example of a new way of doing something that could have been done differently and more cumbersomely in the pre-electronic age. In a recent report, Huws et al. (2018) show that a large fraction of the European population earns some money by participating in the internet economy. Participating in the gig economy is part of that process. Conducting in-depth surveys of people in seven developed European economies, researchers found that between 50 to 64 percent (depending on the country) of the respondents have been selling their own possessions over the internet

(say, via eBay), between 13 and up to 48 percent resold products via Amazon and similar platforms, between 10 and 21 percent sold their own products over the internet, while between 8 and 17 percent rented to paying guests (e.g., via Airbnb). Likewise, a significant proportion of the working population (from 9 percent in Germany and the United Kingdom to as high as 22 percent in Italy) reported having done some work 'virtually' from their own homes via an online platform such as Upwork or Clickworker, providing driving services via a platform like Uber, or working in somebody else's home for a platform like Helpling. In the majority of cases, this is a very occasional supplement to other earnings. However, a non-negligible fraction of the working population ranging from 1.6 percent in the Netherlands to 5.1 percent in Italy derives more than 50 percent of their labor income from such work (see Figure 2.7). Also, from 4.7 percent (in the United Kingdom) to 12.4 percent (in Italy) of the working population is participating in the crowd economy on at least a weekly basis.

Crowd workers are relatively evenly balanced between men and women. They are more likely to be in younger age groups, although such work can be found in all life stages. Huws et al. (2018) found that when asked about their employment status, more than half of all declared crowd workers (except in Italy, where it was 41 percent) said that they were employed full-time. This proportion was even higher among those who earn more than half of their income from the gig work. Having said that, it is not clear whether these people considered themselves to be full-time employees of a platform or another, standard, employer (both situations likely occur). Only 7 percent to 13 percent regarded themselves as self-employed. While gig workers typically valued the flexibility, respondents complained about many aspects of work organization and working conditions. These included difficulty in communicating with platform personnel, arbitrary terminations, perceptions that platforms always take the side of clients against workers, and frequent changes to payment and other systems (see Huws et al., 2018).

As a rule, people working gigs are not paid the benefits normally associated with full-time jobs. This is of course a potentially serious concern. While some online platforms that enable freelance work are starting to look for ways to provide benefits for some of their most active workers, this is an exception rather than the rule. But one has to bear in mind that a person counted as a freelancer may have a regular job, too. In fact, in the United States, this is the case with more than two-thirds of freelancers. In order to protect the rights of people involved in the gig economy and to prevent the race to the bottom in terms of working conditions in Europe, Huws et al. (2018) argue that it is practically impossible to separate gig workers into a separate employment category since their working situations vary too much.

Instead, they propose going back to the underlying principles of the current regulations and legal frameworks to establish a basis for determining how genuine self-employment should be defined (and what should be the rights and obligations of these genuinely self-employed own-account workers), as well as what protections should be available for workers when a relationship of subordination is present (and what should be the rights and obligations of these workers and those who exercise control over their labor). This may imply creating new legal definitions of self-employment and of subordinate worker status. New regulations should recognize that when work involves the delivery of services in public spaces, the rights and responsibilities of consumers and the general public, as well as the public authorities, must also be considered and specified, along with those of workers. In addition, the definition of private employment agencies and temporary work agencies needs to be revised. Applicability of minimum wage regulations (where these exist at a national level) need to be addressed in the case of employees facing subordinate relationships. On the other hand, genuinely self-employed people should have the right to set their own prices and hire other people to do the job. Also, statutory rights for platform workers in relation to suspension or termination of employment need to be considered as well as the right to challenge customer ratings. Direct means of communication including emergency hotlines, insurance coverage of workers, data protection, and health and safety of everyone involved need to be ensured. Finally, the system of benefits applicable in European countries needs to be carefully reconsidered in order to take into account the needs of the growing numbers of the just-in-time workforce.

While many people work gigs because they cannot find regular full-time jobs, a growing number of designers, programmers, and other professionals (there is a new word: 'techno-nomads') find personal freedom in being able to live on the move, experience other countries and cultures while working when they decide to do so wherever they happen to land at the time. For them, gigs are a choice, a way of living (at least for a while). With skills in demand, this has become a feasible lifestyle choice. Millennials in search of meaningful experiences share a similar mindset and are known for being motivated by the allure of life enrichment, gained from experiencing different cultures. If they pursue work, many prefer gigs instead of steady employment.

These people are part of the growing group of professionals on the move. Giordano (2017) argues that digital transformation drives an immense increase in (physical) global mobility. Business expansion opportunities are worldwide and even new companies can become global almost from the start. Corporations are confronted with skill gaps brought on by rapid change. This often requires that people relocate for

a while internationally. While in the past these relocations were relatively infrequent and long in duration, now they are more frequent and usually for a shorter time spell (the average is around 18 months). Another variation of this is commuting and extended business travel to a location without relocation. There are developmental rotational programs for high-potential employees. Reverse transfers allow talent from emerging markets to gain skills in established markets in order to fill future needs upon their return home. Short-term professional stints abroad are quite common for otherwise full-time employed professionals such as medical doctors (performing operations and diagnosing patients during visits to foreign clinics), visiting professors, etc.

We have seen that technological revolution is bringing many exciting prospects globally. But at the same time, introduction of new technologies and the new ways in which the world economy is organized create serious challenges as well. The declining cost and increasing quality of machines puts at risk workers who are employed in low-skill routine tasks that are 'codifiable.' The examples are numerous. More than twothirds of robots are employed in the automotive, electrical/electronics, and metal and machinery industries. Based in China, Foxconn Technology Group, the world's largest electronics assembler, cut its workforce by 30 percent when it introduced robots into the production process. In 2017, 3D printing technologies enabled the German company Adidas to establish two 'speed factories' for shoe production: one in Ansbach, Germany, and the other in Atlanta in the United States, both with small numbers of employees. At the same time, the company eliminated more than 1,000 jobs in Vietnam. Some service jobs are also vulnerable to automation. The largest (state-controlled) bank in the Russian Federation, Sberbank, relies on AI to make 35 percent of its loan decisions, and it anticipates raising that rate to 70 percent in less than five years (see TASS, 2017). 'Robot lawyers' have already replaced 3,000 human employees in Sberbank's legal department. In total, the number of back-office employees in that bank will shrink from 59,000 in 2011 down to 1,000 by 2021. They will be replaced by AI.

Technological changes drive both job growth and job losses, and it is hard to predict with any degree of precision the net outcome both across countries and within each individual country. Such forecasts are primarily based on automation probabilities developed by machine learning experts at the University of Oxford. They were asked to categorize a sample of 70 occupations taken from the O*NET online job database used by the US Department of Labor (Frey and Osborne, 2017). Relying on the probabilities of automation that the authors derive, initial estimates placed 47 percent of US occupations at risk of automation. WDR (2019) applies this approach to forecast potential job losses for several

other countries. All of these numbers are very tentative, however.

What is clear, though, is that technology is changing the skills rewarded in the labor market. WDR (2019) documents that the premium is rising for skills that cannot be replaced by robots, such as general cognitive skills (e.g., critical thinking) and socio-behavioral skills (e.g., managing and recognizing emotions that enhance teamwork). Workers with these skills are more adaptable in labor markets. Since 2001, the share of employment in occupations intensive in non-routine cognitive and socio-behavioral skills has increased, on average, from 19 to 23 percent in emerging economies and from 33 to 41 percent in advanced economies. Within the same industries, workers performing non-routine analytical tasks and those involved in problem-solving are paid a significant premium. Highly valued are teamwork, relationship management, people management, and caregiving. In these activities, people must interact with one another on the basis of intuitive understanding and empathy. Designing, producing art, conducting research, managing teams, nursing, and even cleaning have proven, thus far, hard tasks to automate.

The demand for routine job-specific skills is declining when these tasks are codifiable. Some of these tasks are cognitive, such as processing payrolls or bookkeeping, credit analysis, or routine law procedures. Others are manual, such as operating welding machines, assembling goods, or driving forklifts. These tasks are easily automated. Employment has shifted away from middle-skill occupations such as machine operators. This may translate into rising inequality in advanced economies including developed European economies. Both middle- and low-skill workers could see falling wages: the former because of automation, the latter because of increased competition (WDR, 2019).

For the middle classes in developed countries, the abundance of well-paid industrial jobs has been a traditional guarantor of stability and an indirect measure of equality of opportunity. Thus, decline in industrial employment in many high-income economies (including the United States) over the last two decades is causing social and political friction. This trend is structural and reflects a shift in employment from manufacturing to services in these countries. Industrial employment has moved increasingly to East Asia, which offered a high price differential with respect to developed Western economies. In the rest of the world, the share of industrial employment has remained stable. While at present, industrial employment in East Asia continues to rise, anticipated shortening of the global supply chains, buttressed by the protectionist US trade policies, may challenge that trend. However, even if part of industrial production is brought back to the US, it is the robots and 3D printers, rather than factory workers, that are likely to play a key role in the revival of the US manufacturing sec-

tor. Thus, this may not be a boon for the majority of underemployed US factory workers.

Digital platforms can and should be important drivers towards more inclusive global development. We have talked before about the impact that Alibaba has had in enabling millions of small Chinese enterprises to engage in economic activity. Similarly, eBay's Public Policy Lab has studied the geographical distribution of net enterprise growth in the United States, United Kingdom, and Germany (Olbe, 2018). It has found that eBay supports business growth in places that the traditional economy does not serve very well. Between 2010 and 2014, only 41 percent of US counties saw an increase in the number of traditional business establishments. But nearly 75 percent of counties saw a net increase in their number of eBay-enabled firms (commercial sellers with at least ten transactions worth a total of at least USD 10,000 annually). Similar results held true in the UK and Germany. Northwest England is far behind Greater London in its contribution to enterprise growth in the traditional economy, but not so in the platform-enabled economy. The West Midlands, Yorkshire, and the Humber – regions with third-tier GDP per capita levels – saw eBay-enabled firm growth on a par with southeast England, which has the highest GDP per capita. In Germany, traditional enterprise growth is clustered in the rich southern regions of Baden-Wuerttemberg and Bavaria, as well as in Berlin. Yet four of the poorest regions saw eBay-enabled firm growth. The ability to serve an entire country, continent – or in fact the whole world – is powering a new breed of enterprises: small, independent firms that are more resilient to local economic changes and less dependent on traditional conditions for growth.

Yet, in some important ways, inequality is on the rise, driven in no small part precisely by digitalization and globalization. Andrews et al. (2016) demonstrate that both the leading digital platforms as well as more traditional global champions like BMW, L'Oréal, and Nestlé recorded impressive productivity gains over the 2000s. At the same time, aggregate productivity growth in the OECD – which reflects the performance of all businesses – has stagnated. The authors show that large productivity gaps between the winners and all the other businesses have been growing over time.

The productivity divergence is strongest among information and communication (ICT) services. These are sectors with the 'winner takes all' dynamics. At the same time, aggregate productivity performance was significantly weaker in sectors where divergence was more pronounced. Not only are frontier firms pushing the technological boundary, but a slowdown in the diffusion of best business practices from the frontier to other firms can be recognized. As a result, it has become more difficult for laggard firms to join the frontier.

Importantly, recent studies find that the rise in productivity divergence between the best firms and the rest is much more extreme in sectors where the pace of pro-competitive product market reforms was slowest. This highlights the potential for promoting market competition, especially in services which are generally more sheltered from international markets. This would also create better conditions for growthenhancing reallocation through the entry of more productive businesses and the exit of less successful ones.

Berlingieri et al. (2017) argue that firms that were the most successful in harnessing the power of digital technology and global opportunities pull away even within the same industry sectors and within the same countries. As firms grow apart in productivity, they also become more unequal in how much they pay workers. This is the second great divergence. Again, it is not just the case that Silicon Valley firms are paying more than fast-food restaurants. The pay gap between the top- and bottom-paying firms in the same sector has increased by more than 12 percent from 2001 to 2012. The authors find that wage inequality has grown the most in sectors in which productivity differences have increased the most. To combat inequality of wages, it is thus crucial to encourage overall productivity growth, which in turn requires more and not less competition in the long run.

In addition, to make the most out of global digitalization opportunities, investing in human capital (in all countries) and bridging the digital divide (mostly in emerging economies) has to be among the top priorities. We have seen before that three types of skills are increasingly important in labor markets: complex problem-solving skills, teamwork, and adaptability. Chief Executive Officer of Infosys, Salih Parekh, states in his recent blog that one of the very critical skills is to learn not just to consume technology, but rather to be able to create it. The key would be for children to learn how to code from an early age. He argues that: "In the future, not knowing the language of computers will be as debilitating as illiteracy. If we can bring this 'superpower' to everybody across the global, economic, social, professional, gender, and age divides, then I believe it has the potential to become the great equalizer of our humanity and the amplifier of our potential" (Parekh, 2018).

To prepare for the future, early childhood development coupled with school curricula that foster creative problem-solving and teamwork on projects has to replace the traditional memorize-repeat style of schooling, still prevalent in most of the world. Equally critical is to establish lifelong learning habits. Educational platforms can play an important role in lifelong education. They already offer an increasing array of courses across many of the critical skills either for free or for a small nominal fee. Furthermore, educational platforms can partner up with the existing educational institutions, especially in emerging markets, in order to provide much more impactful educational content and delivery methods at all levels of formal education.

In this way, teachers can be free to spend more time working with students on less commoditized parts of the educational process (supervising teamwork and creative problem-solving, for example), while standardized parts of the curriculum can be learned online. The idea is to increase the reach, lower costs, and substantially upgrade the quality and relevance of the educational process around the globe.

None of this is possible, however, if people have no access to the internet. To that end, one may search for innovative technological solutions in conjunction with private-public partnerships in countries that have difficulties securing internet access for their citizens. Encouragingly, some of the digital giants are currently working on different ideas on how to make high-speed internet truly universally accessible.

2.4 PRIVACY, SECURITY, AND GOVERNMENTS

The key 'currency' of the digital economy is data, a large fraction of which is about ourselves: what websites we visit, what books and newspapers we read, what do we like to eat or drink, what do we do for fun and, of course, what are we interested in buying. Not only is this kind of information collected, but it is also retained, often forever. Since the cost of collecting and retaining data has fallen dramatically, many corporations are automatically collecting all the information that they can get. This information is then mined for useful patterns using increasingly powerful data mining algorithms. As a result, digital platforms and other companies enabling the digital economy may know the most intimate details about our personal lives, our interests, and desires.

The biggest casualty of the digital transformation has been, therefore, our privacy. And yet, privacy matters to everyone. Even to the big proponent of the end of privacy, Facebook CEO Mark Zuckerberg. He has in 2010 famously declared that privacy is "not any more a social norm." Yet he purchased four houses adjacent to his Palo Alto villa in order to secure his own privacy (Schneier, 2015). Obviously, data collection is necessary in a digital economy. The issue however is how much and what kind of data is collected about us, whether and for how long is it retained, whether it can be sold to others and under what conditions, how this data is used, how it is combined and correlated with other data, etc. In particular, it matters whether we own data collected about us, whether we can force companies not to use it in ways that violate our sense of privacy, and whether we can make them even completely delete it.

In contrast to the citizens of the United States and many other countries, citizens of the European Union since 2014 have had the right to request that links to webpages containing sensitive personal information about them be removed. This right was further buttressed by the General Data Protection Regulation (GDPR) which came into force in 2018.

Members of the public can make a request to any organization "verbally or in writing" and the recipient has one month to respond and decide whether to comply or not. In response, Google introduced a geo-blocking feature in 2015 that prevents European users from being able to see delisted links. Since then Google has received more than 845,000 requests from EU citizens to remove a total of 3.3 million web links from its searches, with about 45 percent of the links ultimately getting delisted. This involves both removing the results from its European sites – such as Google.fr, Google.co.uk, and Google.de – as well as restricting results from its other sites – such as Google.com – if the system detects that a search is being carried out from within Europe. However, users can still circumvent the action if they use a virtual private network (VPN) or other tools to mask their location (Kelion, 2019), as long as the data is residing somewhere outside of the European Union.

Importantly, Google resisted censoring search results for people in other parts of the world. In September 2019, the European Court of Justice issued a landmark ruling that the right to delisting upon request of European citizens is limited to Europe only and cannot be applied globally. "Currently, there is no obligation under EU law, for a search engine operator who grants a request for de-referencing made by a data subject [...] to carry out such a de-referencing on all the versions of its search engine," the European Court of Justice ruling said (Kelion, 2019). In effect, the court has declared that the European Union cannot extend its internet privacy policy outside of EU borders unilaterally.

While internet giants violate our privacy, they are by no means alone. Governments do it too. Some would like us to believe that there is a natural trade-off between security and privacy, and that we need massive government surveillance and thus a complete loss of privacy in order to be protected from possible terrorist attacks. Bruce Schneier, a renowned expert in the field of cybersecurity, convincingly argues that, even in principle, indiscriminate massive government surveillance of our digital communications cannot achieve the goal that it claims to pursue, namely to identify potential terrorists (Schneier, 2015). Suppose that a government believes that some people are potentially connected to terrorists. It then collects all kinds of data not only on them, but also on all of the people connected to them in any way, on the people connected to these people, etc. The idea is to be exhaustive in data collection and cast as wide a net as possible. The problem is that any two individuals on Earth can be connected in some way through a very small number of links (recall the six degrees of separation game?). So, the net is indeed cast wide and consists, de facto, of the entire connected world. With this huge data volume in place (and constantly adding to it), sophisticated data mining algorithms and AI are applied in the search for terrorist links. After all, data

mining works well for credit card fraud detection as well as (to some extent) the detection of tax avoidance and fraud. The reason it works in cases of credit card fraud is that in millions of credit card transactions, there are relatively large numbers of fraudulent activities. Thus, the algorithm has enough 'positives' to learn from. Erroneously flagging a transaction as fraudulent simply leads to a temporary halt in credit card payment, and perhaps to a nominal charge. Similarly, the IRS uses data mining to flag tax violations. Again, there is a large enough number of 'positives' for this method to work relatively well (but with higher errors than credit card fraud). The cost of a false positive is an audit.

Why does this not work well for finding terrorists? The 'problem' is too few terrorist attacks given the massive and almost indiscriminate surveillance data. In technical terms, the signal-to-noise ratio is too low. Thus, even the most sophisticated algorithms have a too-high margin of error. Furthermore, the cost of 'false positives' are very high (think of the fate of those erroneously flagged as related to terrorism). What is worse, massive surveillance may actually hurt security. First, for each false lead generated by the AI, valuable human resources have to be assigned. This prevents them from being deployed in traditional spying and counterterrorism activities. And it is through these targeted activities, and not through indiscriminate surveillance, that governments typically catch the bad guys. Worse yet, in order to facilitate data collection on this massive scale, governments collect vulnerabilities that always exist in software systems. They help patch many of them but try to hide a select few in order to use them for attacking adversaries or to spy on us. In addition, with or without cooperation of companies, spy agencies create 'back doors' for ease of access, undermine cryptographic protection of systems, and employ a number of other methods that undermine the security of internet and telecommunication systems (see Schneier, 2015, for fascinating details). While this allows an agency easy access to the entire universe of our data, these loopholes can (and sometimes are) used by other governments as well as criminal elements. They can be used by terrorists too, if they are sophisticated enough to discover them.

Thus, in a world in which data is the most valuable asset, privacy matters. Violation of privacy by both companies and governments is not making us, our data, or the digital infrastructure of our economy any safer – just the opposite. What can be done to improve the situation? In particular, what are policy options at the disposal of Europeans? Whatever the response may be, some things are clear. Europe is lagging behind the United States and China in the development of AI and digital platforms in part due to a trade-off that exists between data and privacy protection, advocated in Europe, and amassing sufficiently large quantities of cheap data needed for fast development of AI systems

and other key technologies (as in the United States and China). As Europe develops its policies regarding privacy in the digital world, policymakers should have in mind this trade-off.

One possible approach is to try to play catch-up while protecting privacy of European citizens. The idea is to bring down barriers for cooperation and data exchange within the European internet companies, scale up European venture capital industry, and possibly provide EU-wide fiscal incentives for the most prominent platforms 'made in Europe' that would act in accordance with the European privacy laws. Harmonization of tax rules among the member states regarding the digital economy, if feasible, would be part of that process. Investors and customers these days like dealing with 'good governance' companies. For this reason, there are likely to be both investors and customers in Europe and around the world that would support privacy-friendly platforms, especially if they reach a sufficient scale. Emergence of largescale European privacy-friendly platforms could create serious positive externalities for Europe in the economic, security, and strategic arenas. Their success would demonstrate that a different way from the American and Chinese one is indeed possible. This would be 'leading by example'.

In parallel to building viable alternatives to privacy-less platforms, Europe should spearhead negotiations of an international treaty that would ensure that people around the world have the same basic privacy rights related to data protection and that the internet stays international, free, and open to all. Imposing national boundaries on data should be opposed since that would be the beginning of the end of the internet's global character. Countries like Russia or China want to have data on their citizens confined within their national boundaries in order to more easily censor information flows and stifle potential dissent. Europe should be careful not to, inadvertently perhaps, provide ammunition for these ideas when talking about 'data sovereignty.' European discourse might be more usefully framed therefore in terms of protecting freedoms of citizens of the European Union and globally. Another option would be to allow different pricing models, offering choices: one for instance would reward customers willing to surrender personal information; another would offer privacy guarantees, but at a cost.

A particularly big danger for the global character of the internet is the US-China trade and technology clash, which threatens to split the world into Chinese and US technological spheres of influence. This would harm the long-term interests not only of the United States and China, but also of the silent majority who may be forced to pick sides in this battle. This would, in turn, reduce potential growth and lower the chance of creating a truly global digital economy and society. By developing an alternative to both the US and Chinese approaches, Europe may increase its stature in

the emerging digital global economy as well as provide those unwilling to take sides with a viable third option.

Security of data, digital systems, and the global internet infrastructure is crucial for the digital economy to flourish. But it cannot be achieved if the most powerful countries actively subvert it by not patching all systemic vulnerabilities they discover, or if government agencies create new security breaches enabling them easier access for spying. It is paramount, even if not easily achieved, for an 'International Internet Arms Treaty' to be signed that would prevent countries from behaving in this predatory manner. Obviously, such a treaty would be hard to negotiate and even harder to police. However, international cooperation is necessary if we are serious about security: it is not possible to create a secure internet for yourself while creating vulnerabilities for others. As long as the internet is a global network, breaches in one part of the network easily propagate to all other parts whether we like it or not. Again, Europe should try to take the lead in negotiating such a treaty.

Internet platforms generate a substantial fraction of their revenues in large EU countries but often have little or no 'physical footprint' in them. This makes it difficult for governments to tax them. Pursuing tax optimization strategies, internet giants locate their official activities in countries with low tax rates (e.g., Ireland). Of course, tax optimization is not illegal and is pursued by other multinationals, not just internet companies. But given the fact that internet platforms play an increasingly important role in the economy, it is paramount that European governments successfully address the issue of fair taxation while preserving their incentives for innovation. We discuss taxation of the digital economy in Chapter 3 of this report. Creation of globally competitive European platforms ('European Googles') may be facilitated with some tax incentives since the creation of such companies would provide important positive economic and strategic externalities to Europe. If Europe becomes instead just a commodity goods producer with the lion's share of profits going to American and Chinese platforms, this would become a matter of industrial and competition policy. In addition, it would have clear implications for the interests of Europeans and their incentives to design tax systems. Tax wars, in that sense, are another face of trade wars in the digital age.

Another issue important to consider here relates to taxation of crowd work provided over the internet platforms. Remote work makes the labor more mobile. One can work in Italy for a Japanese client and get paid in the United States. This creates a problem of finding a fair and effective way to tax the mobile labor and protect the rights of the providers of labor. We have argued before that it is important to clarify whether a particular crowd worker is an independent contractor or a subordinate worker. As an example, take Serbia, a country seeing a rapid increase of inter-

net-based gig work. Its designers, programmers, and other high-value-added gig workers are required by the government to either register a firm and pay tax as a small business (the procedure for that has been greatly simplified lately) or pay a lump sum annual tax as individuals. Either way, since platforms that provide them with work are usually out of reach of the Serbian government, the government gets its cut. Obviously, providers of services have to take that into account when they negotiate the deals with the platforms. Chapter 4 discusses in more detail taxation of mobile jobs and people.

Digital technologies hold significant promise in helping increase efficiency of governments around the world. In particular, digitalization of tax systems is likely to improve both the efficiency and userfriendliness of the process (Musgrove, 2018). To embark on a digital transformation, tax administrations need to have secure and scalable tax compliance digital infrastructure, capacity to process large amounts of digital data and draw insights from it, capacity to automate and personalize services using AI, as well as communication platforms for Government-to-Government (G2G), Government-to-Business (G2B), and Government-to-Citizens (G2C) interactions. Technologies in use in the private sector could perhaps be adapted for these purposes. Of course, none of that can work without hiring, incentivizing, and retaining people that can effectively work with these new technologies. With people and systems in place, tax administrations can use predictive modeling, analyze economic trends and the effects of policy changes, employ AI to predict fraud, etc. At the same time, it is critical for privacy rights of individuals and companies as well as security of data to be protected at all times. Previous discussions make it plain that this is not an easy task, as it goes against the instinct of many governments to simply ignore such things 'for the sake of expediency.'

Likewise, digitalization of other government departments is likely to lead to substantial savings, increased efficiency, and ultimately, better services for citizens and businesses. This would attract more investments and improve growth prospects. The examples of the governments of Estonia and Denmark, which have significantly increased their efficiency through digitalization, are encouraging. The savings that can be achieved would open up the possibility for more targeted spending on protecting the welfare of those who are adversely impacted by technological changes. In addition, governments would have more resources to substantially improve and modernize the educational processes and to build better digital and physical infrastructure. This would, in turn, make such countries more successful on the global digital marketplace.

In summary, while digital transformation holds immense promise, it raises very important issues and challenges, including threats to financial stability. Europe can and should do more to be competitive

with the major players (United States and China). In particular, it could try to lead by example, providing the third way that would couple innovation and entrepreneurship with protection of privacy and freedoms, perhaps by giving individuals a choice in the amount of privacy they surrender.

However, if this is not possible and Europe loses companies that are profitable, it has to defend its interests both in terms of competition policy and in terms of an appropriate taxation policy. Chapter 3 discusses corporate taxation of corporations in the digital and mobile world. On one hand, tax revenues are at record-high levels. But politically there is the issue of perceived fairness. Giant internet companies have little or no physical presence in most European countries where they make large revenues. As a consequence of current rules, they pay little or no taxes in these countries. Also, if IP gets separated from physical products, we have issues with taxation. Thus, the current tax system, designed decades ago, may not be appropriate anymore. Having said that, national taxation based on revenues is a lot like tariffs; as a consequence, tax wars are logically not very different from trade wars and are increasingly linked to them.

In Europe, a large part of the welfare state is linked to jobs. In the mobile world, this may have to change so that the welfare of people is continued to be protected even if jobs are more fluid. Chapter 4 discusses these issues.

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Taxing Multinational Companies

3.1 INTRODUCTION

In debates about fair taxation, corporate income taxes play an important role. The main reason is that globalization and technological change, including digitalization (see Chapter 2), seem to make it increasingly difficult to tax in particular large, multinational companies. At the same time, these companies are considered to be highly profitable and increasingly powerful. Doubts that these companies pay their fair share of taxes are fueled by a growing number of media reports as well as academic research about tax planning and tax avoidance. There have been various spectacular cases of tax avoidance, which have given rise to highly critical public debates in particular about digital companies like Google or Apple. For instance, an article about current OECD initiatives to rein in tax avoidance published in the New York Times on October 9, 2019 begins as follows:

"Digital tax dodgers, take heed: International leaders have advanced a plan to prevent large multinational companies like Apple, Facebook and Amazon from avoiding taxes by shifting profits between countries."[1]

While companies with digital business models seem to find it easy to avoid taxes, other companies have also been criticized for failing to pay their share of tax. One example is Starbucks. Here a recent newspaper article complained that "Starbucks' UK-based European business paid just GBP 18.3 million in tax last year, while paying the coffee giant's parent company in Seattle GBP 348 million in dividends collected from licensing its brand."[2]

A more general reason why corporate taxation is prominent in debates about tax fairness is that corporations are widely perceived as being rich and powerful. At the same time, they are often seen as impersonal and somehow evil entities. Of course, they are owned and run by individuals. Their profits ultimately accrue to their owners, even if the managers with handsome compensation may be those who benefit most from wealth created by corporations. This income should be taxed as should any type of income, in particular if those who receive it are significantly richer than the average taxpayer. There

is a view, which also underlies recent proposals for wealth taxes from left-wing American politicians, that owners of firms that turn out to be highly profitable have often been unusually lucky and enjoy some immunity from competition that is likely to entail efficiency losses. Luck plays a role for any kind of income, however, and corporate taxation need not target the rich and lucky more precisely than other taxes, including those on the profits of non-incorporated firms, and on capital gains.

Another important dimension of the fairness debate in corporate taxation is about the distribution of taxing rights between countries. The existing rules are often seen as biased in favor of the established industrial countries, where the headquarters of most multinational companies are located. Emerging economics like China, India, or Brazil argue that firms from industrialized countries benefit from access to their markets but do not pay appropriate taxes in these 'market countries'.

Unfortunately, there are no clear criteria for what determines a 'fair' distribution of taxing rights in corporate taxation. The distribution of taxing rights is largely a matter of negotiation. In recent tax policy debates, it has been emphasized that corporations should pay tax where they produce and create value. But that does not really help, among other things because it is not clear whether value creation takes place where factories are located, where entrepreneurial risk is borne, where research and development is carried out, or where goods are sold to private consumers. All of these activities somehow contribute to wealth creation. Fairness criteria do offer some guidance to the distribution of taxing rights: offshore financial centers and tax havens where companies have no or little economic activity should not have taxing rights, inasmuch as no contribution to value creation takes place there. Beyond that, there is no theoretical guiding principle.

Practical details do matter very strongly in the design of tax systems, the playground of cat-and-mouse games between governments and taxpayers. For example, value-added taxes are collected from sellers not because it matters in theory whether consumers or shop owners pay them, but because it would be too easy for consumers to lose track of their tax obligations, and too difficult for governments to find out if they do. Because the corporate profits of companies that need to keep and publish detailed accounts are relatively easy to assess, governments will tax them to the extent they can, and company

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[1] New York Times, October 9, 2019, "Tech Giants Shift Profits to Avoid Taxes. There's a Plan to Stop Them." https://www.nytimes.com/2019/10/09/us/politics/tech-giants-taxes-oecd.html.
[2] The Guardian, 2019, "Starbucks pays £18.3m tax but £348m in dividends." https://www.theguardian.com/business/2019/jun/27/starbucks-emea-pays-183m-tax-but-348m-in-royalty-payments.

owners will do what they can to avoid paying corporate taxes.

Reforms to the distribution of taxing rights are driven by the growing bargaining clout of market countries who want revenue not because it is fair, but because they need and can get it. They increasingly use unilateral tax policy measures to raise higher taxes from multinational companies. This leads to double taxation, tax uncertainty, and conflicts with other countries. As in other policy areas like tariffs, for instance, cooperative solutions are likely to lead to better economic outcomes. In this chapter we discuss the development of corporate tax systems over the last few decades and the need for reform.

3.2 WHAT ARE THE ECONOMIC FUNCTIONS OF CORPORATE TAXATION?

Appropriate reforms of the international system of corporate taxation require clarity about what we expect from corporate taxation. The most important role of corporate taxes is to serve as a backstop to the personal income tax. Without corporate taxes, owners of corporations could accumulate income without paying income taxes for a long time. In addition, taxpayers could shift income from the personal to the corporate sphere and avoid paying taxes. This would conflict with the principle of universal taxation: that all taxpayers should be treated equally and bear their fair share of the overall tax burden.

Corporate taxes also have another role, that of ensuring that companies contribute to ease crowding effects of their activities on publicly provided infrastructure or more generally for the benefits they get from public services. This 'benefit tax' perspective raises the question of whether profit is the right tax base. While taxing pure profits does not distort a firm's production choices (because maximizing profits net of a proportional tax has the same solution for any tax rate), this is not a desirable feature when those choices have external effects. In particular, lossmaking firms pay no profit taxes, but they too benefit from public services.

From both perspectives, corporate taxes should in principle aim to be equivalent to taxes on other types of income. In practice, corporate income is usually taxed twice: at the firm level and at the level of the shareholder who receives dividends or capital gains. From a fairness perspective, the sum of these two taxes should be equal to income taxes on other types of income, like labor income, for instance. Usually taxation at the shareholder level is low, taking into account that these profits have already been taxed at the firm level. However, various developments undermine effective taxation of corporate profits at the firm level.

First, there is ample evidence documenting that multinational companies systematically use tax planning opportunities to reduce their tax burden, as we will discuss further below. While usually perfectly legal, this is not desirable from a policy point of view. Therefore, most countries have introduced far-reaching anti-tax avoidance legislation. As we will explain below, there is a danger that national tax policies fighting tax avoidance undermine economic integration. An internationally coordinated approach is needed. Following calls by the Ministers of Finance of the G20 countries, the OECD has started the Base Erosion and Profit Shifting (BEPS) project to propose and coordinate measures and policies against tax avoidance.

A second development is that international mobility of capital and people has increased significantly, while tax and social policy remain a responsibility of national governments. This creates incentives for governments to cut taxes on companies and wealthy and highly skilled individuals, and reduce public transfers. These implications of mobility raise concerns that the tax system will become less progressive and the tax burden will increasingly be shifted away from mobile taxpayers to immobile factors, like low-skilled labor and land.

Third, attention of policymakers has recently focused on the taxation of the so-called 'digital economy'. As mentioned above, firms with digital business models find it easier than other firms to operate in countries without a local physical presence. They also rely more on immaterial assets, which are highly mobile internationally. This allows them to avoid taxes more easily. The European Commission has therefore proposed the introduction of new 'digital' taxes on the revenue of companies with digital business models, and some countries including France have already introduced them, triggering protests from the United States, where most of the large digital companies reside.

3.3 CORPORATE TAXES AND THE DEVELOPMENT OF TAX REVENUE AND TAX STRUCTURES OVER TIME

Over the last few decades, tax policy was prominent in public debates in many countries, and a large number of tax reforms have taken place. Interestingly, despite these reforms, the composition of tax revenue has not changed very much over the past decades, at least not for the average of the OECD countries. But that does not mean that tax systems and the distribution of the tax burden has not changed. As will be explained further below, a key trend of the last few decades was a reduction of tax rates on retained earnings of corporations. At the same time, their share in overall income has increased. As a result, tax revenue collected remained stable, but the tax burden on corporate profits has declined.

3.3.1 Level and Composition of Tax Revenue in the OECD Countries

Figure 3.1 describes the development of tax revenue as a percentage of GDP in several OECD countries. The (unweighted) average tax revenue to GDP ratio increased steadily, from 25 percent in 1965 to over 30 percent in the late 1970s. In 2000, it had reached a level of just under 34 percent, and in 2016, it reached an all-time high of 34.4 percent.
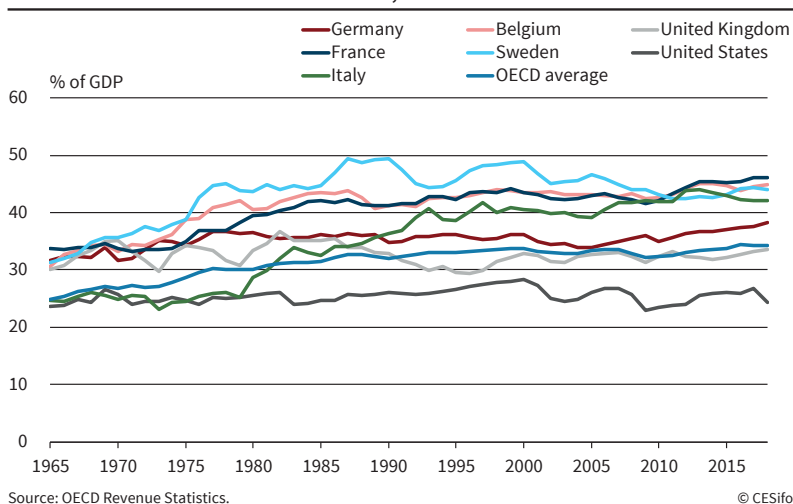
This suggests that governments do not seem to find it particularly difficult to raise revenue, and does not support concerns that the growing mobility of tax bases across borders will undermine the power to tax so much that funding the public sector becomes impossible. The share of overall output going to the public sector is growing, possibly as a consequence of aging trends. As we will discuss in greater detail below, the constraints imposed by international mobility and globalization on tax policies affect the structure of taxes more than the overall revenue collected.

Figure 3.1 also shows that the development of tax revenue differs significantly across countries. The United States is a country with a stable and low revenue ratio. In the United Kingdom, the revenue ratio is higher but also relatively stable. The strongest revenue growth has occurred in the continental European welfare states, like France, Belgium, and – albeit to a lesser extent – Germany. In Italy, the tax revenue ratio was similar to that of the United States until the late 1970s. Since then it has expanded massively. Today it is as high as that of France or even Sweden.[3]

Of course, the growth of overall tax revenue could come at the cost of a change in the revenue structure, which shifts the tax burden from mobile to less mobile sources. Interestingly, the structure of tax revenue has been remarkably stable over time, as illustrated by Figure 3.2. The most significant change is the growth in social security con-

tributions. This development reflects the expansion of the welfare state and social insurance spending as well as, to some extent, the ease of collecting revenue from internationally immobile and readily observable wage income. The share of property and profit taxes in revenue is almost constant. The share of personal income taxes in overall revenue was 27 percent in 1965. Today it is 26 percent. The share of consumption taxes in overall revenue has declined slightly, from 37 percent in 1965 to 32 percent today. This decline is mainly due to the fact that tariffs and excise taxes have been reduced in most countries. They have partly but not fully been replaced by value-added taxes (VAT).

Overall, we can conclude that the composition of tax revenue has remained surprisingly stable over the decades. This is particularly surprising with regard to corporate income taxation, because the debate about tax competition suggests that collecting corporate taxes should have become more difficult.

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[3] In Italy, expenditures began to increase in the 1970s, but until the late 1980s it used to be covered by deficits and some seigniorage. Currently, tax revenue finances service of a large public debt, even if interest costs have declined recently.
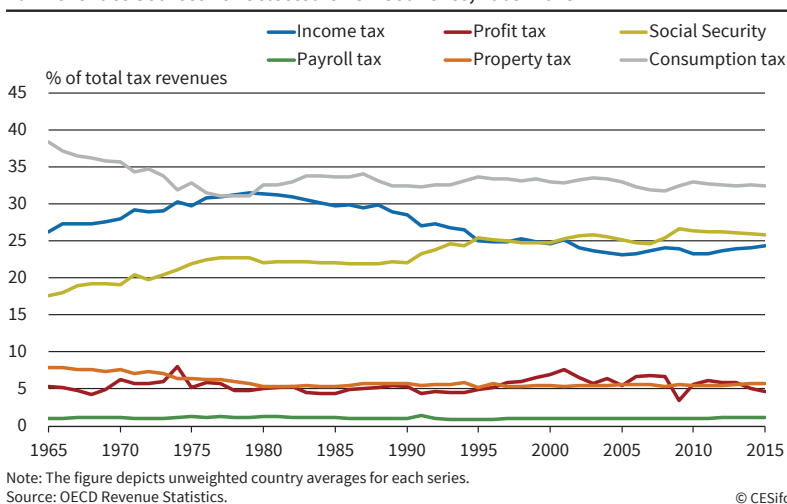
Figure 3.1

Tax Revenues for Selected OECD Countries, 1965–2018

Source: OECD Revenue Statistics.   © CESifo

Figure 3.2

Tax Revenues Sources For Selected OECD Countries, 1965–2015

Note: The figure depicts unweighted country averages for each series.
Source: OECD Revenue Statistics.   © CESifo

3.3.2 Why Is Corporate Tax Revenue Stable Even Though Tax Rates Have Declined?

Figure 3.3 illustrates the development of the share of corporate taxes in overall tax revenue for selected and mostly large OECD countries. Corporate tax revenue is volatile and depends strongly on the business cycle, but there is no long-term downward trend. The figures for individual countries confirm that the share of corporate taxes has not changed much in the last two decades.

The stability of corporate tax revenue is surprising because one of the most important tax policy trends of the last decades is the steady fall in corporate income tax rates. Figure 3.4 illustrates the development of corporate tax rates in various countries since 1980. The average statutory corporate tax rate in the OECD fell from 47 percent to 24 percent. Some countries were even more radical. The United Kingdom reduced its tax rate from 52 to 19 percent. Germany, traditionally a high-tax country, reduced its corporate tax rate from 60 percent to 30 percent. The United States also reduced the corporate tax

Figure 3.3

Share of Corporate Tax Revenues in Total Tax Revenues in OECD Countries, 1980–2018

Source: OECD Revenue Statistics.   © CESifo
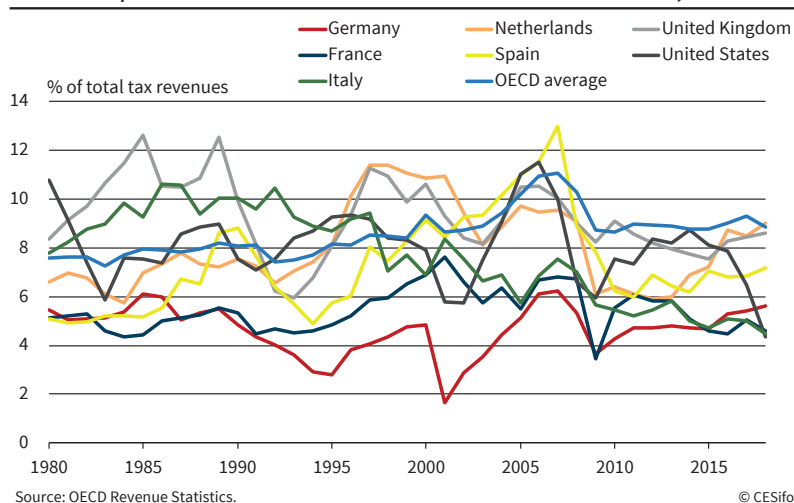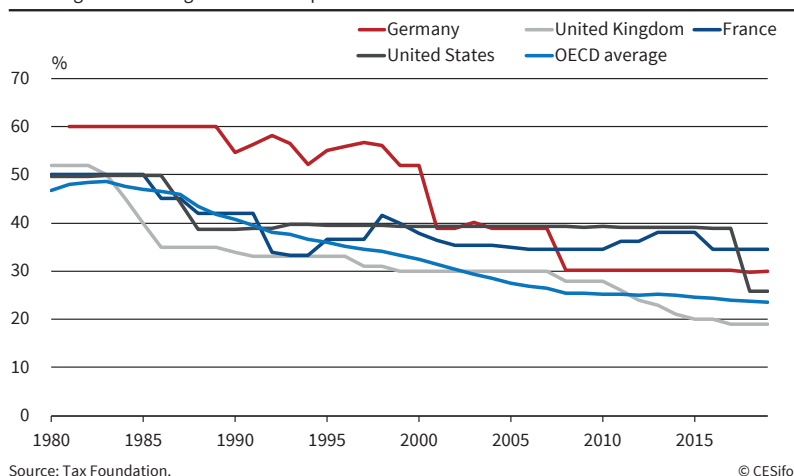
Figure 3.4

Corporate Income Tax Rates in OECD Countries, 1980–2019
Including sub-central government corporate income tax rates

Source: Tax Foundation.   © CESifo

rate in the 1980s, but since then seemed unimpressed by the pressures of tax competition for many years and kept its corporate tax rate at a comparatively high level of just under 40 percent (including state level tax), until the tax reform enacted in 2017 reduced the tax rate to 26 percent.

One would expect that these tax rate reductions lead to a decline in corporate tax revenue. However, tax revenue have been surprisingly stable, as documented above.

There are different explanations for this seemingly inconsistent development of tax rates and tax revenue. It is clear that, if the rates are really lower, the tax base must have increased. The question is why. First, taxable profits may have increased because many countries have combined tax rate cuts with measures to broaden the tax base. These include cuts in depreciation allowances and restrictions on loss offset and the deductibility of interest costs and royalty payments. Second, tax profits may have increased previously due to lower labor costs or lower interest
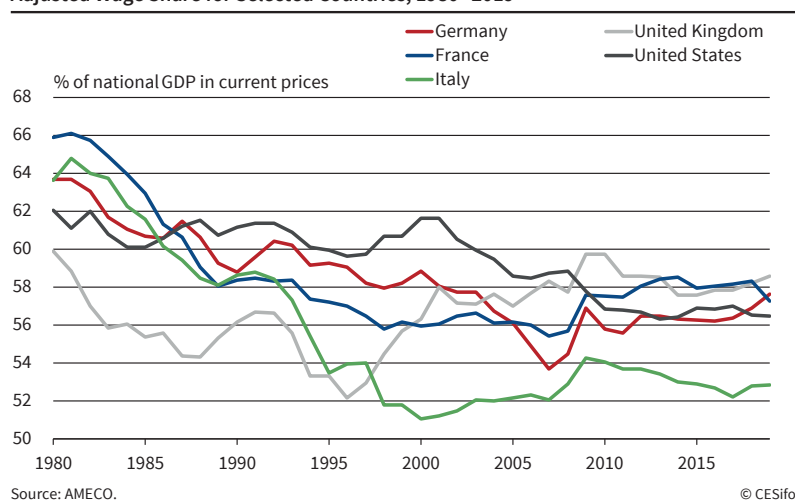
rates. In many countries, the share of wage incomes has declined in recent decades (see Figure 3.5) while the share of corporate profits has increased. Interest rates have been falling more or less steadily over the last two decades. Third, taxable profits may grow because taxpayers shift income from the personal income tax base to the corporate tax base, to benefit from the lower corporate tax rates. This would also mean that profits increase, but just as a consequence of tax avoidance. If this played a large role, though, we should observe an erosion of income tax revenue, which is not really the case.

These findings suggest that the tax burden on corporate profits has indeed decreased; this is what one would expect in the presence of competition for mobile investment as well as tax bases shifted across countries through tax planning. The decline in effective tax burdens may not be as large as suggested by the falling statutory tax rates, because many countries have combined tax rate cuts with base broadening measures, in particular reductions in the deduct-

Adjusted Wage Share for Selected Countries, 1980–2019

% of national GDP in current prices

Legend: Germany, France, Italy, United Kingdom, United States

Source: AMECO.

© CESifo

taxes. Empirical studies have shown that a significant part of the burden of corporate taxes falls on wages. For instance, in a study for Germany, Fuest et al. (2018) find that, for each additional euro of corporate tax collected, wages fall by 65 cents.[5] A key factor is that wage setting often implies a degree of rent sharing between firms and employees. If corporate taxes reduce the available rent, some of the tax burden is shifted to labor.

Along the same lines, empirical studies about the incidence of the value-added tax usually find that consumers do not bear the full burden of the value-added tax. For instance, Benedek et al. (2015) analyze VAT changes in 17 eurozone countries between 1999 and 2013, and show that on average, less than 40 percent of the tax changes were passed on to consumer prices.

For social insurance contributions, a widespread assumption is that both employer and employee contributions are ultimately borne by employees. Empirical studies, however, generate very heterogeneous results. For instance, Saez et al. (2012) analyze a cohort-based reform of social insurance contributions in Greece and find that changes in employer contributions were fully borne by employers, while employees had to bear only the increase in employee contributions. This may be due to the fact that employers did not want or could not pay employees different wages because they belonged to different cohorts, so that this result is unlikely to carry over to other reforms. But it does show that incidence depends on the institutional context. Similar considerations apply to other taxes including personal income taxes.

What does this imply for the analysis of tax incidence in general? There is no generally accepted answer to this question. Saez and Zucman (2019) propose a distinction between the incidence of the current tax system and the distributional impact of tax reforms. They argue that the analysis of the current tax system's incidence should abstract from behavioral reactions and price changes while the analysis of tax reforms should factor in those changes.[6] This is not

ibility of interest payments and restrictions on loss offsets.[4] But these base-broadening measures have not been strong enough to maintain the effective tax rate on corporate income.

3.4 THE PROBLEM OF TAX INCIDENCE

Thinking about the distributional implications of changes in different taxes requires a clear understanding of tax incidence. In tax policy debates, assumptions made about tax incidence – that is, who bears the burden of certain taxes – are often implicit. One might simply assume that the burden of income taxes falls on income taxpayers, that of consumption taxes on consumers, and that of corporate taxes on shareholders. From an economic point of view, however, what matters is the true incidence of taxes, which includes their effects on pre-tax incomes and expenditures. Economic research on tax incidence shows that simple assumptions are often misleading.

There has been a long debate on the incidence of the corporate income tax. In a seminal contribution, Harberger (1962) discussed the incidence of the corporate tax in a theoretical model of a closed economy with two sectors and labor and capital mobility across sectors. When only one of the two sectors pays corporate income tax, then the burden of that tax, under certain conditions, is fully and jointly borne by all capital owners. Later, the analysis was extended to open economies. A benchmark result in this literature is that the burden of sourcebased corporate income tax in a small open economy is fully shifted to immobile factors of production (Gordon, 1986). This suggests that land and immobile labor bear the tax burden when capital is mobile across the borders of countries or regions that impose corporate income

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[4]   For an analysis of the economic factors driving this trend, see Becker and Fuest (2011). They show that tax rate cuts with base-broadening policies are efficient, among other things, if profitability and mobility are positively correlated.

[5]   In a study with international data, Arulampalam et al. (2015) find a similar magnitude. Azémar and Hubbard (2015) analyze data for 13 OECD countries and also find that a significant part of the corporate tax burden is shifted to labor, with the magnitude depending on the wage bargaining system. For a survey of the literature about the incidence of corporate taxes to wages, see Fuest (2014).

[6]   "Current distributional analysis shows the current tax burden by income groups and should assign taxes on each economic factor without including behavioral responses: taxes on labor should fall on labor earners, taxes on capital on the corresponding asset owners, and taxes on consumption on consumers. This allows to distribute both pre-tax and post-tax current incomes and measure the economically relevant tax wedges on each factor without having to specify behavioral responses. Tax reform distributional analysis shows the

convincing. The distributional analysis of the existing system unavoidably refers to a counterfactual with a different tax system, with different prices and quantities, and has to take incidence into account. Assuming that value-added or sales taxes fall on consumers and that payroll taxes fall on workers just because the taxes are called consumer or payroll taxes is misleading. After all, all of these taxes are collected and paid into state coffers by firms, and their changes often trigger changes in prices and quantities. These changes need to be taken into account.

3.5 CORPORATE TAX COMPETITION

The decline in corporate income tax rates seen in recent decades is usually seen as a consequence of tax competition. Corporate tax competition is a process where individual countries try to attract internationally mobile economic activity by cutting taxes. This economic activity can take different forms. To understand the phenomenon of corporate tax competition, it is helpful to distinguish between competition for 'real' economic activity and competition for 'accounting profits'.

3.5.1 Corporate Tax Competition for 'Real' Economic Activity

Taxation affects the location of real investment – that is, of production plants, research labs and other facilities companies use to develop and produce the goods and services they offer. Since capital and people are internationally mobile, countries can attract economic activity by offering attractive tax conditions.

Whether tax competition for real economic activity is desirable is controversial.[7] There is a large literature arguing that tax competition will lead to suboptimal results. The reason is that national tax policies affect the welfare of other countries. If national tax policy maximizes national welfare but does not take into account its effect on the welfare of other countries, it will generally be suboptimal from a global perspective. From this perspective, policy coordination that focuses on global welfare is always welfare enhancing. Since countries are asymmetric, side payments may be necessary to assure that tax coordination increases the welfare of all countries participating in the agreement, but in principle tax competition is never optimal in this setting.

The opposing view argues that national tax policy usually does not maximize national welfare, either because of time inconsistency problems or because the political process leads to distortions in decision-making. From this perspective, tax competition

can be seen as a welcome constraint on the power of governments to tax.

In the current political debate, the right of countries to autonomously set corporate taxes and determine the effective tax burden on domestic investment is not disputed. It is perceived as a fundamental part of national fiscal sovereignty. This fiscal sovereignty also applies to other taxes, not only to corporate income taxes.[8]

3.5.2 Corporate Tax Competition for Accounting Profits

Countries are interested not only in attracting investment and jobs; they also want to collect tax revenue. Where companies pay taxes depends not only on where their plants, research facilities or management is located, but also on their legal and financial structures. For instance, multinational companies can save taxes by financing subsidiaries in high-tax countries with high levels of debt and those located in low-tax countries with more equity. As a result, a larger part of the firm's global profits is reported in low-tax countries without any change in the location of 'real' economic activity. From the perspective of individual countries, this creates incentives to cut tax rates in order to attract 'accounting profits'.

Tax competition for accounting profits is in the focus of the current debate on international taxation because it is related to tax avoidance and profit shifting by multinational firms. While tax competition for real economic activity is more or less accepted, tax competition for accounting profits is widely criticized and seen as harmful and a form of beggar thy neighbor policy. However, the policy debate about tax competition for accounting profits is usually framed from the perspective of multinational companies who are criticized for using tax avoidance opportunities generated by tax differences across countries.

3.6 THE PROBLEM OF TAX PLANNING AND TAX AVOIDANCE BY MULTINATIONAL COMPANIES

Multinational companies can use tax planning to reduce the profit taxes they pay without changing the location of their real economic activity, as mentioned in the preceding section. Examples include income shifting through debt, transfer pricing, or the location of immaterial assets, like patents and brand names. Companies can also exploit classification conflicts between countries to avoid taxes ('hybrid mismatch arrangements'). For instance, if country A classifies a payment related to a hybrid financing arrangement as interest on debt while country B classifies the same payment as a dividend, it may be deductible in country A and tax exempt in country B. The result is that

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impact of a tax reform and should describe the effect on pre-tax incomes, post-tax incomes, and taxes paid by income group separately and factoring in potential behavioral responses." Saez and Zucman (2019, p. 1).
[7] For surveys, see Fuest et al. (2005) and Keen and Konrad (2012).

[8] However, note that the EU member states have agreed to restrict national sovereignty for some taxes. For instance, the standard value-added tax rate has to be between 15 and 25 percent.

it generates 'white income', that is, income which is taxed nowhere.

For the sake of clarity, it should be emphasized that the term 'tax avoidance' refers to legal activities while 'tax evasion' refers to illegal non-payment of taxes. The fact that tax avoidance is legal does not imply that it is desirable or that governments should do nothing against it. Quite the opposite is true: it is part of the definition of tax avoidance that it is an unintended and usually undesired consequence of tax legislation. At the same time, it should be clear that taxpayers cannot and should not be expected to pay more than the minimum tax implied by the tax law. Therefore, to rein in tax avoidance, countries should change the tax law.

These general principles are applicable to international issues in corporate profit taxation. Tax avoidance by multinational companies gives rise to various problems. First and most importantly, corporate taxes have the function of making sure that owners of companies contribute to income taxation just as everybody else does. If companies can legally avoid paying taxes, the tax system is unfair and needs to be changed. Second, tax avoidance can distort competition between firms with different tax avoidance opportunities. Third, tax avoidance itself can distort the behavior of firms and absorbs significant resources, which should go into socially productive activities.

The policy relevance of opportunities for capital and taxable profits shifting across country borders is obvious. In particular, this is because richer individuals are unsurprisingly more inclined and better able to take advantage of opportunities for tax avoidance offered by elaborate anonymous corporate structures made available by specialized tax haven lawyers (Tørsløv et al., 2018; Zucman et al., 2018).

3.6.1 How Empirically Significant is the Problem of Tax Avoidance?

Attempts to estimate the magnitude of tax avoidance face the challenge that tax avoidance is by definition an activity which is difficult to measure – if it were not, it could easily be stopped.

Estimates of profits shifted or revenue lost due to tax avoidance need to define a counterfactual situation without tax avoidance. For a meaningful interpretation of estimates, it is important to take into account the assumed counterfactual, as well as limitations of the data used.[9]

Different studies about profit shifting and tax avoidance produce very different results. One class of studies uses micro data to measure how the reporting of profits changes when tax rates change. A meta-regression study by Heckemeyer and Overesch (2013) finds an average semielasticity of reported profits with respect to the tax rate differential of 0.8. The implication is that if a country cuts its tax rate from 30 to 20 percent, it will increase its tax base due to profit shifting. Specifically, the country will increase its tax base by 8 percent. This result is hard to reconcile with the findings of some descriptive studies based on macro data, which are much larger. For instance, Crivelly et al. (2016) estimate that global corporate tax revenue losses through profit shifting are equal to USD 123 billion per year in the short term and up to USD 647 billion in the long term. In contrast, Janský and Palanský (2018) argue that these losses are only USD 80 billion. Tørsløv et al. (2018) find losses amounting to USD 182 billion. Their estimates imply that multinational firms shift 36 percent of their profits to tax havens. To be compatible with results of micro studies, this would require a 45 percentage point difference in the tax burden between high-tax and low-tax countries, which is much more than the real tax rate difference.

An alternative reason for this difference could be that descriptive macro studies capture more long-term effects. Another potential reason is that the differences are due to specific assumptions about counterfactuals. For instance, Tørsløv et al. (2018) compare the relationship between profits and the sum of wages for subsidiaries of multinational firms in tax havens and local firms. They find that the ratio of profits over wages is much higher for subsidiaries of multinationals compared to local firms. For local firms in tax havens, in contrast, this measure does not differ much from that found for local firms in high-tax countries. Tørsløv et al. (2018) conclude that any profitability of multinational firms above the profitability for local firms is due to profit shifting. This approach relies on strong assumptions – among others, that in the absence of profit shifting, 'true' profits of subsidiaries of multinational firms would be the same as those of local firms. Another possible and even simpler counterfactual would be to assume that the only reason for multinational firms to have subsidiaries in tax havens is tax avoidance. In that case, all profits found in tax havens would be counted as reflecting tax avoidance. However, one could also argue that the true amount of profit shifting is much lower. For instance, if subsidiaries of multinational companies happen to systematically use more IP that is not capitalized, profit shifting may be much lower than measured by the approach described above.

A further and more serious issue with existing profit-shifting estimates was recently pointed out by Blouin and Robinson (2019). They argue that a large part of the literature on profit shifting suffers from a fundamental statistical error regarding foreign profits of foreign subsidiaries, at least of US multinational

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[9] For surveys of the literature on tax avoidance by multinational companies, see Riedel (2014) and Beer et al. (2018). Riedel (2014) discusses different estimation methods used to estimate profit shifting and what the methods imply for the interpretation of the results. Beer et al. (2018) offer a meta-study of the empirical literature on tax avoidance by multinational firms. See, however, the critique of Blouin and Robinson (2019) with respect to Beer et al. (2018).

companies. This leads to double counting of foreign profits, in particular profits reported in tax havens. The reason is that foreign subsidiaries of US multinationals report profits of other subsidiaries further down the ownership chain as 'equity income'.[10] If these profits are counted as profits of multinational firms reported in tax havens for tax purposes, the amount of profit shifting is overestimated drastically. Blouin and Robinson (2019) propose a method to correct for this double counting and conclude that the share of profits multinational companies shift to tax havens is in the range of 4 to 15 percent, not close to 40 percent as some widely cited studies suggest.

While the difficulties in estimating the amount of profit shifting and tax revenue losses through tax avoidance are partly due to methodological problems, they also reflect a lack of reliable and internationally comparable data. Country-by-country reporting is a recent initiative that aims at collecting this type of data. Since 2016, multinational companies in most OECD countries are required to report income earned and profit taxes paid in all countries where they operate to the tax authorities of the country where they are headquartered. The availability of reliable data about the profits and tax payments of multinational companies is important.

Despite the unresolved debate about the overall magnitude of international profit shifting, it is fair to conclude that tax avoidance by multinational firms is significant. If the downward trend in corporate tax rates continues, and given that some companies do manage to reduce their effective corporate income tax burden to very low levels, then there is a danger that the basic functions of corporate income taxation described in Section 3.2 are called into question.

3.6.2 Tax Avoidance and the Digital Economy

The digital transformation of the economy is one of the most important structural changes of our time (see Chapter 2). It also affects the tax system. Companies with digital business models have a number of characteristics that make it particularly easy for them to avoid corporate income tax: they rely more on immaterial assets than other companies. They can also sell products and services in countries without a physical presence, in particular through the internet. Without a physical presence, current tax rules imply that these firms do not need to file for income taxation.

Of course, non-digital companies that export to other countries but do not have a physical presence there do not pay income tax in those countries either. And the general problem of tax avoidance is not restricted to the digital economy. The digitalization of

economic activity can make it easier to elude taxation, but does not change the basic structure of elusive schemes, and information technology can also make it easier for tax authorities to track and deter elusive schemes.

But digital companies have also attracted attention because of their spectacular profitability, either current or expected and reflected in share prices. These very high profits are often criticized as reflecting monopoly power or illegitimate use of customer data. Germany's Chancellor Angela Merkel, for example, thinks that the growing collection and use of consumer data accompanying digitalization poses fairness problems. She supports taxing 'data' in the interests of equity:

"In my opinion, the pricing of data, and especially consumer data, is one of the central equity problems of the future […] It represents a global threat of great unfairness […] we need to factor this into our taxation system."[11]

All of this suggests that taxing the profits of these companies is all the more important. These factors explain why proposals have been made in particular in Europe to introduce new tax rules for digital companies, including taxes on revenue rather than profit.[12] France has even introduced a digital services tax. These new taxes raise two issues. First, since they primarily target US digital firms, they are similar to tariffs and have therefore triggered retaliation from the US. Secondly and more fundamentally, tax avoidance is not restricted to companies with digital tax models.

In the meantime, the project of dealing with tax avoidance by introducing taxes specifically targeting digital companies has been given up in most countries. Instead, attention in the digital tax area focuses on reforming the concept of permanent establishment to include the notion of 'digital presence'.[13] While this is a medium- to long-term project, international efforts coordinated by the OECD to fight tax avoidance have focused on broader reforms, which would target tax avoidance not just by digital firms but by all companies.

3.7 REFORMS OF THE INTERNATIONAL CORPORATE TAX SYSTEM

What can be done to make sure that the international corporate tax system works well? Reforms should aim at reducing tax avoidance and undertaxation as well as double taxation. It is helpful to distinguish between fundamental and far-reaching reform proposals on the one hand, and the more piecemeal approaches that are currently on the international policy agenda on the other.

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[10] These are not the same as dividends, so that correcting reported profits for dividends does not solve the problem.

[11] Die Zeit, May 28, 2018, "Angela Merkel fordert Besteuerung von Daten." https://www.zeit.de/politik/deutschland/2018-05/steuerreform-angela-merkel-daten-eu.
[12] See European Commission (2017, 2018).
[13] See Becker et al. (2019).

BOX 3.1   IS THERE A TAX GAP BETWEEN THE DIGITAL ECONOMY AND THE TRADITIONAL ECONOMY?

The European Commission has analyzed the implications of digitalization for taxation policy, as well as for economic and fiscal policy as a whole. In its analysis, it emphasizes the importance of digitalization for economic development and indicates that the emergence of a digital internal market is to be seen as the precondition for the European economy tapping the economic potential of digitalization.[1]

At the same time, the Commission believes that there is an undesirable difference in tax treatment between companies with conventional business models and companies in the digital economy, which distorts competition in the latter's favor, leading to an unfair distribution of the tax burden. This difference in tax treatment not only arises through tax avoidance internationally, but also benefits digital companies that operate only at a national level. According to the numbers presented by the Commission, the latter have an effective average tax burden of just 8.5 percent, versus the 20.9 percent burden on companies with traditional business models.[2] The European Commission uses these figures to justify its demand to introduce a 'digital tax' on the revenue of digital companies.

Although this justification may seem plausible at first glance, it is not viable. This quickly becomes clear on closer inspection of the differential tax treatment criticized by the Commission. When comparing the tax burden borne by the digital economy with that of other sectors, the European Commission cites research conducted by the Centre for European Economic Research (Zentrum für Europäische Wirtschaftsforschung – ZEW, 2017). According to ZEW's research:

"Digital business models are taxed at an average rate of 10.2 percent, which is lower than the rate of 11.73 percent imposed on companies with traditional business models."

The crucial point here is the explanation of how these figures arise. These are not tax payments by digital firms that have been measured and compared to those made by other companies; they are calculations of the effective average tax rate (EATR) based on Devereux and Griffith (2003). This method considers a hypothetical investment project with a given pre-tax profit and structure of capital goods. A hypothetical tax burden on this project is then calculated. The result depends heavily on the assumptions made about the type of capital goods that are used in the project, because different taxation rules apply to different capital goods. In the digital economy, intangible assets (like internally developed software, for example) occur more frequently than

in conventional business models, where machinery and buildings play a more important role. Since most taxation systems feature longer depreciation periods for machinery and buildings than for self-produced intangible assets, which are normally subject to immediate write-off, the effective tax burden on conventional business models is greater. Moreover, these calculations assume that digital business models benefit more from tax breaks for research activities. However, in the ZEW (2017) study that is the source for the Commission figures, this situation is also clearly explained:

"This is due to a higher assumed share of non-mandatory capitalisation costs in the investment structure […] as well as more favourable write-off rules for digital capital goods and the application of tax incentives for research, development and innovation."

In other words, the European Commission criticizes here that national tax policy offers tax breaks for capital goods that largely benefit the digital economy. As a remedy, it proposes to introduce completely new taxes to offset the advantages created by this tax policy. Obviously, a far more effective approach would be to examine whether such unequal treatment in the tax system is justified and to abolish any unjustified tax breaks.

Different tax depreciation rules are basically justified if the economic lifetime of different economic goods differs. Differences in the effective tax burden arise from tax depreciation rules deviating in different ways from economic depreciation. Differences in the tax treatment of selfproduced assets have a similar effect. If there is an undesirable difference in tax treatment, this can be fixed by adjusting depreciation rules accordingly.

Differences in the tax burden that arise from more intensive research activity in the digital economy and the tax breaks for research related to it are expressly desirable. To offset such subsidies by increasing the tax burden on the digital economy is economically damaging. Tax breaks for research exist because the R&D activities of individual companies generate positive externalities or generate advantages that benefit other companies, without contributing to their costs. Without tax breaks, expenditure on research would be inefficiently low.

All in all, it is misguided to use a difference in tax treatment arising from different write-off conditions and tax breaks for research to justify the introduction of new taxes on digital business models.

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[1] European Commission (2017, p. 2).
[2] European Commission (2017, p. 6).

3.7.1 Fundamental Reforms

3.7.1.1 Formula Apportionment

Currently the international corporate tax system relies on the method of 'separate accounting', which means that every entity (subsidiary or permanent establishment) of a multinational company calculates its profits separately. Taxes are then assessed by the countries of residence of each corporate entity.[14]

Profits are supposed to be calculated on the basis of arm's length pricing, meaning that transactions between entities of the multinational firms are priced as transactions between unrelated firms. But transactions within multinational firms usually differ fundamentally from transactions between unrelated firms. Therefore, separate accounting creates opportunities for profit shifting.

An alternative approach to the taxation of multinational companies is formula apportionment. Under this system, the starting point for taxation is the consolidated, worldwide profit of multinational groups. This profit is then allocated to the countries where the multinational firm operates, on the basis of a formula that may include payroll, assets, or sales. Each country then applies its tax rate to its share of the firm's profit.

In theory, this may be sensible from a 'benefit tax' perspective (which, however, might call for the tax base to be different from profits). In practice, introducing worldwide formula apportionment would require considerable efforts for tax coordination: countries would have to agree on common rules for the determination of profits. Consolidation implies that losses made in one country would reduce taxable profits in all other countries. Countries would have to trust the administrative procedures of other countries because the worldwide profit of each multinational firm would have to be determined and audited by one tax administration. Formula apportionment would prevent various forms of profit shifting available today. For instance, interest payments on intra-group debt would no longer change the allocation of profits across countries. However, new opportunities for tax planning and tax avoidance would arise. For instance, multinational groups would be able to reduce their tax burden by buying or selling subsidiaries in a way that is not possible under separate accounting.

Some countries (including the United States and Germany) use formula apportionment for corporate taxation at the state or local level. In the European Union, formula allocation has been discussed for a long time in the framework of the CCCTB project (Common Consolidated Corporate Tax Base). However, even within the European Union it has proved

infeasible so far to find agreement on common rules for the determination of corporate profits. The debate is ongoing, but global formula apportionment is not a realistic option.

3.7.1.2 Destination-Based Cash Flow Taxation

The idea of destination-based corporate income taxation (Bond and Devereux, 2002; Devereux and De la Feria, 2014) is motivated primarily by the observation that corporate tax bases as they are defined today are very mobile, whereas the final consumers of most goods and services are not. Destination-based corporate taxation would mean that corporations pay taxes where their customers are, not where they produce the goods and services they sell. This would imply, among other things, that revenue from exports is fully exempt from domestic corporate taxation while the costs of imported goods are taxable. This 'border adjustment' would make the corporate income tax similar in some respects to the value-added tax. In fact, the combination of a cut in the corporate income and payroll taxes, financed with a higher value-added tax, would make the existing tax system equivalent to introducing a destination-based corporate income tax.

As explained by Auerbach (2017), a destination-based cash flow tax would remove a number of problems of the existing tax system:

1. Transactions with related foreign parties (other entities of the same multinational group) would play no role for the tax system. The border adjustment would offset domestic taxes on revenue from exports or deduction of expenses associated with cross-border transactions. There would be no incentive to manipulate transfer prices to shift profits to low-tax countries.
2. Corporate residence would no longer be a determinant of tax liability. This would eliminate the incentive to change residence to avoid taxes.
3. The border adjustment would have the effect of imposing a tax based on where products are sold, not on where they are produced. This removes incentives to relocate production plants to low-tax countries.

Despite these advantages, replacing the existing corporate tax with a destination-based system would be challenging. First, it would lead to a significant redistribution of taxing rights across countries. It is clear that the losers will not easily accept this. Second, many companies would find it difficult to adjust. For instance, importers would lose the right to deduct the cost of imported goods from their corporate income tax base. Prices may adjust to compensate them to some extent, but that will take time. Third, many countries will find it difficult to agree to a system that implies that domestic companies who use the local

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[14] In some cases, residence can largely be a matter of arbitrary choice, in particular for firms that do not directly engage in production and sales activities but manage portfolios of immaterial assets (like patents or brands), or for holding companies that administer controlling interests in other corporations.

infrastructure but produce mainly for export do not pay any tax in the origin country.

In the United States, the destination-based corporate tax was discussed seriously as an option for US tax reform in 2016 (see Tax Reform Task Force, 2016), but it was ultimately dismissed. This is not surprising, given that a sudden switch to this tax would raise the challenges just mentioned. But one should note that there is a trend in many countries towards higher value-added tax rates and lower corporate taxes. Combined with reductions in payroll taxes, these reforms may be interpreted as a gradual shift towards de facto destination-based cash flow taxation.

3.7.2 Current Reform Proposals on the International Policy Agenda

As a reaction to the problem of tax avoidance by multinational companies, the G20 countries have initiated a process of international tax policy coordination, which aims at reducing 'base erosion and profit shifting' (BEPS). In the framework of this project, 15 actions have been defined.[15] They include, for instance, tax challenges arising from digitalization (BEPS Action 1), guidelines to prevent 'Hybrid mismatch arrangements' (BEPS Action 2), denial of treaty benefits in cases that could otherwise result in double non-taxation (Action 6), changes to the definition of permanent establishments to ensure that the intended scope of the definition is not circumvented through artificial arrangements (Action 7), country-by-country reporting to improve the information available to tax authorities about where multinational companies report their profits (BEPS Action 13), or mutual agreement procedures to avoid double taxation and reduce uncertainty for taxpayers (BEPS Action 14). An increasing proportion of participating countries are adopting these measures.[16]

The current debate about the reform of international corporate taxation focuses on two particular projects. These are usually referred to as the OECD 'Pillar 1' and 'Pillar 2' proposals because, as in the case of BEPS, the forum where these reforms are developed is the OECD. The OECD (2019b) defines these two reform projects as follows:

"Pillar One addresses the allocation of taxing rights between jurisdictions and considers various proposals for new profit allocation and nexus rules;

Pillar Two (also referred to as the 'Global Anti-Base Erosion' or 'GloBE' proposal) calls for the "development of a co-ordinated set of rules to address ongoing risks from structures that allow MNEs to shift profit to jurisdictions where they are subject to no or very low taxation."[17]

The debate on both pillars is ongoing, but already fairly advanced.

3.7.2.1 Market Country Taxation (OECD Pillar 1)

This reform effectively intends to redistribute taxing rights to countries where multinational firms sell their products while their products are developed and produced in other countries. At first glance, this reform project seems related to the fundamental reform idea of introducing destination-based corporate taxation. But closer inspection shows that the two concepts are in fact very different. In the OECD proposal, there is no plan for any border adjustment. The allocation of taxing rights to the market countries will work differently.

The basic idea is as follows: The profits of multinational firms will be split into a component called the 'routine profit' and a second component called the 'residual profit'. The routine profit would be calculated as a 'normal' return on the firm's assets. Profits above this threshold would be classified as residual profits. The reallocation of taxing rights will primarily apply to the residual profit. A fraction of the residual profits will be allocated to the market countries where the companies sell their products. This fraction will be determined through a formula that could include, for instance, sales to final consumers. The market countries may claim additional profit shares when they host 'baseline marketing and distribution functions'.

The starting point for this operation is the consolidated profit of the multinational firm. In principle, it would be possible to do this using the global profits of multinational firms. But since many of these firms have very different operations, the current plans are to do the consolidation separately for different business lines and regions.

Another key aspect of Pillar 1 is a binding mechanism to deal with cases where disputes between countries arise regarding the application of the proposal.

From an economic perspective, moving taxing rights to market countries has pros and cons. Consumers are less mobile than factories and much less mobile than immaterial assets. Therefore, moving taxing rights to market countries reduces the pressures of tax competition, and it makes many tax avoidance strategies more difficult. Market country taxation also addresses the perception that digital companies do not pay enough tax. At the same time, countries may want to tax companies where they produce because that is where they benefit from public services.

Ultimately, the decision to move taxing rights to market countries is a political decision reflecting the increasing economic and political weight of countries like China, India, or Brazil, where companies from OECD countries sell a growing part of their products and services. Given this situation, the question arises whether there are simpler ways to extend market country taxing rights. Splitting profits into routine

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[15] See OECD (2020), International collaboration to end tax avoidance. http://www.oecd.org/tax/beps/.
[16] The current developments in the adoption of these measures is documented in OECD (2019a).
[17] OECD (2019b, p. 3).

and residual profits, and doing so separately for business lines and regions, leads to a high degree of additional complexity. One option for simplification that should be considered would be to use overall rather than residual profits as a basis for profit allocation. Of course, complexity has the advantage of offering many margins for adjustment, which may help to generate political consensus. But complexity also has considerable costs. In particular, it tends to create new opportunities for tax planning.

3.7.2.2 'Unilateral Minimum Taxation' With Source-Based Enforcement (OECD Pillar 2)

This proposal aims at ensuring that all corporate profits are taxed at least at a minimum tax rate. What that minimum tax rate is – 10 percent, 15 percent, or any other number – remains to be defined. The most important point of the reform is that the introduction of this minimum tax does not depend on all countries agreeing to implement it. Instead, the proposal aims at allowing a subgroup of presumably high-tax countries to effectively enforce the minimum tax. To achieve this, two measures will be implemented.

The first is often referred to as an income inclusion rule. Consider a simple example: a multinational company is headquartered in country A. It has a subsidiary in country B. If the profits of the subsidiary in B are taxed below the minimum rate, country A will tax these profits. Country A would levy a tax on foreign profits that could be equal to the minimum tax, with a tax credit granted for taxes paid in B.

The second measure is the introduction of an undertaxed payments rule. This implies the following: If the headquarters residing in country A makes a payment for some input to its subsidiary or any other recipient in B, this payment will be fully deductible in A if and only if the recipient in B is taxed at least at the minimum rate.

A key challenge for this reform is that tax administrations will have to determine for each entity of each multinational company, and even for each border-crossing payment, whether the minimum tax criterion applies. This requires a reliable information basis. A pragmatic way of dealing with the administrative challenges this poses would be to define a group of countries that are trusted for complying with the minimum tax requirements. If the leading OECD countries and all EU countries were part of this group, a significant part of all transactions and entities would be covered.

3.7.2.3 The Role of Transparency and Data: Country-by-Country Reporting

The taxation of multinational companies is complex, as are the proposals to change it. In the public debate, a key challenge is that reliable information regarding the contribution of multinational firms to tax revenue and the magnitude of tax avoidance is not easily available. This is why civil society organizations as well as politicians have called for measures to make more information available about where multinational companies operate, where they report their profits, and where they pay taxes. This has led to the idea of country-by-country reporting – that is, asking multinationals to submit regular reports about how their worldwide business activities (employees, assets, sales, profits) and their corporate income tax payments are distributed across countries.

This has been taken up by the OECD tax coordination efforts under BEPS Action 13. It states that all large multinational enterprises should prepare a country-by-country (CbC) report with aggregate data on the global distribution of income, profit, taxes paid, and economic activity across tax jurisdictions in which it operates.

A key question is who gets access to these CbC reports. BEPS Action 13 states that the reports should be shared with tax administrations in these jurisdictions and used to deal with important transfer pricing problems as well as to flag tax avoidance risks. Since 2016, many countries have put this into practice. Some policymakers and civil society organizations want to go one step further and have called for public country-by-country reporting – that is, public access to these reports. On April 12, 2016, the Commission presented a proposal for public country-by-country reporting for multinational firms with a total consolidated revenue of EUR 750 million or more.[18]

An important challenge for country-by-country reporting is that precise common standards are needed to make sure that the information provided is reliable and comparable across countries. This is not trivial, as different countries have different accounting standards. The question of whether or not the reports should be publicly available is a matter of the trade-off between the desire for transparency and the right to privacy and protection of sensitive business information. If the reports are made available, this should be done internationally and in a coordinated way. Publishing them only for multinationals headquartered in the EU would give these companies a competitive disadvantage and create incentives for relocation.

But the country-by-country reporting data, once standards have been developed, should be used to better inform the policy debate about problems and progress in making sure that multinational companies pay their share of tax. This could be achieved, for instance, if the European Union required its member states to provide the country by country data they collect and published a yearly report with a detailed analysis – but one that does not reveal information about individual firms – about where multinationals based in the European Union operate and where

[18] The proposal is an amendment to the Accounting Directive 2013/34/EU.

they pay their tax. This report could contribute significantly to improving the informational basis of political and public debates about international tax policy.

3.8 CONCLUSION AND POLICY IMPLICATIONS

The analysis in this chapter has shown that the international corporate tax system needs to be reformed. It creates considerable incentives to engage in tax planning and tax avoidance. This distorts competition and leads to an unfair distribution of the tax burden. Many countries react to these problems by introducing unilateral policies to counter tax avoidance. These may lead to double taxation as well as create new tax avoidance opportunities. In addition, these policies may lead to conflicts between countries and thus undermine economic integration. Given this situation, our conclusions for tax policy are as follows:

1. Fairness is an important property of tax systems. Although views about fairness differ widely, a situation where different companies are taxed very differently and some companies are able to avoid part of the taxes on their profits is clearly unfair. There is thus a need for a policy response.
2. A lack of clarity exists in respect of the magnitude of profit shifting and tax avoidance by multinational companies. Data collected in the framework of country-by-country reporting has the potential to improve the information basis of the discussion about tax avoidance. However, currently this data suffers from a lack of clarity and standardization regarding what exactly is reported. Better standardization is needed to make sure that this data is appropriate and internationally comparable.
3. Plans in the European Union to make this data public for EU companies are harmful. In its current state, the data would give rise to misinterpretations. In the absence of global coordination, the publication of this data would put European companies at a competitive disadvantage. Rather than making this data public, it should be made available for economic analysis by researchers, safeguarding the anonymity of individual companies. We propose that the European Union publish a regular report on the basis of country-by-country data, combined with other available micro and macro data, to highlight the extent to which multinational companies pay taxes in European and other countries.
4. We think that the current proposals to reallocate taxing rights to the market countries are unnecessarily complex. This is primarily a result of splitting the profits into routine and residual profits and using only residual profits for the allocation of taxing rights to market countries. While this may protect the fiscal interests of the 'headquarter countries', this complexity runs the risk of gene-

rating new tax avoidance opportunities and new conflicts between countries about taxing rights.
5. The proposal to introduce a minimum tax on global profits by combining an income inclusion rule with an undertaxed payments rule can help to rein in tax avoidance using low-tax countries. Clarity is needed in the calculation of the effective tax burden on foreign entities or transaction partners. To limit the administrative cost of minimum taxation, a certification at the country level should be introduced that exempts transactions with countries where it is recognized that they comply with the minimum tax standard.

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Taxing Mobile Jobs and People

4.1 INTRODUCTION

Labor markets are in a flux with employment prospects differing across types of jobs and persons. Wage dispersion has increased, and unemployment rates differ across groups. The process creates both winners and losers: top incomes have been growing rapidly, while incomes at the bottom have been growing much less and in some cases even declining. The general perception is that labor markets have become riskier due to structural changes and new forms of jobs. These trends are widely considered a threat to social cohesion, and it is a pertinent question why gains from economic progress are not distributed more fairly. Current policies have failed to ensure that the winners compensate the losers. The main channel through which such compensation can take place is via tax-financed welfare arrangements. However, the very same drivers affecting labor markets also affect the scope for taxation. A difficult policy dilemma arises when the need for social protection increases at the same time as it becomes more difficult and costly to tax-finance such arrangements.

Structural changes in labor markets have numerous causes, in particular globalization and new technologies, but also policy changes. It is difficult, but also less important, to separate the specific sources of change; the net outcome is increasing mobility of jobs and people, affecting both the type and level of risks faced by workers.

Globalization – in its broad meaning of a process driven by both technological changes and policy decisions – has increased the mobility of production and factors of production. In a labor market context, trade and relocation of production may be interpreted as job mobility. If production is relocated to another country or importers crowd out domestic producers, domestic jobs are transformed into foreign jobs, and vice versa when domestic firms increase their market share at home or abroad. On the one hand, this mechanism is the source of gains from trade, but on the other hand, structural changes follow and create new options for some and destroy possibilities for others. At the aggregate level, the implication is that production and employment become more sensitive to domestic cost conditions, including taxes (the 'elasticity' argument). As a consequence, tax-financing may become costlier (more distortionary), putting tax-financed welfare arrangements under pressure.

The mobility of factors of production also involves labor mobility – a key element of the European Single Market. Such mobility allows factors of production – including workers – to relocate to areas that offer better options. This option is mainly available to the better-educated part of the workforce, but it also affects the scope for taxation. Welfare systems come under pressure if those contributing most to tax-financed arrangements – high-income groups – migrate to low-tax countries, while those standing to benefit the most from social protection migrate to high-tax countries. Moreover – as discussed in Chapter 2 – digital mobility loosens the tie between service provision and location, making geographical relocation of production activities less important. These developments also raise questions about tax enforcement and avoidance. Mobility of production and factors of production thus challenges the financial viability of tax-financed welfare arrangements. The political-economy implications of various types of mobility often exceed actual mobility flows, since the potential exit option increases the political power of particular groups of winners, making it more difficult to implement redistributive policies.

Individual risks in the labor market may arise due to the abovementioned mechanisms. New types of jobs – the so-called gig economy – illustrate how the traditional employer-employee link is disrupted, with the worker assuming the role of both boss and worker (self-employed). While the traditional employer-employee relation typically involves some risk diversification, the new forms of jobs shift more risk to the worker. This may be propagated by a higher speed of adjustment and level of risk than seen in the past. However, these developments also allow for more flexibility and possibilities, e.g., self-employment.

In all European countries, welfare state arrangements play an important role, but the extent and structure are different in each. A significant share of resources is allocated and distributed via the public sector, and thus financed by various types of taxes (across the EU28 countries, total tax revenue constitutes about 45 percent of GDP). Taxation thus comes to the fore in this discussion due to its importance for incentives, distribution, and financing of public activities.

Much public debate takes its outset in the premise that taxes harm competitiveness, leading to the corollary that globalization inevitably puts a downward pressure on taxes and hence the possibilities of financing collective welfare arrangements. This view is too simple. The effects of taxation cannot be seen independently of what is financed by taxes. Taxes

financing, say, education or day care have different effects on economic performance (increasing labor supply) than taxes financing, say, early retirement (reducing labor supply). Evidence from cross-country comparisons shows that economic performance (e.g., per capita income) is not straightforwardly related to measures of the size of welfare arrangements (public sector).[1] A more detailed analysis of the specific taxes and what they are financing is required to assess the effects of taxes on economic performance.

Taxes finance, among other things, the social safety net. A key design element in the social safety net is the link between entitlements and contributions (tax payments) at the individual level. In the so-called universal welfare model, entitlements are the same for all, independent of individual contributions (sometimes denoted the *Beveridgean model*). This setting corresponds to the classic textbook case, where taxes distort individual incentives because the individual does not see any relation between tax payments and the services or insurance arrangements provided (the *common pool problem*). Obviously, at the aggregate level there is an explicit link, since taxes finance the expenditures following from the social arrangements.

An alternative model ties entitlements to contributions (the *Bismarckian model*). This can be in a zero-one sense where, for instance, the employed have different rights than the non-employed, or a more sophisticated arrangement, with entitlements dependent on income, as is the case for pension benefits. In the limit where entitlements depend solely on individual contributions, distortions are smaller,[2] but there is no collective risk sharing/distribution either.

The two principles of social insurance design differ along many dimensions, but most important in the present context are the implications for insurance and incentive structures. The universal scheme offers the most comprehensive insurance (redistribution) by including the entire population, ensuring the same entitlements for all. However, the delinking of entitlements and contributions distorts individual incentives, unlike a scheme linking contributions and entitlement. That said, no European country pursues any of these approaches in pure form, but the relative importance of these design elements differs. Welfare arrangements in the Nordic countries tend to be universal in nature, while continental and some southern European countries have more contribution-based systems (Esping-Andersen, 1990).

How entitlements and contributions are linked also have important implications for the mobility of workers/people. A crucial aspect is whether the entitlement is implicit or explicit. In a private-contribution-based scheme, i.e., a contributory pension scheme, the account is individual, and exportability is not an issue. Implicit arrangements do not have such individualized accounts, and exportability is a trickier issue. If, for instance, an individual considers changing labor supply, the after-tax wage is relevant, while the decision is not perceived to affect the provision of welfare services or the social safety net; hence the distortionary effects of taxes. However, a link between entitlements and contributions arises in the context of migration. At the individual level, a migration decision is not a marginal decision. Emigration implies not only an escape from taxation (if moving to a low-tax country) but also from the tax-financed welfare package; the opposite applies for immigrants. Hence, the individual migration decision depends on the entire package: taxes and what they are financing. Importantly, the net benefit/costs of welfare arrangements in general differ across the population, implying that migration incentives are not the same for all. The complicated tax and entitlement implications of migration also point to a possible impediment to labor mobility; welfare arrangements (on both the tax and expenditure side) are very different across countries, creating a non-trivial information problem and thus mobility costs.

This chapter illustrates recent developments in income inequality and tax reforms, then discusses taxation of labor income and the design of the social safety net against the background of increasing mobility of jobs and people. We focus on ways to make tax and welfare arrangements fairer, in the sense of providing insurance to protect against risks and costs of structural adjustments, adopting both a national perspective, given the quite different designs of welfare arrangements across European countries, and a European perspective. Section 4.2. starts out with a brief overview of developments in income inequality and the underlying drivers, and recent trends in the taxation of earned incomes. The role of taxes for mobility of jobs is discussed in Section 4.3., and for mobility of people/workers in Section 4.4. The policy options in designing tax systems and the social safety net when the mobility of both jobs and workers is increasing are first discussed from a national perspective, and then the need for a common social policy in Europe is discussed. Section 4.6 summarizes and provides policy recommendations.

4.2 INEQUALITY, REDISTRIBUTION, AND LABOR INCOME TAXATION

To set the scene, we start by providing a brief account of recent developments in income inequality and taxation.

### 4.2.1 Income Inequality and Redistribution

Developments in inequality in disposable incomes across OECD countries in Figure 4.1 are illustrated

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[1] The correlation between per capita income (PPP USD) and the tax share (total tax revenue as a share of GDP) is positive (in 2017: 0.25).
[2] Mandated contributions to e.g., a funded, individualized pension system may have distortionary effects if, for example, agents are myopic wanting to front-load consumption rather than saving for old age.

Figure 4.1

Inequality in Disposable Incomes in 2000 and 2016

Gini Index of disposable incomes in 2016
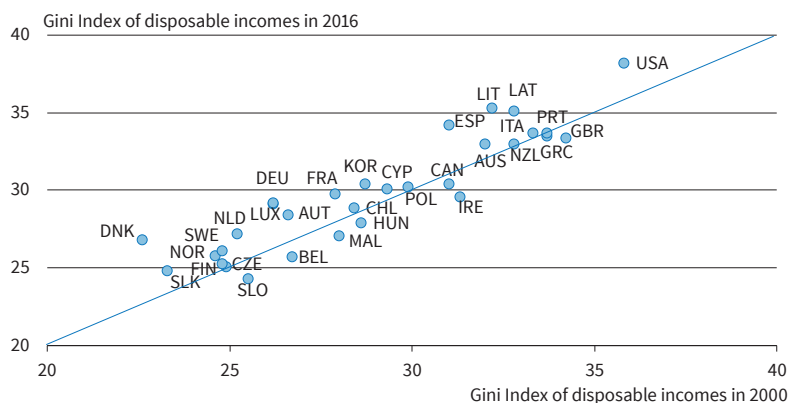
Note: Gini coefficient for disposable income equivalized incomes taking into account the household size and structure.
Data for Switzerland applies to 2015.
Source: Solt (2019).

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Some countries have lower inequality in disposable income due to both lower inequality in market incomes and more redistribution, but there are also countries where inequality in disposable income is below the mean despite higher market income inequality due to redistribution. Conversely, many countries with inequality above the mean both have higher inequality in market incomes and redistribute less. It is also apparent from the figure that the extent of redistribution is not straightforwardly linked to differences in market income inequality.[5] This suggests that there are a number of country-specific factors explaining how the extent of redistribution is determined besides the role of market income inequality.

by a cross-plot of the Gini coefficient in 2000 and 2016. Generally, income inequality increased over this period; more countries experienced an increase (countries below the 45-degree line) than a decrease (countries above the line). However, the large variation in both the levels of income inequality and the changes in income inequality is noteworthy.

Inequality in disposable incomes (incomes after taxes and transfers) depends on both the underlying inequality in market incomes and the extent of redistribution.[3] The extent of redistribution is a complicated issue depending on the specific design of the taxation scheme and the social safety net. It is beyond the scope of this chapter to detail country-specific structures and changes herein. To highlight some general trends, the following uses summary metrics[4] allowing for cross-country comparisons. Figure 4.2 breaks down the difference in disposable income inequality from the average disposable income inequality into the part coming from differences in market income inequality and to redistribution. This is done here for OECD countries.

Changes in disposable income inequality over recent years (from 2000 to 2016) can similarly be split into the part coming from changes in market income inequality and the part coming from changed redistribution (see Figure 4.3). With a few exceptions, country changes fall in two groups. Some countries – positioned in the north-western quadrant – experienced both an increase in market income inequality and a decrease in redistribution, and therefore disposable income inequality increased. Another group of countries – positioned in the south-western quadrant – had increasing market income inequality but more redistribution, leaving disposable income inequality to either decrease or increase. Less redistribution has thus in some countries exacerbated increases in market income inequality, while it tended to mute

[5] The correlation between market income inequality and the redistribution factor is negative (−0.38).

[3] Income inequality depends critically on demographic factors (age structure of the population) and household structures (e.g., the share of single-person households). About 25 percent of the increase in the Gini coefficient between 1987 and 2013 for OECD countries can be explained by changes in household structures and the age composition of the population; see OECD (2018).

[4] Define the Gini measured over market income as G_M and over disposable income as G_D. The redistribution coefficient is defined as $R \equiv G_D/G_M$, and gives the reduction in inequality due to taxes and transfers. A relative measure is better than the absolute difference between the Gini for market incomes and disposable income, since the latter is not independent of the level of inequality. That is, the absolute difference $(G_M - G_D)$ can be small either because of much redistribution or because of a high level of inequality in market incomes.

Figure 4.2

Decomposition of Differences in Disposable Income Inequality
The role of market income inequality and redistribution
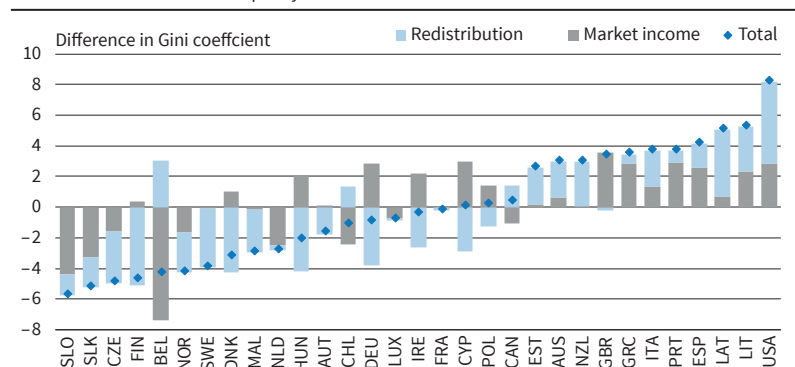
Note: Denote the Gini-coefficient measured over market income by G_M and over disposable income by G_D. The redistribution coefficient is defined as $R \equiv G_D/G_M$. Define the respective average value by an upper bar, hence $\bar{R} \equiv \bar{G}_D/\bar{G}_M$. The decomposition uses that $G_D - \bar{G}_D = \bar{R}(G_M - \bar{G}_M) + \bar{G}_M(R - \bar{R})$. Hence, the first term on the RHS is the part attributed to differences in market income inequality and the second term to differences in redistribution.
Source: Solt (2019); EEAG calculations.

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Figure 4.3

Changes in Inequality in Market Incomes and Redistribution Between 2000 and 2016
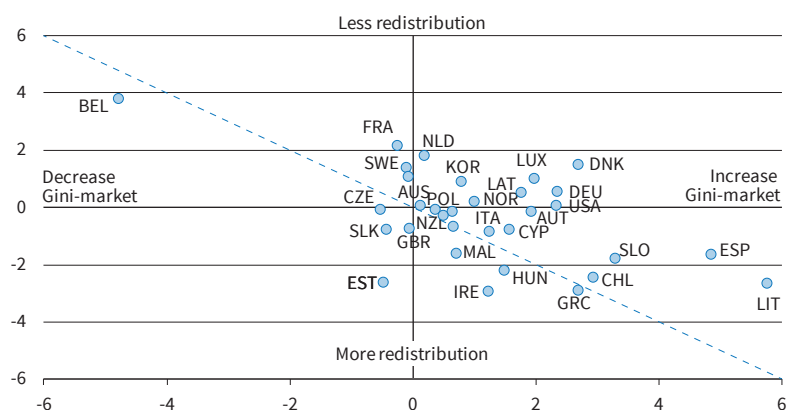
Note: Data as in Figure 4.1 and Figure 4.2 and decompositions of the same type. Countries above (below) the dotted line have experienced an increase (decrease) in disposable income inequality.
Source: Solt (2019) and EEAG calculations.

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the overall trend in income inequality on the basis of the Gini coefficient. Using other metrics and focusing on either the bottom or the top of the income distribution may give a different picture.

4.2.2 Labor Income Taxation

The taxation system is a key part of redistributive policies, in that the larger share of tax revenue comes from the direct and indirect taxation of earned income. The share of tax revenue from capital income taxation, corporate taxation, taxation of property, etc. amounts on average to 16 percent of total tax revenue for OECD countries (see discussion in Chapter 3). The taxation of labor income, either when it is earned or when it is spent, is thus the major source of revenue for public sector activities.

the effects of increased market income inequality in others.

Policies have not generally become less redistributive over the considered sample period. As is well known, the extent of redistribution is much larger in European countries than in the United States, and among European countries there are also large variations. Sweden and France are examples of countries with a downward trend in redistribution over the sample period. Note that a decline in measured redistribution may arise either from a shift in the relative importance of different types of income (e.g., from labor to capital income, which on average is less taxed and more concentrated on high-income groups) or reforms of tax and transfer schemes.

Generally, market income inequality has increased over the sample period, which may be explained in part by common trends, including globalization and new technologies, generally perceived to increase income inequality. Market income is made up of both labor and capital income, and changes in both components may contribute to increasing inequality. Wage income may be more unequally distributed due to increasing wage dispersion, unemployment, etc. Capital income has increased in importance in many countries, and since such incomes tend to be more unequally distributed, this is a key factor behind increasing market income inequality, see e.g., OECD (2018). It is noteworthy that changes in market income inequality differ significantly across countries. This shows that country-specific factors matter and that common trends can affect countries differently depending on their institutional structure, industry structure, and policy responses.

In interpreting these findings, note that changes in market income inequality and the redistribution metric may be related. Policy changes affecting redistribution may also affect market income inequality and vice versa. Finally, the above has considered only

The structure of taxation of earned income differs across countries, with different burdens on income taxation, social contributions, and indirect taxation (VAT and excise taxes). From a labor market perspective, what matters is the total wedge between the compensation for work received by workers and the total costs to employers caused by taxation. The cost of labor to firms is the wage including social contributions, while for the worker the wage net of direct taxes, social contributions, and indirect taxes is the relevant measure of the compensation for work. The total tax wedge is thus the sum of social contributions paid by employers and employees, direct taxes, and indirect taxes. The composition of the single parts does not matter; the sum does.[6]

The key channels through which taxation affects labor markets are via the intensive (how much to work) and the extensive (looking for a job) margin. Different tax concepts are relevant for these margins. For the intensive margin, marginal tax rates are relevant. The development in marginal tax rates for OECD countries is shown in Figure 4.4. The figure is illustrative only, since there are many detailed differences in taxation systems across countries (e.g., the definition of taxable income); these are not captured by the simple metric used here. The first observation is the large differences in marginal tax rates between countries. The level of marginal tax rates is closely correlated with the overall size of the public sector

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[6] This is a well-known result holding in both competitive and non-competitive labor markets, see Cahuc and Zylberberg (2004). The split in tax sources matters if the tax bases are not identical. An indirect tax will thus possibly tax non-registered incomes and have a larger tax base than earned income; i.e., a given tax revenue requires a lower indirect tax rate than direct tax rate.

Figure 4.4

Marginal Tax Rates in OECD Countries in 2000 and 2018

2018, in %
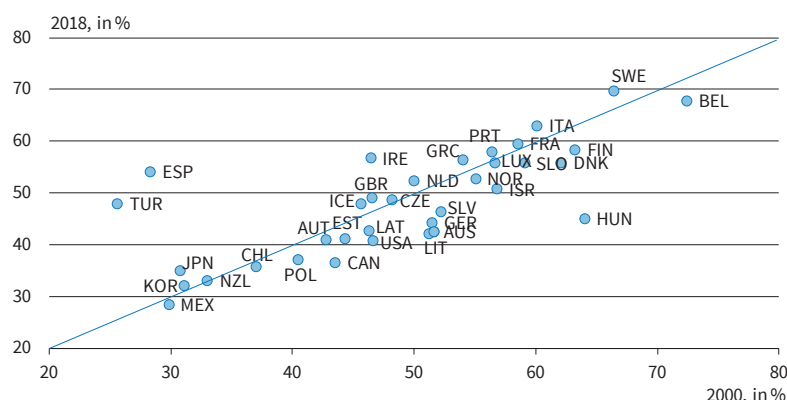
Note: Marginal tax wedge (in % of labor costs) for a single at 167% of average earnings with no children. The tax wedge does not include consumption taxes.
Source: OECD Tax Database.

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measured by the share of total tax revenue in GDP.[7] Second, more countries lowered (countries below the line) than increased (countries above the line) marginal tax rates between 2000 and 2018. There is thus a weak trend towards lower marginal tax rates. This reflects tax reforms lowering marginal tax rates and broadening tax bases by, say, reducing tax deductions.

Economic incentives along the extensive margin – that is, when going from being out of a job to employment – depend both on the taxes paid and on the transfers received when out of job. So-called effective tax rates measure the combined effect on disposable income of taxation and transfers when shifting from unemployment to employment. Such effective tax rates are shown in Figure 4.5. Country differences are also large here, and countries with high (low) marginal taxes (Figure 4.4) do not necessarily have high (low) effective tax rates (Figure 4.5). However, employment rates are only moderately correlated with effective

[7] The correlation is 0.71 in 2017.

tax rates,[8] stressing that work incentives are not determined solely by effective tax rates. Second, over time there is a tendency towards lower effective tax rates; more countries have lowered (countries below the line) than increased (countries above the line) marginal effective tax rates. However, the changes are generally small, and there is no landslide decline. Note that the effective tax rates are also important for income insurance in the event of job losses. If the economic gain from finding a job is small (low economic incentive), it follows that the economic consequences of losing the job are small (high insurance/ social protection) and vice versa.

### 4.2.3 Has Taxation Become Less Progressive?

In recent policy debates, there has been particular focus on whether taxation schemes have become less progressive in recent years. The top income tax rate is a highly disputed parameter and sometimes becomes a symbol for redistributive policy agendas. One example is the 75 percent tax rate on incomes above EUR 1 million announced by President Francois Hollande of France in 2012 and introduced in the years 2013 and 2014 before being abolished in 2015.

There has been an important change in the progressivity of personal income taxes. In most countries, top statutory income tax rates have been reduced significantly over the last decades. But top income tax rates do not reveal much about the true progressivity of the tax system because the outcome depends on the income levels at which these and other tax rates apply and on the way in which taxable income is calculated. Tax systems with very high tax rates often offer exemptions and avoidance opportunities, and some reductions in the tax rate have been accompanied by a broadening of the tax bases. Measuring progressivity is also tricky because the results depend heavily on which types of taxpayers are considered. Comparing the top 1 percent of taxpayers to taxpayers with average incomes may lead to results that differ considerably

Figure 4.5

Extensive Margin: Effective Tax Rate on Entering Employment in 2001 and 2018

2018, in %
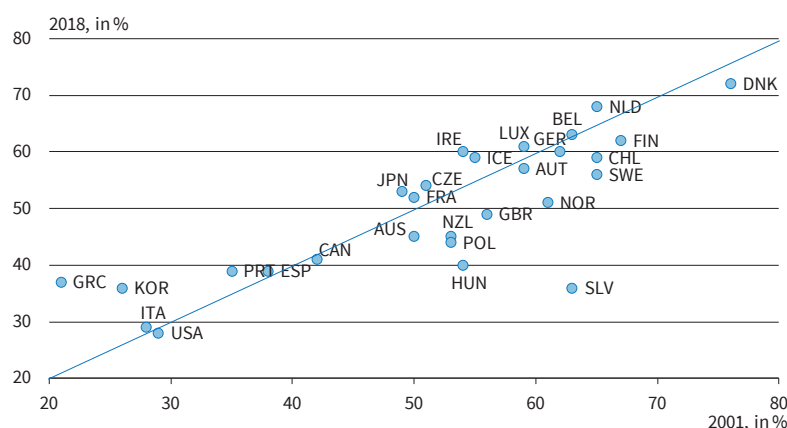
Note: Entering employment at the average wage after two months of unemployment for a single person without children. Effective tax rate includes houseing benefits and temporary in-work benefits.
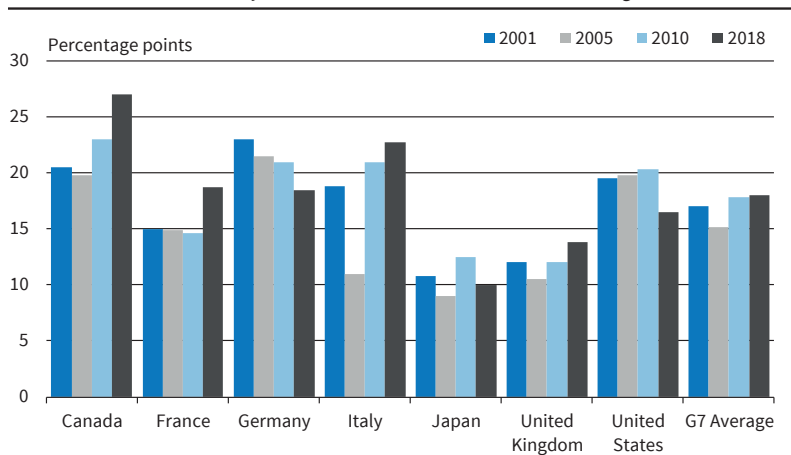Source: OECD Tax Database.

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[8] For 27 OECD countries the correlation is 0.5 in 2018.

Figure 4.6

Tax Rate Difference Between High and Average Income Households
Difference in tax rates for family with two children at 400% and 100% of average incomes

Percentage points

■ 2001 ■ 2005 ■ 2010 ■ 2018

Source: OECD Tax-Benefit Web Calculator.

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from those of a comparison of the top 10 percent with average taxpayers.

Tax progressivity is illustrated in Figure 4.6 for G7 countries, showing the difference in the average tax rate between a household with 400 percent of the country's average income and an average income household. Data is available only for the period since 2001. For all countries, there is a progressive element, but it differs considerably across countries; however, the G7 average numbers show that there is no clear trend. It should be noted that the most significant changes in income tax systems happened before 2001. The most important example is the US tax reform of 1986, which reduced the top federal income tax rate from 50 percent to 38.5 percent. Various European countries have also reduced their top income tax rates. Germany, for instance, had a top income tax rate of 56 percent in 1999 (including a temporary surcharge introduced to finance reunification, which exists until today). Today the top tax rate is 47.5 percent.

A recent paper by Egger et al. (2019) considers tax progression for the period 1980–2007 for a sample of 14 EU countries and the G7 countries (see Figure 4.7). Progressivity here is measured as the difference between the tax rate paid by a household in the top 1 percent and that paid by a middle-income household. In 1980, the tax system was more progressive in the 14 EU countries, but for both groups of countries there was declining progressivity in the 1980s, and it is now similar for both. This development is both due to rising social insurance contributions paid by middle-income households and to declining income taxes on top earners.

How should the reduction of income tax progression be seen from a policy perspective? The theory of optimal income taxation focuses on three factors to determine the optimal degree of tax progressivity: the social welfare function, the distribution of taxpayers over income classes, and the elasticity of taxable income. The social welfare function is essentially a value judgement about the desirability of income redistribution, which economists usually take as given. Much economic research focuses on the elasticity of taxable income, which in turn results from different behavioral responses: see also Chapter 3. One is changes in 'real' economic behavior (like labor supply, savings and investment, risk taking, or migration to another jurisdiction); others work through incentives to engage in tax planning and tax avoidance, or illegal tax evasion. How tax bases are affected by the mobility of jobs and people is discussed below.

Combined with information on the distribution of income, the elasticity of taxable income implies a link between tax rates and revenues, and makes it possible to derive the optimal income tax progression for given weights of taxpayer groups in the social welfare function. Empirical studies on this elasticity have produced a wide range of results. Two conclusions can be drawn from this research. The first is that the elasticity of taxable income is not a 'structural parameter'. Instead it depends on the institutional environment

Figure 4.7

Income Tax Progression in the EU14, 1980–2007
Labor income tax rates for top 1 percent and median workers

%

—— Median income tax rate   —— Top 1% income tax rate

Note: Included countries are Austria, Belgium, Germany, France, Italy, Denmark, Spain, Finland, Ireland, Greece, the Netherlands, Portugal, Sweden and the United Kingdom.
Source: Egger et al. (2019) and EEAG calculations.

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and prevailing economic conditions. For instance, if taxes are collected at source like wage taxes, the elasticity tends to be smaller because there is less room for avoidance and evasion. Second, the elasticity tends to be higher for high-income taxpayers, in particular the top 1 percent (see discussion below). This may reflect that high-income taxpayers often receive a larger share of their income from freelancing work, entrepreneurial activity, or capital. These activities are likely to be more mobile and they offer more opportunities for tax planning to avoid or even evade taxes. Finally, the elasticity of various tax bases is affected by the scope for tax shifting. A growing difference between personal and corporate income tax rates (see Chapter 3) creates incentives to shift income into the corporate sector, reducing tax progressivity.[9] In addition, many tax systems offer a preferential income tax treatment for capital gains, and they allow certain types of labor income, in particular income from entrepreneurial activity, to be treated as capital gains. There is evidence at least for the United States that the share of capital gains in overall income increases with income, reaching more than 45 percent for taxpayers with gross yearly incomes above USD 10 million (Scheuer and Slemrod, 2019).[10] Lower income taxes on these capital gains make the tax system less progressive. These explanations are consistent with the findings reported in Figure 4.7.[11]

However, there are other explanations for the decline in income tax progression.[12] First, population ageing may play a role. If a progressive tax system is seen as an insurance mechanism, young people may be more supportive of tax progression because they face more uncertainty about their lifetime incomes than older people. Second, fragmentation due to international migration or a clearer divide between low- and high-income groups may have reduced support for redistributive policies.[13] Third, views about the importance of incentive effects of taxation may have changed. In the 1980s, politicians like Ronald Reagan or Margaret Thatcher were successful because voters, after the economic instability and the decline of growth experienced in the 1970s, were increasingly skeptical about the idea that governments should regulate the economy or redistribute income. Ideas like the Laffer Curve effect, which is the hope that tax rate cuts will lead to more tax revenue because of

improved incentives, were popular.[14] More generally, there was a shift in focus towards structural issues, including the incentive structure for human capital accumulation and work.

Whether or not countries want to return to more progressive tax systems ultimately depends on political value judgements. The higher observed elasticities of the tax base for high-income taxpayers suggest, however, that returning to higher tax rates on high-income earners may not generate much more tax revenue. At the same time, more attention should be devoted to the definition of the tax base and tax exemptions, in particular for capital gains.

4.3 MOBILITY OF JOBS AND LABOR INCOME TAXATION

Globalization increases the mobility of goods and jobs. Both political factors, including reductions in or removals of tariffs, non-tariff trade barriers, regulations, etc., and technological factors, including reduced transport costs and improved information technologies, have significantly reduced the costs of moving goods and services across borders. Increased mobility implies tougher competition, and production of both final and intermediate goods becomes more footloose when production can move more easily to destinations with lower production costs while still serving the same customers. Simultaneously, a larger share of economic activity is exposed to foreign competition. Consequently, production and therefore labor demand and jobs become more sensitive to local cost conditions compared to that of competitors. Since wages are an important cost component, these effects imply that employment becomes more sensitive to wages (a flatter labor demand curve[15]), which in turn implies that tax becomes more distortionary. Relatively high wages (seen relative to productivity) and high tax wedges may harm employment more, the more globalized the economy. Hence, the costs of tax-financed welfare arrangements increase via higher distortions at the same time as the revenue obtained from the tax is reduced.

In general equilibrium, this reasoning is less straightforward. Although labor income taxes may increase wages, the industry and trade structures adjust too. Higher wages shift production towards activities for which the country has comparative advantages (high productivity); as a result, overall productivity increases and the terms of trade change

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[9] See Fuest and Weichenreider (2002).

[10] There may well be other reasons for lower taxes on capital gains than preventing income shifting to the corporate sphere. They may just reflect political lobbying for targeted tax reductions, which are technical enough not to be noticed by the general public.

[11] Swank and Steinmo (2002) present earlier evidence questioning that globalization is a dominating factor for tax policy. Adam and Kammas (2007) find that social insurance contributions are higher in more open economies and conclude that globalization increases demand for insurance, as in Rodrik (1998).

[12] One should note that there are also forces that should push towards more, not less, tax progression. For instance, the median voter theorem would predict that growing income inequality should lead to more, not less, tax progression.

[13] This idea is developed by Collier (2018).

[14] Ronald Reagan's comment on the idea that lowering high-income tax rates would produce higher revenues was as follows: "A few economists call this principle supply-side economics. I just call it common sense," https://www.ontheissues.org/Celeb/Ronald_Reagan_Budget_+_Economy.htm.

[15] Globalization does not in general increase the wage sensitivity of labor demand. At higher levels of integration, firms may outsource larger parts of their production to foreign (low-wage/low-cost) countries. This, in turn, implies that firms' costs and thus production and thereby domestic employment become less sensitive to local wages, as the cost share of local labor has been reduced (see, e.g., Skaksen and Sørensen, 2001).

to the advantage of the home country; see, e.g., Obstfeld and Rogoff (1996). This in turn affects tax bases and the ability to finance welfare activities, implying that globalization may not necessarily lead to a retrenchment of welfare arrangements.

Globalization not only affects the sensitivity of labor demand to the wage but also its position (level). Debates on globalization and tax-financed welfare states tend to ignore the gains from trade. These gains arise from lower information/transportation costs and specialization on production. They appear as gains to consumers in the form of lower prices (driven by more varieties and/or tougher competition) and higher aggregate real wages (more specialization). Higher real wages increase the tax base both directly (through the higher income) and indirectly if labor supply and thus employment is affected (see below). This budget effect is partly neutralized by increased public expenditures, since wage developments in the public sector tend to follow wage developments in the private sector. However, in net terms there is a positive revenue effect, creating some room in the public finances for a reduced tax rate. This in turn reduces the efficiency costs of financing the welfare arrangements; see, e.g., Andersen and Sørensen (2012).

The distortionary effects of labor income taxation ultimately depend on labor demand and supply elasticities[16] and on wage formation. It is thus crucial to know whether evidence confirms that these elasticities have changed so as to make labor income taxation more distortionary.

Starting with labor demand elasticities, a meta-study by Lichter et al. (2015) concludes that there is substantial variation in elasticities between sectors and countries. Labor demand is less sensitive to wages in the short run compared to the long run, and employment protection legislation tends to make labor demand less wage-elastic. There is evidence that labor demand has become more elastic over time, possibly due to technological progress and globalization (see also Slaughter, 2001; Hijzen and Swaim, 2012; and Senses, 2012).

A vast amount of empirical literature assesses elasticities of labor supply (see surveys by, e.g., Evers et al., 2005; Meghir and Phillips, 2008; Chetty et al., 2011; and Bargain and Peichl, 2013). As is well known, estimated labor supply elasticities are not large, and in most cases significantly below one. A common finding is that labor supply is more responsive along the extensive (participation) than along the intensive (hours) margin. Labor supply elasticities are generally larger for women than men, especially for single mothers. Moreover, these elasticities tend to be falling in the overall employment rate; see Evers et al. (2005) and Bargain and Peichl (2013). In the same vein, there

[16] In the extreme case of a 'textbook' small open economy facing exogenous product prices, employment depends solely on labor supply (wages), and hence only the labor supply elasticity matters.

seems to be a declining time trend in labor supply elasticities, which may be attributed to changes in work preferences, including a stronger attachment of women to the labor market (which in turn may also be related to social preferences and gender issues, also reflected in expansions of childcare). These findings do not preclude potentially large responses for specific groups, e.g., due to high implicit tax rates or a clustering of individuals around thresholds in the tax system.

There are surprisingly few empirical studies exploring the link between taxation and wage competitiveness. Alesina and Perotti (1997) consider how relative unit labor costs depend on labor taxation, focusing on the role of wage setting institutions. They find that taxes increase relative unit labor costs, especially in countries with intermediary levels of centralization, whereas there is only a small effect with more centralized bargaining. Daveri and Tabellini (2000) find that taxes increase wages in continental European countries, but they do not find significant effects for the Anglo-Saxon and Nordic countries. Lane and Perotti (2003) focus on how the transmission from taxes to wages depends on the exchange rate regime. In flexible exchange rate regimes, they do not find any effect, while there is a small wage push effect in countries with a fixed exchange rate. Bennmarker et al. (2012) find on Swedish data that an earned income tax credit has a small but significant negative effect on wages.

In summary, the evidence leaves an inconclusive verdict on whether the distortions from labor income taxation have increased or decreased in recent years. The larger elasticity of labor demand suggests an increase, while the lower elasticity of labor supply suggests the opposite. Taken at face value, this evidence does not indicate that the consequences of labor income taxation have changed significantly in recent years.

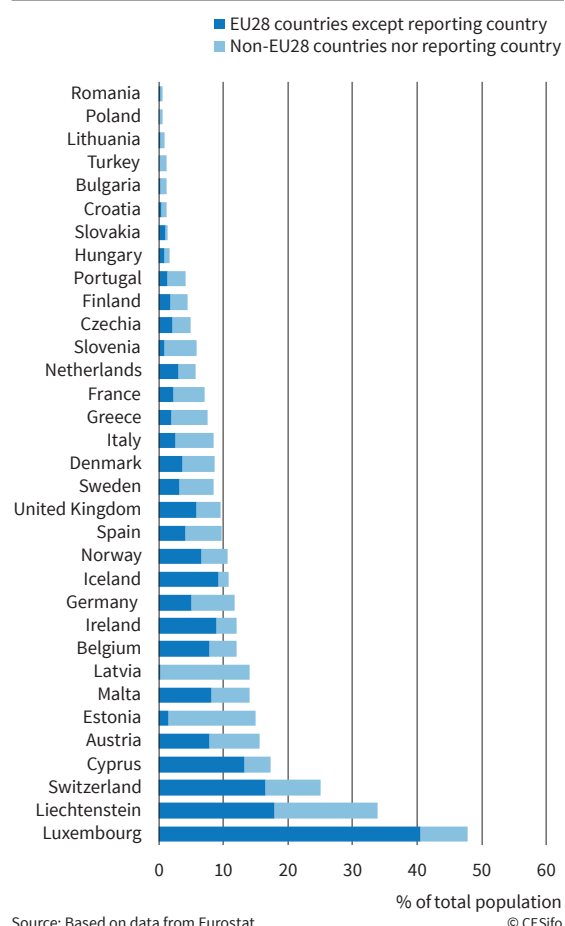## 4.4 MIGRATION AND LABOR INCOME TAXATION AND ENTITLEMENTS

Labor is reallocated between countries via migration and cross-border workers. Migration has many drivers – economic, humanitarian (refugees and family unification), educational – and the group of migrants is thus very heterogeneous (see EEAG, 2017). A key element of the single market is the free movement of people and labor within the European Union (and associated countries). Immigration from outside the European Union is determined by international conventions and national rules. The following focuses on the economic implications of migration, in particular for the labor market and public finances.

Both as a result of the single market and global migration waves, the share of foreign-born has increased in most EU countries. Migration patterns within the EU have been significantly affected by EU

Figure 4.8

Share of Population with Foreign Citizenship in 2018

- ■ EU28 countries except reporting country
- ■ Non-EU28 countries nor reporting country

Romania
Poland
Lithuania
Turkey
Bulgaria
Croatia
Slovakia
Hungary
Portugal
Finland
Czechia
Slovenia
Netherlands
France
Greece
Italy
Denmark
Sweden
United Kingdom
Spain
Norway
Iceland
Germany
Ireland
Belgium
Latvia
Malta
Estonia
Austria
Cyprus
Switzerland
Liechtenstein
Luxembourg

0   10   20   30   40   50   60

% of total population

Source: Based on data from Eurostat.   © CESifo

4.4.1 Migration and Labor Markets

Migration (labor mobility) is associated with efficiency gains, since it allows a better allocation of labor according to productivities broadly interpreted. An important role of trade is to reallocate production and thus employment to exploit comparative advantages, but this does not in general ensure an efficient geographical allocation of production factors. Labor mobility can eliminate geographical differences in labor productivity, and hence create efficiency gains. Labor mobility is thus one of many mechanisms through which economic convergence between countries can arise. This is an essential element of the European Single Market, which comprises free movement not only of goods, services, and capital, but also of labor. If labor migration responds to differences in wages and employment possibilities, it serves to reduce disparities in economic development across EU countries. This may also be an important adjustment mechanism within the European Monetary Union.

However, mobility of labor differs from that of capital, since locational preferences matter for the former, and such preferences can arise from habit formation (home bias), culture, language, and geographical factors/climate, but also institutions, including welfare arrangements.

The efficiency gains from labor mobility do in general have equity implications. As an example, emigration of skilled labor may reduce the wages of unskilled labor, if the two types of labor are complements in production. Agglomeration and asymmetric effects of globalization (sectors/countries) also have redistributive consequences not only within but also between countries.

Redistributive effects also arise if immigration is biased towards low-skilled labor. Globalization and technological changes are associated with so-called skill-biased changes, implying that demand for low-/less skilled labor is declining in high-income countries. If immigration increases the supply of unskilled labor at the same time as the demand for low-skilled labor declines, the incumbent group of unskilled experiences lower wages and/or higher unemployment. Moreover, the inflow of unskilled labor tends to reduce prices of, say, service activities, mainly to the benefit of high-income groups. Through these channels, unskilled immigration may increase income inequality. While these mechanisms are not qualitatively different from the outsourcing of production-intensive, unskilled labor (and import of the goods at a lower price), immigration is a more visible consequence of globalization, fueling discontent, and it is a major reason for the recent globalization backlash. It is a source of social tension, since groups already under pressure in the labor market find that they carry a disproportionately large share of the adjustment burden in the form of deteriorating job

enlargement, especially migration flows from East to West. These migration flows have been documented in, e.g., Atoyan et al. (2016), EEAG (2017), and Alcidi and Gros (2019). A snapshot of these developments is given in Figure 4.8, showing the share of the population with foreign citizenship in different European countries in 2018. Across EU countries, about 10 percent of the population had a foreign citizenship in 2018. A little more than half of this group are citizens of another EU country, and a little less than half are citizens of a non-EU country. The figure also displays considerable country differences with a higher share of foreigners in the 'old' compared to the 'new' member states, reflecting the abovementioned east-west migration pattern.

Discussing migration, it is useful to make a distinction between the 'labor' and 'welfare' perspective. The former focuses on how migration affects labor markets in both the destination and the source country, while the latter addresses the implications for welfare arrangements. Although these issues cannot be completely separated, the distinction captures essential arguments in the discussion, often leading to rather different views on migration and thus also policy recommendations. The following gives a brief account of some of the key arguments.

prospects and/or lower wages – hence the view that 'they take our jobs.'

Finally, although the European Single Market formally ensures labor mobility, there are many obstacles to such mobility, and economic and non-economic mobility costs are not trivial, even within the European Union. Some of these obstacles relate to the welfare implications of migration; see discussion below.

4.4.2 Welfare Arrangements and Public Finances

Migration affects welfare arrangements via both the expenditure and the financing side. Importantly, these effects differ qualitatively from the usual discussion of tax distortions, since a migration decision is not a marginal decision, but a decision on the entire package (Tiebout, 1959). Emigrants opt out not only of tax financing, but also of access to the social safety net and publicly provided services.

Welfare arrangements are associated with both push and pull factors on migration. The push factor is discussed mostly in relation to the scope for redistributive policies and the possibility that high-income groups opt out of welfare arrangements by emigrating. This obviously constrains the financial possibilities for redistributive policies. The dilemma is that maintaining high taxes on high-income groups may erode tax revenue due to emigration, but tax reductions to prevent emigration also reduce revenue, and in either case the consequence is less redistribution. This is a race-to-the-bottom mechanism forcing countries to pursue less redistributive policies.

This argument is reinforced by the pull or magnet argument that generous welfare arrangements are particularly attractive to immigrants likely to be net beneficiaries of the welfare arrangement (see, e.g., Borjas, 1999; and Razin et al., 2011). If immigrants with low qualifications choose destination countries with generous welfare arrangements, they are likely to become reliant on welfare benefits, which strains public finances.

However, the push factors may be exaggerated by considering only tax payments. As noted, migration is not a marginal decision, and the package argument applies. Migrating to a low-tax country has a tax advantage for high-income groups, but the flipside is a less generous welfare package. The relevant economic comparison is not only the after-tax income in the two countries, since the value of access to publicly provided services (day care, education for the children, health care, etc.) should be included.[17]

There is substantial heterogeneity in the way welfare arrangements affect migration incentives, also across the life-cycle. There is a clear age-dependency or life-cycle pattern in individual contributions to and benefits from welfare arrangements. Contributions are naturally concentrated during working life and thus the age group 20 to 65 years, while benefits in the form of day care and education mainly benefit the young, and health care and pensions the old (see, e.g., Andersen and Bhattacharya, 2017). This phenomenon is often interpreted as an implicit or social intergenerational contract; the young and the old are net beneficiaries, and the 'middle-aged' net contributors. This pattern is seen in all countries, although the age dependencies depend on the extent of welfare arrangements (and thus tax levels). Besides this intergenerational link, there is an intragenerational link via the social safety net, since progressive taxation has important implications for income insurance and the distribution of income within a given year.

The implicit contract can be interpreted from a redistributive perspective, but also from a capital market/insurance perspective. In a lifetime perspective, the implicit contract offers insurance against various contingencies that may happen throughout life; public education makes educational choice less dependent on financial factors, health care reduces the need for precautionary savings, etc. What in an ex post situation performs a redistributive role (transfers to the sick from the non-sick) is in an ex ante sense providing insurance. The implicit nature of this contract and the fact that it comprises the entire population is attractive from a redistribution/insurance perspective. However, this contract is challenged by selection in migration patterns. It is well known from the insurance literature that adverse selection can have serious effects on market outcomes, and the push and pull factors discussed above give rise to such adverse selection mechanisms for the implicit/social contract.

Even if the implicit contract early in life (ex ante) is appealing, it may be less attractive later in life (ex post) when the position in the income distribution is known. Migration creates a possibility to opt out of the contract. Education is a prime example of this. In countries where education is largely tax-financed – as is the case in many EU countries – the implicit contract entails that education is paid back via tax payments later in life, when the acquired human capital results in attractive jobs with high incomes. This implicit contract can be broken by, after having completed education, migrating and bringing the human capital to a country with lower tax payments and possibly a higher wage premium to human capital. For the same reason, it may be difficult to attract foreigners with high human capital. Another example

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[17] Revealed political preferences imply that the current welfare package has the support of the decisive median voter, who supports the scheme by definition, and therefore does not have a migration incentive. Even if the median voter has an income above the median, there may be support for the welfare scheme due to its implicit insurance value (Moene and Wallerstein, 2001). Adding mobility costs, the push factor may apply only to a small subset of the population. Note that temporary migration to acquire education or international work experience is a different issue, since it also brings value to the domestic labor market when the person returns home.

is pensioners – so-called 'snowbirds' – bringing their pension from, say, northern Europe to the warmer climate in southern Europe, which also offers more lenient taxation, and still having the option of returning home to tax-financed health care if serious health problems arise.

Mobility and migration add another extensive margin response of importance for income taxation. Even though mobility involves the entire tax-welfare package, mobility may be an issue for large net contributors, especially among high-income groups facing large tax payments and for whom the implicit insurance value of the social safety net broadly interpreted has low value. Taxation of highly mobile groups raises difficult questions. To the extent that well-defined specific groups differing in *mobility elasticity* can be identified, there is an argument for taxing these groups more leniently than less mobile groups; under some conditions, this also maximizes tax revenue (if the elasticity is higher than unity).[18] However, this challenges the notion of fairness that not all are taxed at the same rate. Moreover, the high mobility of these groups gives rise to tax competition between countries, and may thus lead to suboptimal tax rates.

In sum, the push and pull factors give rise to selection mechanisms that change the population structure, and this may challenge tax-financed welfare arrangements. This does not imply that retrenchment of welfare arrangements generally follows, but that adjustments are required, and that race-to-the-bottom mechanisms may arise in specific policy areas.

4.4.3 Evidence

There is an empirical literature assessing the extent to which welfare arrangements are a pull or magnet factor influencing immigration flows, but the support of this hypothesis is not strong (see Pedersen et al., 2008; De Giorgi and Pellizzari, 2013; Giulietti et al., 2013; and Skupnik, 2014). Network effects seem to be of some importance for migration patterns. East-west migration patterns have mainly been affected by income differences, and more recent south-north migration patterns by unemployment (Alcidi and Gros, 2019). However, among refugees there is some indication that the better educated seek out countries with high returns to qualifications, and the less educated countries with more effective migration procedures and generous welfare arrangements.

In a recent study on Norwegian data, Bratsberg et al. (2019) find a form of excess migration or excess churning as a result of the single market for labor and the differences in welfare arrangements. Employment in a country with a generous welfare system like Norway is associated with a gain in terms of welfare entitlements. This may make migrant workers

willing to accept a lower starting wage in order to gain 'insider' status, and firms have an incentive to hire such workers. Over time, the reservation wages of these migrant workers increase as welfare entitlement is gained, giving firms an incentive to replace the worker with a new migrant worker willing to accept a low starting wage.

In general, the young, males, and the better educated have a higher propensity to migrate. For the better educated, there is an element of brain circulation rather than brain drain among high-income countries; that is, temporary migration but eventual return to the country of origin. However, the United Kingdom and United States are net winners in the competition for talent, having attracted more highly educated individuals. Interestingly, migration flows are not driven by wage gaps only, but also by structural factors including general life satisfaction, opportunities for children, quality/trust in national institutions, and urban amenities (see EBRD, 2018; Atoyan et al., 2016). This lends support to the view that the entire 'package' determines migration incentives, and that countries with low and ineffective public spending and provision of public goods face the largest emigration forces. A tax reduction may thus in isolation have no significant effect on migration flows.

The migration incentive differs significantly across socio-economic groups and how they interact with tax-financed welfare arrangements. Eight EU countries offer preferential tax schemes to foreigners, in some cases targeting high-income groups. These schemes are intended to retain potential emigrants and attract foreigners. In particular, groups with very high income may be more inclined to emigration. A recent piece of literature analyzes the response of high-income groups to changes in the average tax rate. Kleven et al. (2019) survey the empirical evidence from microstudies of how migration responds to taxes.[19] For high-income groups (top 1 percent of the income distribution), the elasticity of the stock of foreigners to the average net of tax rate (one minus the average tax) is about 1.6, and thus high. However, this high elasticity pertains to a rather selective group with little location-specific human capital and ties to specific firms, such as star scientists, entrepreneurs, and professionals in sports, and thus cannot be taken to apply to wider groups in the labor market.

More generally, when assessing how migration affects public finances, two points are in order. First, it is important to distinguish between the ex ante and ex post effects. The former refers to whether generous welfare arrangements are a pull factor attracting immigrants that tend to benefit from the welfare arrangements. Even if there is no such welfare magnet and migration flows are determined by other factors,

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[18] For a discussion see Scheuer and Slemrod (2019).

[19] See also Kleven et al. (2013a,b).

public budgets are affected ex post if there is immigration of groups tending to have low employment rates and thus ending up relying more on welfare benefits.[20] Similar reasoning applies to emigration – the push factor – of high-income groups. Second, the public finance implications obviously depend on the type of migration (education, work, family unification, refugees). However, all forms of migration irrespective of the cause affect public finances, via both the revenue and expenditure side, and this is closely related to the labor market performance of immigrants. Admission of migrants on humanitarian grounds is clearly not motivated by economic concerns in the first place, but the economic consequences are of course important for the host countries.

The public finance implications of immigration are intimately related to the employment performance of immigrants for the basic reason that individuals in employment contribute more taxes, while those who are not employed are often entitled to some form of public support. In all European countries, public finances are, therefore, very sensitive to the employment level, with larger sensitivities in countries with more extensive welfare arrangements. This also implies heterogeneity in the public finance implications of immigration across immigration groups. In short, groups of immigrants having employment rates above the average tend to improve public finances, and vice versa (see, e.g., OECD, 2013, and Hansen et al., 2016). Across European countries, employment rates for immigrants from outside the European Union are generally lower than for the native population (EEAG, 2015), and this is related to refugee and family unification. Employment rates for EU migrant workers are generally high, as should be expected.

4.4.4 Migrants' Rights and Duties

Migration and mobility raise a number of issues in terms of rights and duties; here the focus is on taxation and social insurance/security. It is important to distinguish between migration within the European Union and migration between the EU and non-EU countries. The following mainly discusses intra-EU migration/mobility.

As is well known, there are substantial differences in welfare arrangements across EU countries, and this is of importance in relation to the rights (access to welfare arrangements) and duties (tax payments)

of migrants. The heterogeneity in rules is in itself a significant impediment to migration/mobility due to information/transparency issues and uncertainty related to the consequences of migration decisions. It is beyond the scope of this chapter to give a detailed account of differences in welfare arrangements and the implications they have for migration. The following focuses on aspects related to migration and mobility.

EU citizens can reside freely in another country for up to three months, and can reside longer if they are workers, self-employed, or if they have enough resources to support themselves and their families. Even if an EU citizen is no longer in work or self-employed, the status of worker/self-employed is retained under some conditions. However, non-worker migrants will not automatically obtain entitlements to welfare benefits. After five years of residence, citizens obtain rights for permanent residence and to be treated in all ways as nationals of the member state in question.

Starting with taxation, there are no EU-wide rules for the taxation of mobile/migrating EU nationals living or working in another EU country.[21] Income taxation is generally based on a residence principle (total income being taxed), but the definition of 'tax residence' differs between countries (typically a person will be considered tax-resident in a country if he/she has lived more than six months to a year in the country). In some cases, foreigners residing in the country are offered more lenient taxation (see discussion above), but there are also examples where tax obligations in the source country remain after migration. Taxation is governed by bilateral double-taxation agreements, implying that numerous principles and approaches are pursued (European Commission, 2014). This complex situation also raises questions about tax avoidance and tax enforcement.

Turning to social insurance or security, the EU system for coordination of social security systems – see Box 4.1 below – lays down the principles to protect the social rights of people moving within the European Union. While the principles are clear, their application often gives rise to problems, and they are not always seen as ensuring fair mobility. When interpreting these principles, the European Court of Justice has generally given mobility precedence over welfare.[22]

Mobility/migration raises difficult issues on insurance provision, since the labor and welfare views are intertwined. Migration raises two key issues in relation to social security: to ensure that migrants do not lose insurance coverage, and that insurance arrangements do not distort mobility decisions.

The main argument for free mobility is allocative efficiency. Free mobility of labor facilitates relocation

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[20] Welfare generosity may affect return migration. Reagan and Olsen (2000) find for the US that welfare benefit generosity does not affect the return probability, but the welfare program participation negatively impacts the immigrants' probability of returning. Using German data, Kirdar (2009) finds that the effect of immigrants' unemployment on return migration varies according to the length of the unemployment spell. Specifically, the longer the unemployment spell, the more likely the immigrant is to remain in Germany. On the contrary, short-term unemployed immigrants tend to return-migrate. An interesting study for Norway by Bratsberg et al. (2014) finds that the financial crisis disproportionately affected migrant workers. Although a negative labor market shock increased return migration, the majority of labor migrants remained in Norway claiming unemployment benefits.

[21] See European Union (2019), Help and Advice for EU Nationals and Their Family, https://europa.eu/youreurope/citizens/work/taxes/income-taxes-abroad/index_en.htm.
[22] For a discussion of EU social security coordination from a judicial perspective see, e.g., Bruzelius et al. (2018) and Pennings (2018).

of workers, depending on differences in employment prospects (wages/productivity), and this ensures a better allocation of production factors within the European Union. This contributes to higher incomes for the mobile workers, but also releases aggregate gains for the European Union.

Well-known problems of adverse selection and moral hazard pose problems for insurance markets, and critically affect the available type of insurance and the specific contract properties. Private insurance markets for unemployment are examples of these challenges and why intervention is common in this area.[23] Shift of insurance provider is a particularly challenging issue, and insurance contracts typically feature waiting periods (also known as elimination periods and qualifying periods): that is, a time span between commencing contributing to the scheme and when benefit entitlement is achieved. Such a delay serves to reduce adverse selection and moral hazard problems. Waiting periods exist for, say, unemployment insurance (in many countries one year) and health insurance (can be up to four to five years).

Mobility/migration raises the fundamental issue of establishing who should be providing the insurance: the source country or the destination country? To illustrate, it would seem plausible that the source country insurance applies in the case of temporary mobility, while the destination country insurance applies in the case of permanent migration. Even this simple principle is challenged by the fact that the time dimension – temporary or permanent – of migration is typically not known ex ante and depends, among other things, on labor market developments (at home and abroad) and the insurance provided. Cross-country differences in insurance arrangements and different levels of income (and thus benefit levels) reinforce these problems. To see this, suppose that employment prospects are temporarily better in country A than B, and efficiency arguments thus call for temporary migration of workers from country B to A. If these countries are similar in other respects, this may be relatively straightforward. However, if they are different, say country B offers higher unemployment benefits than country A (could be for political reasons or because the general income level is higher than in country A), the situation is different. If migrating from country A to B gives entitlement to insurance in country B, the migration decision is distorted, since it is influenced not only by the temporary employment prospects but also by the gain from getting access to a more generous insurance scheme provided in country B (see the evidence for Norway reported above). This is even clearer if the temporary

migrant can bring, say, unemployment benefits back to country A. While stylized, the example brings out how migration decisions may be affected by welfare arrangements.

These problems become clearer when considering some of the problems associated with the coordination of social security across EU countries.[24] The levels of unemployment benefits (and many other dimensions) differ between EU countries. If migrant workers are entitled to unemployment in the home country, they are entitled to join the unemployment benefit system in the destination country (provided any membership fees or equivalent are paid). Even if replacement rates are the same, benefit levels (in PPP-adjusted euros) are different between countries. Hence, the benefit level in a high-income country (say, the Netherlands) exceeds average wages in some low-income countries (say, Bulgaria). If migrating from a low-income country to take a (temporary) job in a high-income country, unemployment has no serious economic consequences, since benefits are still higher than wages in the home country (and the purchasing power even higher in the case of exportability of the benefit). A further complication with exportability of benefits is that countries with relatively generous benefits tend to tie a number of conditionalities to benefit entitlements (so-called workfare requirements). In principle, these conditions apply even if exporting the benefit, but clearly the enforcement of such conditionalities is an open question if the destination country does not apply the same type of conditionalities. Similar problems have been seen in relation to study grants. While entitlement is not free, it is acquired after short spells of employment. Family benefits are also problematic, since eligibility for child benefits is gained even if the child does not move with the parent to the new home country.

It should also be noted that the principles work well in some areas. Pension rights are typically acquired via residence or employment. Pensions are exportable under an aggregation principle and the so-called pro-rata principle such that the total pension for a migrant is made up of pensions from different countries in proportion to the part of working life spent in the respective countries. The principles thus deal with migration in a straightforward and fair way. However, this does not imply the absence of challenges. Pension benefits differ across countries, making it difficult for the individual to assess the pension benefit (and thus replacement rate) they are entitled to as a pensioner. There are country differences in how pension entitlements are related to employment histories (e.g., points system, income during the last five or ten years, etc.) and this implies that pensions for

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[23] Private insurance companies do offer insurance against unemployment, but often as a top-up to the mandatory/public part of unemployment insurance. Private insurance is problematic because unemployment is associated with aggregate persistent shocks and adverse selection and moral hazard issues, see, e.g., Barr (2001). For an account of unemployment insurance systems within the EU see, e.g., Esser et al. (2013).

[24] A particularly striking example of this complexity is that foreign students from EU countries in Scotland are exempt from tuition fees, as are Scots, but students from other parts of the United Kingdom are charged tuition fees.

migrant workers may depend on where they worked when they were young and old. Pensions are also taxed differently across countries (see, e.g., Genser and Holzmann, 2019). In some countries, contributions are exempt from income taxation and pensions are taxable income, while in others, contributions are taxable income, and pensions are not taxed. Some countries tax the return on accumulated assets, others do not. This raises issues not only for tax-financed pensions but also for funded, contributed schemes. One argument in the debate is that these problems are of secondary importance since the quantitative importance of the problem is modest. It is true that current numbers on exportability of benefits do not suggest that large financial burdens arise. However, the effects cannot be judged solely from the budgetary consequences. As noted, allocation of resources is distorted, and that is an additional cost. Moreover, political responses are driven not only by narrow budget considerations but also by whether rules and regulations support a fair outcome. Some of the examples of exportability of benefits mentioned above have challenged the notion of fair mobility. If EU regulations are considered binding, the policy response may have other costs. For example, in EU member countries, most public jobs must be available to all EU nationals and public universities must charge the same fees to local and other EU citizens. Of course, language proficiency may be required of civil servants and students, and need not be required for reasons of efficiency. In Denmark, there are political efforts to forbid tertiary education in languages other than Danish, aiming to make a largely tax-financed educational system less attractive for children of other countries' taxpayers. Should those efforts be successful, the principle of equal access will in practice backfire and make it more difficult for Danish and other EU citizens to study and work and pay taxes anywhere in an EU integrated labor market.

4.4.5 Migration Rules

While there is free mobility of labor within the European Union, migration from outside the European Union is regulated by the member states. Such migration rules are complex. Some forms of migration are covered by international conventions, while others are unilaterally decided at the country level. As an example, under EU law there are 20 different categories of third-country nationals, each with different rights depending on the links to EU member states or their need for protection. While the cases of students and migrant workers may be relatively simple (see EEAG, 2015, on the rules for worker migration within the European Union), the rules applying to asylum seekers and family unification are detailed and complex (see EEAG, 2017). The attractiveness of becoming an EU citizen is also reflected in the fact that some countries sell citizenships or close sub-

stitutes to it, including Bulgaria, Malta, Cyprus, and Austria (Konrad and Rees, 2019). Given free movement within the European Union, this is effectively an EU citizenship.

In addition, it is not always easy to make a sharp distinction between a refugee and an economic migrant, since there are multiple reasons for migration, and informational asymmetries exist between applicants and asylum administrators. In designing migration polices, there is also the dilemma that those who make it to the border (in the case of long-distance conflicts) are selected among the displaced people and seldom include the weakest segment of the population.

In recent years, there has been a clear trend towards more restrictive and selective immigration rules. In short, most countries are trying to admit only individuals who can fit into the labor market to ensure 'positive' rather than 'negative' selection. This outcome may be interpreted as a 'race to the top' with countries trying to attract individuals with high human capital. One example is preferential tax treatment schemes for migrants targeting high-income groups, as mentioned above. An ageing population is in some countries driving pro-immigration policies to attract qualified people of working age to rebalance the age structure of the population (a remedy for low fertility rates). One interesting example is Poland, which has recently introduced an income tax break for most young people below the age of 26 to reduce emigration and incentivize return migration. This should be seen against the backdrop of large net emigration flows and an ageing population.

4.5 SOCIAL SAFETY NET AND TAXATION – POLICY OPTIONS

The social rights of migrants are a contested issue in the European Union. There is a clear divide between those taking the 'labor' perspective, who argue for the need for rule simplification and harmonization to reduce barriers for worker migration/mobility even if it comes at the cost of less social security, and those taking the 'welfare' perspective, who advocate steps to avoid 'misuse' of welfare arrangements even if it may come at the cost of less mobility. Views on the 'welfare' perspective vary between European countries, reflecting different varieties of welfare models. There are also obvious differences of interest between countries tending to experience net emigration flows and those experiencing net immigration flows. Countries with extended welfare arrangements, like the Nordic countries, are particularly concerned about how to maintain welfare arrangements, while the source countries for many immigrants do not share this concern.

The issue of how to compensate the losers from structural changes that produce gains to society at large is particularly relevant. This role rests primarily on the social safety net and the taxation system.

BOX 4.1   EUROPEAN SOCIAL SECURITY COORDINATION REGULATIONS

All persons being citizens in a member state are also citizens of the Union. Within the European Union, individuals have freedom to move and reside freely. Social policy is national sovereignty, but mobility/migration is regulated by the principles of social security coordination.

EU social security coordination (regulation 883) ensures that all migrant EU citizens (EU countries plus Iceland, Liechtenstein, Norway, and Switzerland) have social coverage. The regulation specifies the responsibilities of the member states as regards mobile and migrant EU citizens. The part of social security covered includes unemployment, sickness, maternity/paternity, old age pension, disability, and work accidents. The rule applies both to workers and to others moving within the European Union. These coordination rules do not replace national systems, and member states can unilaterally decide who is to be insured under their legislation, which benefits are granted, and under what conditions.

The specific elements of these coordination rules have been changed numerous times and are currently under revision.

The coordination rests on four main principles:

– Individuals are covered by the legislation of one country at a time, ensuring that contributions are paid only in one country. The decision on the legal jurisdiction to which a given individual belongs is made by the social security institutions and is not an individual choice (the principle of single applicable law).
– EU migrant citizens have the same rights and obligations as the nationals of the country for which the coverage applies (the principle of equal treatment or non-discrimination).
– Periods of residence or insurance in one member state count when deciding benefit entitlements in a new host country (the principle of aggregation).
– EU migrant citizens should receive acquired benefits regardless of country of residence (the principle of exportability).

There is an important difference between economic activity (workers) and non-active citizens. For the former group, member states are obliged to follow the non-discrimination principle from the day of arrival. Individuals are free to live in another member country if they are in employment, self-employed, or can document sufficient means not to be a financial burden for the host country. As a rule, workers are covered by the country where they work, pensioners will receive pensions from the countries where they worked, and non-working citizens are the responsibility of the country of residence. There are some important exceptions, like unemployed being able to bring unemployment benefits with them for a period of three months to search for a job in another member country. The coordination regulation does not give migrants rights to non-contributory social assistance schemes that provide means-tested minimum subsistence income.

The key policy challenge is to offer insurance against various adverse events faced by individuals while ensuring flexibility, adaptability, and incentives to be self-supporting via employment. The perspective here is how to maintain and/or repair deficiencies in current welfare arrangements while at the same time allowing for labor mobility and migration. It is beyond the scope of this chapter to discuss the broader design issue related to the social safety nets and tax systems.

The following discusses possible policy steps to square the concerns for welfare arrangements and mobility/migration. We first discuss steps available to national states in balancing 'welfare' and 'labor' concerns. The relevance of these solutions depends on the extent of welfare arrangements in European countries. However, these proposals do not get to grips with the issue of policy spillovers between member states and the problems arising from interaction between rather different country-specific welfare arrangements; problems that may be solved by the more radical move of also making the European Union a social union.

4.5.1 Safeguarding National Welfare Arrangements

Welfare arrangements differ across European countries both in structure and extent, and the following considers some policy options given these differences, implying that policy responses are country specific. Importantly, some of these proposals apply only to migrants from outside the EU/EEA due to the non-discrimination principle for migrant EU citizens. It is implied that measures affecting welfare entitlements for immigrants from outside the European Union also apply to emigrants returning home from a non-EU country.

Entitlement to welfare arrangements can be regulated by waiting periods, that is, by requiring some minimum residence period for individuals to acquire certain social rights. Such waiting periods are also known from the private insurance market and serve to reduce the risk of opportunistic acquisition of insurance when the need is known with a high probability. Waiting periods for social benefits restrain welfare

'shopping', but imply that social insurance for immigrants falls below that of the population at large. As an example, Denmark has introduced a waiting period for full eligibility into the social safety net (residence for seven out of the last eight years; from 2019 nine out of the last ten years), otherwise social benefits are lower (roughly half for a single person). Introducing waiting periods lessens the financial pressure from non-employed immigrants on the social safety net since it may deter immigration, and at the same time it strengthens work incentives of non-employed immigrants. If the reference point of migrants is their living standard in their country of origin, even this lower level of benefit may be considered acceptable. An argument often made in political discussions is whether such waiting periods are fair. A counterargument is that the social safety net is designed to support social integration and equality of opportunities, which is impaired by such clauses on benefit entitlements introducing a divide in the population.

Similarly, eligibility conditions for social benefits depend on previous employment record. This is well known from unemployment insurance (voluntary, insurance based), but may also apply to the basic social safety net. Again, using Denmark as an example, there is an employment condition in the social safety net such that 'full' rights depend on satisfying both a lower limit with respect to working hours within the year, and total employment while residing in the country. Such conditions make the system less universal and create a tie between contributions and entitlements. Again, it may be considered just and fair that the insurance is related to contributions in this broad way. The counterargument is that lack of employment and income is equally problematic for all, irrespective of their employment/residence history.

The issue of the financial burden falling on the social safety net is closely related to work incentives. The classic dilemma is that generous social support for those who have difficulties working and/or have lost their job also implies that the economic gain from returning to work is correspondingly low. This incentive problem can be remedied by workfare or active labor market policies. By introducing such conditionalities in the social safety net, generous income insurance can be consistent with work incentives.[25] Workfare conditionalities have the dual purpose of both being a work test (motivation/threat effect) and aiming at enhancing qualifications of the jobless to improve their job-finding possibilities. This idea applies not only to income-replacing benefits, but also to, say, child benefits. Such benefits may both reduce work incentives and raise issues surrounding the integration of children if they stay at home at critical early ages.[26] Rather than providing child benefits

– or other family benefits – unconditionally, the benefits can be transformed into a subsidy in the form of a low (free) price for day-care institutions. Norway, for example, has free child care (20 hours per week for children aged three to five) targeting low-income families, a group with overrepresentation of immigrants from non-OECD countries. Such measures facilitate labor market participation for women and strengthen the social integration of both parents and children.

The financing of education is a particular issue. Most EU countries have extensive public financing (3 to 8.5 percent of GDP). There are several arguments for such subsidies, including capital market imperfections, social background, etc. However, taxation of labor income (especially high marginal tax rates) reduces the incentive to use human capital in the labor market and therefore also reduces educational incentives. This gives an additional argument for subsidizing education to maintain educational incentives (Bovenberg and Jacobs, 2005). While educational subsidies (including study grants and subsidized loans) are redistributive in the short run, they are regressive in the long run, since incomes and education are strongly related. To the extent that marginal income tax rates have been reduced in recent tax reforms (see Section 4.2) and skill premiums have increased, there is room to reduce educational subsidies and thereby make this policy element less regressive.

The emigration issue for highly educated people discussed above is a further challenge if education is largely tax-financed. Increased private financing of education is a possibility, but that may stifle social mobility since the financial constraint is most prominent for youth with a less strong social background. This argument is important at early stages in the educational system, but not for tertiary education. In particular for Master's degrees the argument is less compelling, and subsidies for such degrees are highly regressive. The migration problem associated with education and tax payments for the highly educated can be resolved by notional accounts where educational expenses (e.g., for Master's degrees) are debited during studies, and the account is credited by tax payments while working in the country. Such a scheme would have no effect on the non-migrating individuals, since the notional debt will gradually be reduced by their tax payments out of earned income. However, upon emigrating the balance on the account or a portion thereof becomes an explicit debt. This reduces free riding on the social contract by making implicit debts explicit upon migration.[27]

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[25] This also points out that the work incentives implied by social benefits cannot be assessed solely from benefit generosity (effective marginal tax rates, cf. above). The eligibility conditions may play an important role for employment incentives.

[26] Andersen et al. (2019) find that reducing benefits (Start Aid) to

refugee immigrants by around 50 percent increased employment for some, but also reduced female labor force participation. Moreover, children's likelihood of being enrolled in childcare or preschool, their performance in language tests, and their years of education all decreased, while teenagers' crime rates increased.

[27] It is interesting that the United States, a country with a lean welfare state and low tax share, retains the right to tax citizens irrespective of residence. Conversely, countries with extended welfare arrangements and high tax share do not retain this right.

A particularly problematic case is the export of benefits like family benefits. Child benefits are exportable to children still residing in the source country if, say, the father is working in another EU country. To the extent that such benefits are instruments to strengthen social inclusion and reduce social barriers for children, the rationale for benefit export has been probed in policy debates. A number of countries – Austria, Denmark, Germany, the Netherlands, and the United Kingdom – have questioned whether EU rules are too lax. Since the level of family benefits is determined by living costs and standards in the destination country, the real value in the source country may be much larger than in the residence country. As a response to this, Austria decided to make family benefits paid for children residing in another member state dependent on the costs of living in that particular member state. In response to this, the European Commission has launched an infringement procedure, since this step is seen as breaching the EU rules on social security, in particular the principle of equal treatment of workers who are nationals of another member state. While the financial burden from export of such family benefits is modest, this has been a showcase of EU rules going too far at the risk of undermining support for the single market.

A more wide-ranging step is to change the social contract underlying tax-financed welfare arrangements from being implicit to being explicit. As discussed above, the implicit social contract has some advantages in terms of insurance and redistribution, but it is vulnerable to mobility and migration. This problem can be remedied partially by making the contract quasi-explicit. Norway is an example of a country with an explicit membership requirement for social insurance (national insurance scheme).[28] Individuals born in Norway become members automatically, and immigrants can become members if they are resident for at least twelve months. It is possible to maintain membership (at a reduced contribution rate) if living abroad. A number of other countries have similar arrangements for social insurance, e.g., the "Caisse des Français de l'Étranger" in France. Such membership models can be interpreted as an extensive linking of entitlement and contributions in the sense of the overall 'membership' of the social contract while still maintaining a decoupling of entitlements and contribution at the individual level. For immigrants, the membership model is like a waiting-period model, but this scheme has the advantage that it can handle the return of emigrants more flexibly.

4.5.2 Social Europe?

The current European Treaties rules out supranational legislation for the most important elements of the member countries' welfare states and labor market

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[28] See NAV (2019), Membership of the National Insurance Scheme, https://www.nav.no/en/Home/Rules+and+regulations/Membership+of+the+National+Insurance+Scheme.

regulation (Bertola, 2015). Article 151 TFEU states as aims "the promotion of employment, improved living and working conditions, so as to make possible their harmonization while the improvement is being maintained, proper social protection, dialogue between management and labor, the development of human resources with a view to lasting high employment and the combating of exclusion." However, it explicitly forbids "harmonization of the laws and regulations of the Member States" for social protection schemes, where only cooperation, knowledge sharing, and exchanges of information are envisioned. And it disallows even that "open method of coordination" (requiring member states to report on jointly set, verifiable, regularly updated targets, see Van Rie and Marx, 2012) for "pay, the right of association, the right to strike, or the right to impose lockouts" (Article 153). This has made it impossible to achieve the same regulatory harmonization implemented by the 1987 Single European Act, which by removing unanimity requirements allowed formulation and enforcement of proper regulation in the single market for goods by 1992. That Act and the Treaties retain unanimity for taxation, free movement of persons, and workers' rights outside of specific fields such as health and safety and equality between women and men.

It is not difficult to see why member states were and remain reluctant to forgo policymaking power in the social and labor policy area. As illustrated and discussed above, the structure and generosity of their welfare states are very different. The areas for which the treaties envision only non-binding monitoring and comparison procedures are those where national histories and traditions resulted in very heterogeneous 'models of capitalism', where differently developed markets interact with different policies. Employment protection, unemployment insurance, collective wage bargaining, and legal minimum wages complement or substitute each other in pursuing policy objectives that are very important to all European countries, but targeted with different instruments. Besides history, the current level of economic development is also an important source of heterogeneity, as illustrated in Figure 4.9, which plots the relationship between inequality reduction through redistribution and per capita income levels: richer countries tend to redistribute more, plausibly because it is easier to bear the cost of reduced incentives to work.

Heterogeneous countries do not want to implement policies that are politically or economically unsuitable for them. Of course, this problem is relevant in all policy areas, including monetary policy, and not only across but also within countries, where regions and cities have to trade some inconvenient policy uniformity off against the advantages of broader social and economic interactions. Social policy is, however, much more explicitly redistributive than monetary and most other policies, hence even more problematic in the absence of a suitable political decision process.

Figure 4.9

Extensive Margin: Effective Tax Rate on Entering Employment
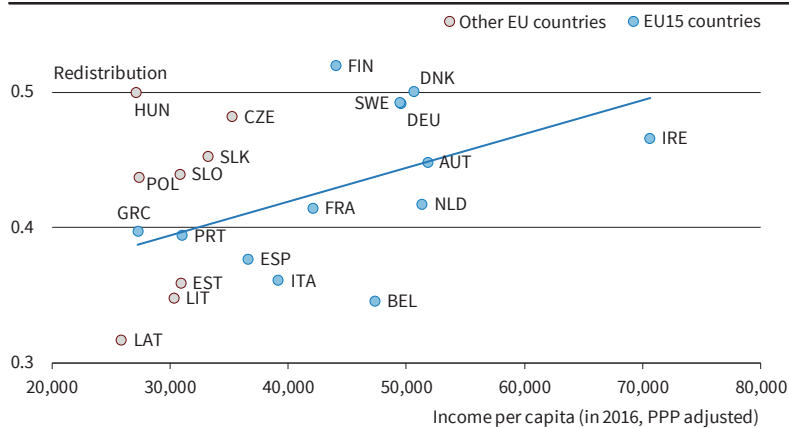
Note: Per capita income measured in US Dollar at purchasing power parity. Redistribution is defined as in Figure 4.2. The line plot is a linear regression for the EU15 countries (excluding the United Kingdom and Luxembourg).
Source: Eurostat and EEAG calculations.   © CESifo

4.5.2.1 The Problem

It is also not difficult to see that the same logic that lends support to the single market (and a single currency) also supports a single social policy framework. That logic is very old, even though its application to Europe dates from only a few decades ago (Bertola, 2007). In Part II of Chapter X (Book I) of the *Wealth of Nations*, under the still very topical title "Inequalities Occasioned by the Policy of Europe," Adam Smith points out that integrated markets and the resulting price and wage equalization are more efficient than isolated economies. He notes that equalization of factor prices can be and was in his time prevented not only by market entry barriers (such as mandatory rationed apprenticeship) but also by social policy. In England, limited mobility of ordinary workers was in his view explained by the parish-based welfare system of the Poor Laws, which made it difficult to migrate for those thought likely to apply for subsidies. There and in every other European country, national welfare schemes subsequently replaced traditional risk-sharing in extended families and local communities, and made it possible for internal migration to build integrated, industrialized, and urbanized advanced economies.

An area of markets as well integrated as they aim to be in the European Union should also build an integrated social policy framework. In the current EU policy framework, migration is unrestrained by policy, and the right of citizens to obtain welfare benefits is enforced at the European Court of Justice level even as policy choices are left to member states. This generates the tension, reviewed above in this chapter, between market integration and political desires to preserve and restrict access to country-level welfare benefits. Just as uncoordinated macroeconomic policies, fixed exchange rates, and free capital mobility were mutually inconsistent before the Economic and Monetary Union, it is impossible for free mobility,

local social policy, and effective social protection fully to coexist.

The three members of that inconsistent trinity currently coexist and evolve uneasily in the European Union. Over time, it has become possible for member countries to impose minimum wage and working condition standards on foreign workers who are posted to their territory or (like truck drivers) work there temporarily. Individuals can work abroad for up to two years while remaining attached to their country of residence's social security scheme: this provision makes it easier for workers to move and fosters labor market integration, but it can hinder mobility when implemented in unduly restrictive ways. As in Adam Smith's depiction of Elizabethan England, so in the EU those countries (such as Austria and France) that resent international competition and/or would like contributions to be high everywhere have recently begun to impose stiff fines on individuals (such as German businessmen and academics) who perform labor services without holding a valid A1 certificate of social security entitlement. Fortunately, modern information technology makes that certificate rather easy to obtain.

4.5.2.2 What Should Happen?

While average income differences between countries are not always larger than those across regions within a country, they are certainly large enough to make it unthinkable to implement across the whole European Union welfare schemes as homogenous as those of each member state. But social policy does not need to and should not be as uniform as monetary policy, because people do not move as quickly as financial market participants. It can remain diverse across countries, and even within them it should reflect local specificities. Even as it strives to adapt to local conditions, however, policy should be structured in such a way as to provide appropriate incentives to local policymakers. Policy always has to trade its objectives off against the moral hazard and efficiency losses that are unavoidable under incomplete information, but will fail to achieve even the feasible second best when it is not coordinated across policymakers (Sinn, 2003).

In each country, social policy pursues objectives that are conceptually distinct, if intermingled in practice. One is that of expressing solidarity (or, more pragmatically, of preventing social unrest) by helping ex ante poor individuals who live in the same society.

The other is that of promising insurance against future individual shocks. As discussed above in this chapter, both objectives become more difficult to target when individuals can move across the confines of the relevant policies. It is sensible for a society to educate, train, or at least passively subsidize disadvantaged individuals it has to interact with; but if the poor can be dumped out of sight, it may be tempting to spare the expense. All individuals, no matter how ex ante advantaged, appreciate protection from bad luck; but participation in insurance schemes needs to be mandatory and permanent, because it will be unappealing for ex post lucky individuals, and cannot function if those individuals can opt out of contributions by moving. As uncoordinated policymaking tries (and, in equilibrium, fails) to repel the poor and attract contributors, policy becomes ineffective everywhere.

To preserve social peace and social insurance as well as unfettered mobility, policy does not need to be fully centralized, but does need to feature clear rights and obligations for decentralized policymaking and for individual labor supply and mobility choices. Reforms in each country can accommodate mobility if they are complemented by explicit coordination and supranational instruments aimed at preventing detrimental policy competition. When the poor can move, it is in everybody's interest that they be treated well everywhere. To prevent social dumping, it would be advisable to enforce minimum welfare benefits, co-financed centrally and set at levels compatible with suitable work and mobility incentives within and across differently developed areas. To preserve feasibility of unemployment benefits and pension schemes, these should be mandatory but structured in such a way as to exclude ex ante redistribution: actuarially fair linkages between individual contributions and portable pension rights would need to be enforced in all EU countries, and would not require central funding.[29]

4.5.2.3 What Might Happen?

The path from the current situation to a sensible configuration is long and difficult, but might yet be traveled. The electoral success of anti-migration populist parties makes it increasingly clear that market integration is more likely to be forgone than social policy setting power or effectiveness, and all other parts of the political spectrum have recently shown keen awareness of the need to try and implement European labor market policies. According to French President

Macron, "Europe, where social security was created, needs to introduce a social shield for all workers, guaranteeing the same pay for the same work, and an EU minimum wage, appropriate to each country, negotiated collectively every year." European Commission Vice-President Timmermans called for each EU member state to have a minimum wage equivalent to 60 percent of its median salary. The incoming Commission President von der Leyen's political guidelines want to "move away from unanimity […] for social and taxation policies" and envision a "European Unemployment Benefit Reinsurance Scheme" that will "protect our citizens and reduce the pressure on public finances during external shocks."

Political and technical issues are also increasingly clear, however, and many devils lurk in the unspoken details of recent political positions and policy proposals. Regulation of wages is appealing as an apparently inexpensive way to help the deserving poor: who could be against equal pay for equal work? Minimum wages are a very blunt tool, however, and their redistributive implications make them controversial. If the labor market pays low wages for any reason, imposing higher wages without increasing expenditure on education, training, or non-employment subsidies tends to price out some labor, with strong (if appealing for middle-class workers) redistributive implications as they reduce capital and land returns and benefit employable workers. Wage floors concentrate such effects in specific regions of large heterogeneous countries, and would also have different effects across countries in the European Union. Poor people in poor countries gain from integration, because their low (if rising) wages make their labor competitive in the integrated economy: a binding minimum wage in poor countries can price them out, and favor competing workers in richer countries.

As to European Unemployment Insurance, a variety of schemes have been considered (notably by the 2015 Five Presidents' report; see Berlavy, Marcon, and Maselli, 2015, for a detailed review and references). They are appealing because they are technically not fiscal instruments but can potentially work as an automatic, non-political cyclical stabilization tool that can prevent self-fulfilling public finance spirals and need not result in permanent transfers. The reinsurance terminology suggests that the scheme would continue to be designed at the national level, and financed only when needed by yet to be determined supranational funds. Because the level of unemployment depends on benefit generosity and conditionality, the scheme could link supranational subsidies to changes of unemployment rates. While this would not remove the need to harmonize and supervise national policy reforms, it would help insurance buffer country-level permanent shocks. Of course, most shocks occur at the level of sectors, regions, and occupations, and the insurance scheme should ultimately aim to stabilize the welfare of people, not just the budgets

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[29] Bertola et al. (2001) discuss these theoretical insights in more detail and discuss the much less generous but more mobility-consistent welfare arrangements in the United States, where the federal government was originally tasked with ensuring freedom of interstate commerce but over time came to regulate and co-finance welfare provision schemes administered at the state level, and to administer Social Security. The United States also shows that fluid markets and easier personal mobility can accommodate very different policies, and allow individuals to "vote with their feet" in search of social arrangements that suit their preferences.

of member states. A direct EU-based scheme (such as the one simulated by Dolls et al., 2015) would do so more directly and, like Social Security in the United States, would usefully put remote European institutions in direct contact with European citizens.

It remains to be seen whether political intentions will develop into some first steps towards a coherent policy framework, or will just offer opportunities for misunderstandings and disagreements. Poor member states can see minimum wages without internationally co-funded benefits as a tool meant to price out their workers and protect the national interest of rich member states. What is clear is that unemployment insurance would be difficult, and minimum wages impossible, to enforce with supranational legislation. Enhanced cooperation would be hard to design and justify under the European Treaties currently in force. Treaty revisions might in the future allow qualified majority voting and co-decision on some of such policies, but it is hard to envision an agreement to do so for unemployment insurance and/or minimum wages in isolation. It would be both technically and politically very difficult, but necessary, to design and implement a labor and social policy framework as comprehensive and wide-ranging as that which made it possible to enact the single market for goods and, to a much more limited extent, for services, which, like employment, feature stringent and politically controversial regulation.

4.6 CONCLUSION

Increased mobility of jobs and workers/people is of importance for the design of the tax-financed welfare arrangements. Globalization and technological changes create winners and losers, influencing the need and scope for collective insurance and redistribution, but also the scope to tax-finance such arrangements. Ensuring a fairer distribution of the gains and costs is essential to maintaining political support for economic integration.

The policy scope – especially in relation to the design of the social safety net – depends critically on whether it is mobility and migration within the European Union or between EU and non-EU countries. Within the European Union, the single market and the principles underlying social security coordination, in particular the non-discriminatory principle, restrain the possibilities of differentiating benefit entitlements, while the scope is larger with respect to mobility/migration of non-EU citizens.

Policy responses pertain to both the revenue and the expenditure side. Developments over recent decades show that differences in welfare state arrangements have persisted, and that among the best performing economies there are some countries with lean and some countries with extended welfare states. This shows that the scope for national policies with respect to the design of welfare arrangements is largely intact. This does not imply that external factors do not matter, but they are not an either-or issue.

The main source of tax revenue accrues from the direct and indirect taxation of earned income, and increased mobility may drain tax revenue. Shifting taxation from mobile to less mobile tax bases is a solution to these pressures. It is also possible to maintain progressive elements in taxation, while it may not be possible to change the top statutory tax rates, by focusing on the definition of tax bases and tax exemptions, in particular for capital gains.

The mobility/migration issue in respect to taxation mainly pertains to (very) high-income groups from whom taxes are of major importance and access to welfare arrangements of marginal importance. For these groups, taxes matter more than the entire package, and mobility is an issue. Identical tax rules for all are considered fair by most, but may induce emigration and loss of tax revenue. A difficult policy choice arises. A general reduction of taxation (less progressive income taxation) reduces the problem but has significant effects for tax revenue and also redistribution. Maintaining taxes leads to possible emigration, which may also reduce tax revenue, and may be seen as a signal that the country is unattractive to the successful. An intermediate solution is to grant tax exemptions to particular groups of emigrants. Such a step addresses only the emigration side of the problem, and not the immigration side. A number of countries have resorted to such tax exemptions in recent years, targeting either relatively broad groups in an effort to increase labor supply (countering the effects of an ageing population) or narrow groups to attract the talented or superrich. Such policies are impossible to control under the current EU institutional structure, which puts fiscal matters firmly at the national level, but can dangerously trigger race-to-the-bottom mechanisms within as well as outside the European Union. As a first step towards building a consensus to regulate such policies, these developments should be closely monitored at the EU level, where information should be regularly collected on taxation schemes that facilitate tax avoidance and trigger tax competition.

Turning to the expenditure side, there are substantial differences across the main expenditure types. Starting with education, we focus on tertiary education, which is heavily subsidized in most countries (study grants, no or subsidized fees). As discussed above, such policies are regressive in a lifetime perspective, and with increasing skill premiums they also reward the winners. While there are substantial arguments for subsidizing primary and secondary education to ensure equal opportunities and use of the human capital potential in the population, this argument is less compelling for tertiary education – especially at the Master's level. Barriers to education set in at much earlier ages. Moreover, the return from tertiary education has a large private compo-

nent. Educational subsidies can be reduced in various ways. One is to substitute state-guaranteed loans for study grants; this also reduces the extent to which emigrants can free ride on tax-financed education. Such a change is consistent with maintained incentives for education, and it improves public finances and reduces regressive policies.

For tax-financed pensions, the pro rata principle ensures that pensions are proportional to the length of the working period in a given country. This reduces burden shifting between member states in the case of migration, and ensures that all are entitled to some minimum pension. Funded pension arrangements are exportable, and there are no formal barriers in this area. However, a huge problem of transparency and information remains. While the general principles are simple, there are a vast number of details in specific pension arrangements on contributions, benefit entitlement, benefit levels, taxation, etc., and they differ across countries. This is an impediment to mobility and makes it difficult for workers to assess whether their future pension entitlements are adequate. Within the European Union, there is a great need for improved and easily accessible information such that mobile workers can gain an overview of the pension implications of mobility.

Events during working life that affect people's ability to be self-supporting – like unemployment and sickness – or cause specific expenditure needs – like medical treatment – are more difficult to handle. Insurance coverage can in many cases be unclear for the individual due to the variety of systems prevailing across EU countries. Unemployment insurance is mandatory in some countries and voluntary in others; some countries have public health coverage, others have mandatory contributory schemes, and in some countries insurance is tied to specific jobs. From the individual perspective, there is an issue of coverage adequacy. From the single-country perspective, it is an issue of who is responsible and should cover the costs.

Waiting periods – also known from private insurance markets – are a way to protect national welfare arrangements from 'welfare shopping'. Waiting periods can be defined in terms of a period of residence or employment. Such measures come at the cost of less insurance for those who actually immigrate – possibly also returning emigrants.

Exportability of benefits is a controversial issue; child benefits, in particular, have been heavily debated, since they are paid by the destination country of workers even for children who remain in the source country (e.g., one parent moves to work in another country, and the other parent stays in the source country with the children). While the financial side of this problem is not large, it has become a symbol that the 'labor' view has taken prominence over the 'welfare' view in EU policies. This particular element is considered unfair by many. One solution for child benefits – and in principle other benefits that can be exported (e.g., disability benefits) – is to index the amount to living conditions in the country in which the child is living. This prevents the real value of the child benefits from being out of proportion with the living standards in a particular country, and ensures the child allowance does not distort mobility (in some cases employers have used such access to child benefits as a recruitment argument). When the level of social benefits – like child benefits – aims to ensure adequacy in a given environment, the proposal to index such benefits to the living costs in the country of residence makes sense. Without such a solution, countries may resort to less obvious and more undesirable solutions or measures.

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Taxing Immobile Factors and Wealth

5.1 INTRODUCTION

In a globalized world, the taxation of immobile factors becomes a major policy question. Mobile factors can change their location in response to differential taxation, leading to a loss of revenue for the national government,[1] either because of actual geographical real-location (the firm or the individual move to another country) or due to the *threat* of mobility. This engenders 'tax competition' between states that choose to lower their tax rates in order to prevent factors from departing. Consequently, national governments cannot ignore these effects when choosing the structure of their fiscal system and are hence constrained in the amount of taxation that they can impose on mobile factors. In contrast, an immobile factor cannot, by definition, cross borders. Tax rates may have an impact on its use or accumulation, but the possibility of fleeing to reduce the tax burden is not an option, thus eliminating an important behavioral reaction and making it an attractive source of revenue.

One example of an immobile factor is consumption, which occurs in the location where the individual resides. Land and housing are also immobile, raising questions about how to tax those and, more generally, how to tax wealth, in a world where different types of assets differ in their degree of mobility. One final aspect we will consider is inheritance taxation, both because it is closely related to wealth taxes but also because it has been considerably affected by increasing mobility.

5.2 THE WEIGHT OF IMMOBILE FACTORS IN TAX SYSTEMS

Consumption and excise taxes are among the oldest forms of taxation. Salt was taxed from classical antiquity, and the French version, the *gabelle*, was one of the most hated taxes of the ancient régime. As we will discuss, taxes on consumption are regressive

[1] A vast literature has empirically identified sizeable responses to tax differentials. See Wilson (1999) and Cremer and Pestieau (2004) for reviews of the literature on tax competition, and Hines (1999) on empirical work on behavioral responses.

and, since they were first used, figure prominently in debates about fairness. The balance of taxation has been the subject of vigorous public debate. In the aftermath of political revolutions, new representative assemblies often tried to move to an assessment of property instead. Thus, in the aftermath of the 1688 change of dynasty in England (the 'Glorious Revolution'), Parliament passed a tax on windows, exempting modest houses with a small number of windows. France in 1798 enacted similar legislation, which was only repealed in 1926, after taxes were modernized and income tax introduced during the First World War. Compared to income taxes, consumption and property taxes hence have a much longer history and were, until the 20th century, the main sources of fiscal revenue.

Today, consumption taxes amount to a considerable share of GDP (around 11 percent for the OECD average). This share has been stable over time, with a few exceptions such as Spain, where very low rates were progressively increased to close the gap with the OECD average. Despite a variation in rates (19 percent in Germany, 25 percent in Sweden), revenue shares are relatively similar across countries, ranging between 9.8 and 12.4 percent in 2016. In contrast, the extent to which countries rely on the tax varies considerably: as a share of total tax revenue, consumption taxes range from 25 percent in France to 32 percent in the United Kingdom.

Compared to consumption taxes, property taxes amount to a smaller share of GDP and vary considerably more across countries. For the OECD average,

Figure 5.1

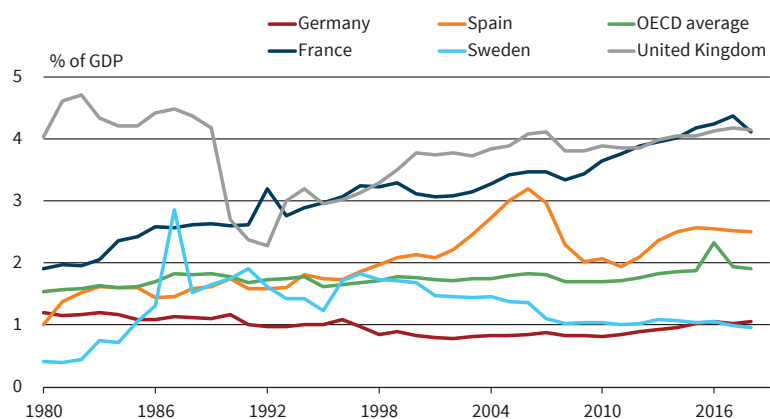**Tax Revenues from Consumption Taxes in Selected OECD Countries, 1980–2018**
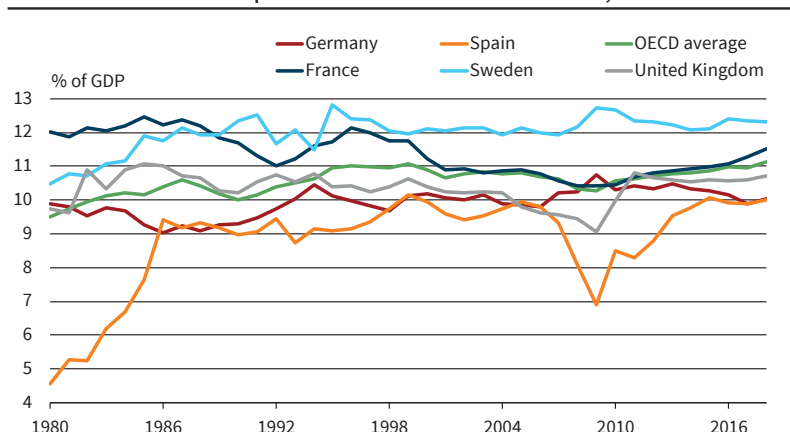
Note: Data is not available for Chile, Czech Republic, Estonia, Hungary, Israel, Latvia, Lithuania, Poland, Slovakia, and Slovenia until 1995.
Source: OECD.

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Figure 5.2

Tax Revenues from Property Taxes in Selected OECD Countries, 1980–2018

Note: Data is not available for Chile, Czech Republic, Estonia, Hungary, Israel, Latvia, Lithuania, Poland, Slovakia, and Slovenia until 1995.
Source: OECD.

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Austria (2.8 and 1.3 percent in 2016, respectively) as well as in the Scandinavian economies, where it amounts to between 2 and 4 percent, and is highest in France and especially in the United Kingdom, where it accounted for 12.3 percent of receipts in 2016. In fact, in the UK property taxes are substantial and are a key component of local governments' finance, accounting for around 30 percent of their revenue (Ministry of Housing, Communities, and Local Government, 2019).

Data on wealth and inheritance taxation is less readily available and more difficult to compare across countries. As well as a variety of tax rates and brackets, this type of taxation is characterized by a plethora of exemptions. For example, some countries do not include the main residence in net wealth tax bases, while inheritance taxes often exclude family firms and inter vivos gifts may not be taxed at all. What is clear is that these two forms of taxation, which were prevalent across the European

they rose from around 1.5 percent of GDP to 2.0 percent over the period from 1980 to 2016. This masks very different patterns, with Germany displaying a stable share of around 1 percent of GDP and France experiencing an increase from 1.9 to 4.4 percent of GDP (and from 4.8 to 9 percent of revenue). The role that property taxes play in overall tax receipts varies enormously across countries. It is low in Germany and

Table 5.1

Consumption and Property Taxes as a Share of Tax Revenue in 2018

	OECD Average	Austria	Belgium	Denmark	France	Germany	Italy	Spain	Sweden	UK	US
Consumption tax receipts as % of tax revenue	32.5	27.5	24.4	32.7	25.0	26.2	28.3	29.1	28.0	32.0	17.6
Property tax receipts as % of tax revenue	5.5	1.3	7.8	4.1	8.9	2.7	6.1	7.3	2.2	12.3	12.2

Source: OECD.

Figure 5.3

Net Wealth and Inheritance Taxation in Europe, 2017/2018
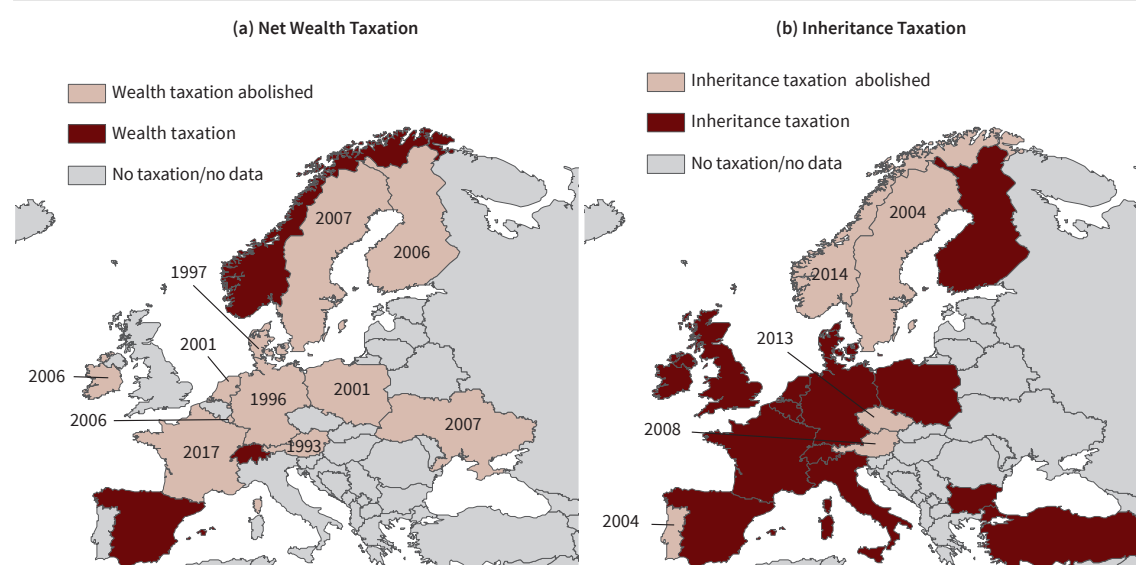
Note: The year marks the date of abolition of the tax.
Source: ifo DICE Report II/2018, Drometer et al. (2018).

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Union in the second half of the 20th century, have been abolished in a large number of countries, starting in the mid-1990s. In 2017, France, Norway, Spain, and Switzerland were the only EU countries with a net wealth tax (OECD, 2018), and France has since removed and replaced it with a property tax. Inheritance taxation is still common, though some countries, notably Norway and Sweden, have recently abolished it.

5.3 CONSUMPTION TAXES

5.3.1 The Impact of Consumption Taxes

Consumption taxes, notably VAT, have become one of the main sources of tax revenue in most high-income countries (the United States being the notable exception, with local and state sales taxes, but no deferral sales tax). They have the advantage that consumption is, generally, not mobile and hence they do not affect location choices. Moreover, if all goods are taxed at the same rate, they do not distort the choices made by individuals over different consumption goods.

The main argument against consumption taxes concerns redistribution. Given that the propensity to consume is higher for those with lower incomes, a proportional tax on consumption implies that high-income individuals will be paying a lower share of their income than low-income ones.[2] When such taxes are considered in isolation, there are hence concerns for fairness, and these have often been voiced through claims for lower tax rates on goods that are disproportionately consumed by low-income households. However, consumption taxes are rarely the only fiscal instrument used by a state, and their distributional implications should be assessed in conjunction with those esteeming from direct taxation and the welfare benefit system. Moreover, consumption taxes are difficult to avoid, and hence in a context of income tax optimization and evasion, they may at least tax at the point of expenditure incomes that would otherwise go untaxed.

Tax exemptions are an important concern. Many European countries create complexities by imposing different rates of VAT, with the United Kingdom for instance taxing hot and cold takeaway food at different rates. Exemptions affect a variety of goods, including amusement parks in France, gold coins in Germany, and cut flowers in both countries. A considerable part of these exemptions are simply the result of lobbying, have no economic rationale, and may have adverse distributional consequences. In some cases, the exemptions were introduced with a distributive aim but have failed to play such a role. For example, in the United Kingdom the total exemption from VAT of children's clothing – originally seen as a staple – favors those who purchase designer clothes for children (most likely high-income households), while dis-

torting expenditure towards clothing. Because of such distortions, much of the literature favors a common tax on all consumption goods combined with a progressive income tax system and redistributive benefits; see for example the Mirrlees Review. A different VAT rate is nevertheless justified for goods with a clear externality, such as an impact on the individual's future health (e.g., tobacco) or environmental externalities (which we will discuss below).[3]

Indirect taxes face two major constraints. First, given that the way to evaluate the distributive consequences of a fiscal system is to consider all its components, the extent to which consumption taxes can be used to raise revenue without having undesirable distributional consequences depends on the degree of redistribution operating through direct taxes. In other words, there are limits to the extent to which consumption taxes can be used if fairness in the overall tax system is a concern. Second, indirect taxes must be considered in an international context, notably by EU countries. The creation of the single market raised the question of *where* taxes should be levied. The decision in the European Union (and in many other countries) has been that indirect taxes are levied in the destination country, i.e., the one where the consumer purchasing the good is located, and not in the country that produces the good. This can create a number of inefficiencies in terms of fraud and cross-border shopping that results in a considerable loss of revenue (see Box 5.1).

Despite these drawbacks, consumption taxes remain a major tool for raising revenue, a tool that is to a large extent immune to mobility and should hence be a central part of fiscal systems, as is currently the case. As we have seen, the arguments for reduced rates are seldom solid and a common tax on all consumption goods would avoid distortions and be an improvement over existing systems. There is one notable exception: taxing externalities.

5.3.2 Taxing Goods with Externalities

Differential VAT rates are justified when an externality stems from the consumption of a particular good. Externalities can be positive or negative, resulting in lower or higher rates respectively, and a common practice across EU countries is to impose lower rates on books and cultural events. A more controversial question is how to tax negative externalities. In this section we consider a particular example, the taxation of environmental externalities – particularly carbon emissions[4] – as they are closely related to the process of globalization. Emissions themselves are

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[2] The propensity to consume is also higher for older individuals, implying some intergenerational redistribution too.

[3] The Pigouvian approach and optimal tax theory imply that high tax rates should be imposed on goods with negative externalities as well as on those with low demand elasticity and those which complement leisure.

[4] Environmental taxation should apply to a variety of activities, including those that produce nitrogen, which is a major source of acid rain, or those that use microplastics, which have damaging consequences for oceans and marine life.

BOX 5.1   VAT AND CROSS-BORDER EFFECTS

Taken together, in 2016 the 28 countries in the European Union experienced a total VAT loss estimated at EUR 147.1 billion, amounting to 12.3 percent of the total expected VAT revenue (Davoine et al., 2018). This so-called 'VAT Gap' is due to lax tax compliance, tax fraud, tax avoidance, bankruptcies, and insolvencies. Both liquidity constraints on firms and the size of the tax administration have a significant impact on the VAT Gap, but the increase in cross-border transactions seems to be a major factor facilitating fraud. One type of scheme consists of fraudulent traders supplying goods to other business, collecting VAT from them, and then not remitting VAT to the tax authorities, a procedure that is vastly facilitated by the fact that no VAT is chargeable on cross-border transactions between EU member states. Fraud also emerges due to the non-payment of VAT on imports into the European Common Market (ECM), particularly when goods enter one EU state and are then transported to another member state, with VAT being due only in the latter. Fraud occurs if the goods stay in the initial state without payment of the tax or if the goods move to the country of destination, but VAT is not collected because the customs authorities are not aware that the good was imported into the ECM.

A second cause of concern are VAT refunds to non-residents. In 2016, EU tax administrations received almost 700,000 claims amounting to EUR 109.4 million (Larhlid et al., 2017), with the majority of claims being worth less than EUR 1,000. One cost of these claims is simply administrative. As trade volumes keep growing, these claims take up an increasing amount of time of tax administrations across the EU. Cross-border shopping also results in a loss of revenue for the fiscal authorities, and this has been well documented in the case of North America. Ferris (2000) estimates that in the 1990s, Canada was losing 4 percent of its potential revenue from sales tax due to cross-border shopping in low-sales-tax US states. Even within nations, this is an important effect. Manuszak and Moul (2008) examine gasoline purchases in the Chicago area – which had the highest gasoline taxes in the region at the time – and estimate a loss of 40 percent of potential revenue. Similar effects can be expected to exist in the European Union.

Swiss residents systematically engage in considerable cross-border shopping to profit from lower prices in neighboring EU countries. For the latter, this implies an administrative cost related to the reimbursement of taxes; for the Swiss state, there is a considerable revenue loss. For example, the Swiss canton of Geneva has estimated that in 2018, 5.5 percent of household consumption (EUR 361 million out of EUR 6,524 million) consisted of goods purchased across the French border (Etat de Genève, 2019), implying a loss of about 5 percent of the tax revenue stemming from consumption taxes.

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mobile and hence policies (or the lack of) in one country will affect the environmental quality in another. Another issue is that of carbon leakages: as one economy increases environmental restrictions, the production of high-carbon-content goods moves to less regulated economies, thus increasing their level of emissions.

Environmental concerns imply that the European Union needs some form of carbon pricing in order to reduce the burning of carbon-based fuels and comply with announced climate change objectives. Two possibilities exist: carbon taxes and emission permits. The current system consists of traded permits, the EU Emissions Trading System (ETS), which has been in place since 2005 (see Flachsland et al., 2018 for a discussion). The ETS is efficient as it enables direct control of the level of emissions, something which carbon taxes do not do. Yet the system has several drawbacks. The first concerns the resulting market prices. The EU ETS has delivered prices that have been well below the initial expectations and which are perceived as having failed to decarbonize the European economy. Moreover, price volatility and the possibility of an unpredictable collapse make it difficult for the price to steer investments.

A solution would be the creation of a *price corridor* that limits fluctuations and reduces uncertainty,[5] hence providing a more stable investment climate.

The current ETS system is also unsatisfactory in that it does not cover the energy used in housing and other buildings as well as in private transport, which together account for a considerable share of total emissions. On the international level, the need to buy permits creates a wedge between the costs of firms in the European Union and those outside it (for whom there is no or little regulation). The resulting loss of competitiveness of the former shifts production to the latter, implying that while the permits reduce the emissions associated with European production, they may have only a limited effect in reducing those associated with the consumption by EU citizens, i.e., there are carbon leakages. A carbon tax can help tackle both problems.[6]

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[5]   The idea of introducing at least a carbon price floor has been debated, yet it has so far been blocked due to the Council's unanimity requirement in EU treaties on tax matters.

[6]   An additional concern is competition as the first wave of permits were given out for free to existing firms according to their emissions at the time, making the costs higher for an entrant that has to buy permits. However, new issues have progressively moved towards auctioned permits, largely solving this concern.

A carbon tax is a fee imposed on the carbon content of any type of greenhouse gas emitted by a sector and can be used to complement the ETS. More precisely, it would be possible to introduce a VAT system calibrated by the carbon content of goods, so that those commodities or services that do not fall within the ETS framework pay the standard VAT plus a rate depending on their carbon content. This calibrated VAT would reduce the carbon leakage problem, hence addressing the emissions generated by domestic consumption of imports by ensuring a level playing field between EU and foreign producers as far as carbon emissions are concerned. A calibrated VAT should also be applied to heating fuels and gasoline to reduce emissions by households. Although both policies are likely to be difficult to implement, steps could be taken at the EU level to facilitate them. Notably, just as there are requirements for a minimum VAT, a minimum tax rate on heating fuels and gasoline would be desirable, at least in the short run while possible extensions of the ETS to cover these sectors are considered. Concerning the calibrated VAT on imports, the European Union should ensure that discussions of carbon emissions are part of trade negotiations, ideally seeking an international agreement on available instruments. This agreement should emphasize that a calibrated VAT is not a form of protectionism, but is rather a tool for equal treatment of emissions irrespective of their geographical origin.

Lastly, both carbon taxes and ETS have undesirable domestic distributive consequences as they increase consumer prices, thus hurting low-income households the most. The distributional consequences can be addressed by using the proceeds for redistribution. For example, in Canada, tax revenue from the federal carbon tax is used as a rebate in income tax for households, and it is estimated that these refunds offset the higher prices for about 70 percent of households. This idea could potentially be pushed further by channeling carbon tax receipts from imports to low-income economies hurt by the tax, for example in the form of development aid.

5.4. TAXING LAND AND HOUSING

5.4.1 The Arguments for Taxing Land

David Ricardo termed income from land a rent paid to the landlord for the unearned quality of soil, and starting with Henry George (Progress and Poverty, 1879), many economists have argued that taxing the value of land is an efficient source of public revenue, as it allows for the reduction of more distortive taxes on labor and capital. Land prices reflect one of two things: either the presence of natural resources (such as gold, rare earths, or vine-friendly soil) or the value of location (in terms of access to productive activities or amenities). Either way, landowners enjoy rents

that are due to natural randomness or to the benefits resulting from externalities, the latter often due to public investments in the form of good transport, access to supply chains, or the quality of schools. Taxing these rents will consequently not affect the productive capacity of the land.

Indeed, land-value taxes have little disincentive effect as they cannot reduce the supply of land nor distort individual investments on what is built. They are unlikely to result in fiscal optimization since plots cannot be hidden or moved to tax havens, and provide easy collateral for the tax authorities in case of payment default. They may even stimulate economic activity by ensuring that all profitable land is used and not kept idle,[7] and are likely to reduce housing prices in dense urban areas, thus benefiting young workers who are on average less well-off than their elders. Moreover, as land prices increase because, say, investments in transport and infrastructure turn low-value farmland into high-value plots for commuters, a land tax recovers part of the investment as tax revenue rather than leaving it all as a windfall to the original owners.

As a way of charging for the costs of providing local services, land-value taxes are hence efficient, yet they raise concerns about fairness. The tax bill does not depend on the landowner's ability to pay, but rather on the value of an asset, implying that a high payment may be required from individuals with moderate incomes. There is nevertheless a strong correlation between income and housing wealth, but as we will discuss below, fairness is an important concern when designing this type of taxation.

5.4.2 Why Is Land Taxed So Little?

In the light of these arguments, it is surprising that land is so little taxed. The traditional argument explaining the low taxation of land is called the "homevoter" effect (Fischel, 2001). For most households, their home is their most important asset, in many cases their only asset, and hence a vast number of households feel that land-value taxes will be a double penalty, as they would not only be a burden on their own finances but also reduce the price of their property as future buyers factor in the increased tax. Figure 5.4 shows the proportion of households in the European Union according to whether or not they live on their own property, and indicates the prevalence of homeowners. Homeowners are consequently a large fraction of the electorate and argue that because they have paid for the land, they should be allowed to enjoy its rents. Consequently, homeowners, even of modest properties, tend not to support land and property taxes. As homeownership has expanded, the

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[7] There is already a cost of not using land in terms of its opportunity cost, but in certain locations with a considerable share of vacant property (e.g., Paris), this cost seems not to be sufficiently high to encourage full occupation. A land-value tax would be an additional cost that should decrease vacancy rates.

Figure 5.4
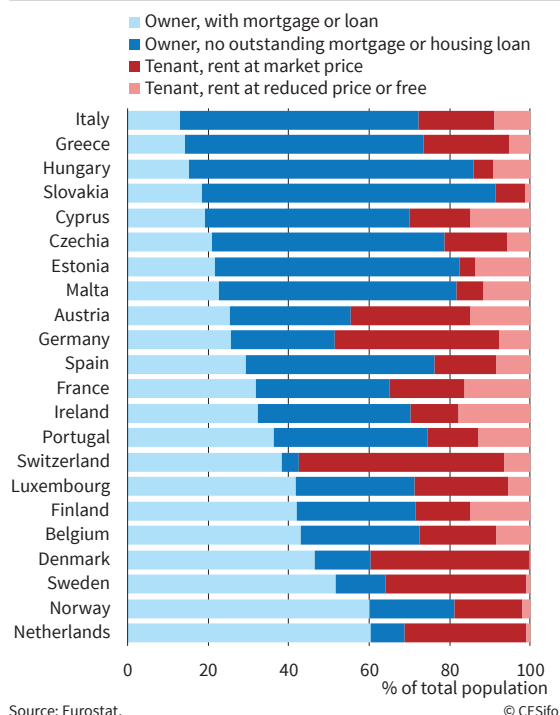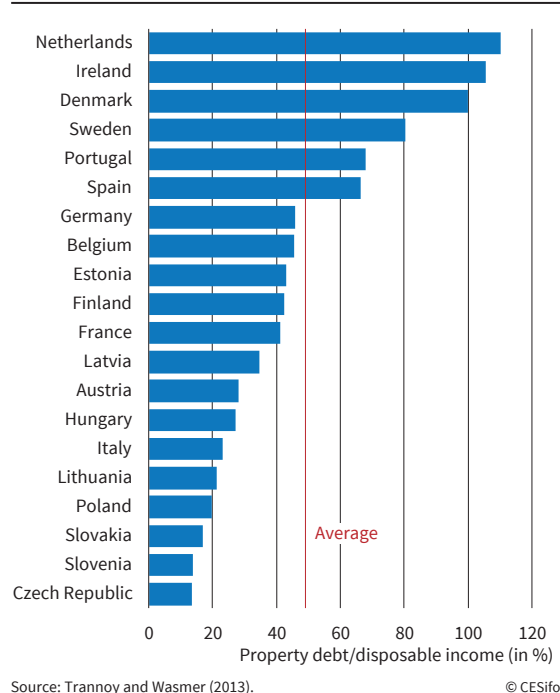
Distribution of Population by Tenure Status in 2018

■ Owner, with mortgage or loan
■ Owner, no outstanding mortgage or housing loan
■ Tenant, rent at market price
■ Tenant, rent at reduced price or free

Italy
Greece
Hungary
Slovakia
Cyprus
Czechia
Estonia
Malta
Austria
Germany
Spain
France
Ireland
Portugal
Switzerland
Luxembourg
Finland
Belgium
Denmark
Sweden
Norway
Netherlands

0   20   40   60   80   100
% of total population

Source: Eurostat.   © CESifo

Figure 5.5

Real Estate Debt of Households in Various European Countries in 2010

Netherlands
Ireland
Denmark
Sweden
Portugal
Spain
Germany
Belgium
Estonia
Finland
France
Latvia
Austria
Hungary
Italy
Lithuania
Poland
Slovakia
Slovenia
Czech Republic

Average

0   20   40   60   80   100   120
Property debt/disposable income (in %)

Source: Trannoy and Wasmer (2013).   © CESifo

support for such taxes has fallen, capturing the fact that the median voter has shifted from being a renter to an owner.

Moreover, as the real-estate debt burden of households has increased, homeowners have probably become more sensitive to land taxes. Taxation that reduces the price of their property could potentially imply negative equity, with important implications for both household finances and their opportunity to move to other locations should the need arise. Figure 5.5 shows the ratio of debt to disposable income in EU countries and indicates that, given its magnitude, price changes could represent a major problem for households in many countries.

This hypothesis is supported by empirical analyses for the United States. Dehring et al. (2008) examine the political support for public projects in the United States that are perceived as increasing property values and show that support crucially depends on the size of the home-owner population. Moreover, politicians respond to such attitudes by adapting policy to the demands of the home-voter. Ahlfeldt et al. (2015) examine the results from a referendum concerning a major public project in Germany to test the hypothesis that, compared to tenants, homeowners are more (less) likely to support initiatives that positively (negatively) affect the amenity value of a neighborhood and hence its house prices. Their results indicate that this is the case, implying that political choices are strongly influenced by the property status of a constituency.

An additional mechanism is put forward by Hilber and Robert-Nicoud (2013), who present a broader theory of the political opposition to land taxes. They suggest that, as well as homeowners, powerful groups engage in lobbying aimed at keeping property and land prices high. This includes those in professions whose income depends on the cost of land and property, such as notaries, real estate agents, and real estate developers. Interestingly, Solé-Ollé and Viladecans-Marsal (2007) show, using Spanish data, that local governments are more likely to implement policies reducing property and land prices when they face little political competition than when the competition is strong, implying that the political class sees expected house price dynamics as a key determinant of political support.

5.4.3 How Feasible Are Land-Value Taxes?

Introducing a tax on the value of land presents some problems. The first is balancing winners and losers within cities. Some businesses require much more space than others and will be penalized, with city cinemas and urban car-repair shops being hit hard. Private urban gardens, which clearly provide an externality in terms of environmental conditions, may disappear as owners will be encouraged by the tax to convert them into extra housing, which would itself be efficient by increasing the supply of housing.

A second concern is the valuation of land. This is never straightforward but even less so in the case of expensive urban land, which is rarely vacant. Transaction prices are useful information, but they are prices for properties, not plots of land, and separating the two components is difficult. A plot should be valued

as if it were vacant and this requires approximations of the cost of building and depreciation rates. A further question is how to take into account different planning restrictions on land use.

The distributive implications of land taxes are complex. First, the tax would be particularly burdensome on certain categories. Low-income pensioners who live in large family homes would have to pay a large bill irrespective of their incomes, although in the tight housing markets of most EU countries, there may be benefits in terms of encouraging older people in large properties to move to more suitable accommodation and free up housing for larger families. The tax would also hurt owners with a mortgage (usually younger individuals), as the value of their land may be considerable even if their net wealth is low, although this problem could be solved by sharing the tax burden between the owner and the lending institution. Second, the redistributive properties so strongly defended by George and his followers are today only partially true. As argued by Piketty (2014), since much of the increase in wealth inequality during the second half of the 20th century has been due to rising house prices, landvalue taxes are a simple way of taxing capital gains associated with these price increases and which, generally, do not depend on individual actions.[8] Taxing land implies a greater fiscal burden for the voting middle class as compared to those on low wages and welfare, which are less likely to own property.[9] In contrast, what separates the middle class and the top percentiles of the distribution is precisely that home ownership constitutes a major share of wealth for the former yet not for the latter. Land is hence less concentrated than it was in the past and, as a result, the burden of a land-value tax falls largely on the middle class.

Some of these objections can be overcome, and to do so, three aspects are fundamental. The first is that a land tax should not be implemented overnight but rather be introduced gradually so as to allow for market signals to progressively reflect the changes. This would help spread the costs to the losers both over time and across individuals if there are several successive owners. Second, the existence of winners and losers implies that there will be pressure to protect certain categories. The danger with such considerations is that the tax on land values may de facto be eroded by a plethora of exemptions. Third, the valuation of land is not an insuperable problem and will likely become easier in the light of

the IT developments discussed in Chapter 2 that can help gather information on transactions, improvements, and access to public services. The main drawback of a land-value tax is that it is 'not fair' in the sense that it is not based on ability to pay. In order to further explore this aspect, the next section discusses the taxation of land, property, and net wealth.

5.4.4 Land-Value Taxes, Property Taxes, and Wealth Taxes

The value of land is part of the value of a property, which in turn is part of an individual's net wealth. Although taxing one or the other of these assets is closely linked, which one is chosen as a tax base can have different implications both in terms of efficiency and fairness. Before considering these, it is worth examining the composition of household wealth. Computing the share of land in the latter is not straightforward, as most countries do not assess the value of land. It is nevertheless possible to consider the importance of property wealth, of which land is a substantial component, in income and in total wealth. Table 5.2 reports the increasing importance of wealth relative to annual household income in France, Germany, and the United Kingdom over the past six decades. Overall, wealth relative to annual income is lowest in Germany and largest in France, but in all three countries it has roughly doubled between 1950 and 2010. In contrast, housing wealth as a proportion of annual income has tripled or quadrupled. The result is that by 2010, property was a much larger share of total wealth than in 1950, rising from 31 percent to 61 percent in France, from 26 percent to 56 percent in Germany, and from 40 percent to 57 percent in the United Kingdom.

Property-value taxes share many of the features of land-value taxes, notably that the tax base is immobile. They have the drawback that they create a distortion as they penalize improvements to the buildings standing on it, and the advantage that since the price of a property is to a large extent related to the number of dwellers, they imply a stronger correlation between the tax bill and the use of public services than a land-value tax. In contrast, because other types of wealth are mobile, a net wealth tax results in tax optimization and capital flight. This reduces tax revenue and, potentially, output.

Table 5.2

Housing Wealth

	France			Germany			United Kingdom		
	Wealth as % of income	Housing as % of income	Housing as % of wealth	Wealth as % of income	Housing as % of income	Housing as % of wealth	Wealth as % of income	Housing as % of income	Housing as % of wealth
1950	278	85	31	233	60	26	235	94	40
1970	363	122	34	313	128	41	333	124	37
2010	605	371	61	414	231	56	523	300	57

Source: Piketty (2014).

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[8] This is an important loophole of most European tax systems, in which capital gains associated with the household's main residence go untaxed.
[9] This group is also often characterized by low turnout rates in elections and hence yields less political pressure.

In terms of fairness, net wealth taxes are in principle assessed on the individual's capacity to pay (in terms of wealth, not necessarily of income), which, as we have seen, is not the case for land-value taxes nor for property taxes. There are nevertheless several caveats. First, a broadbased capital income tax can play the same distributive role as a net wealth tax, and has the advantage of not creating liquidity problems[10] and of taxing capital gains, which are harder to evaluate with an annual wealth tax. Second, the valuation problem associated with land-value or property taxes is even greater in the case of the plethora of assets and debts included in net wealth. When this is combined with the use of exemptions (such as that on the main residence, which is common in many countries), it can potentially give rise to unfair treatment of taxpayers.[11] Lastly, tax optimization and changing country of fiscal residence are more frequently undertaken by those at the top of the distribution, and hence *de facto* curb the relationship between the capacity to pay and the tax bill of individuals. As a result, mobility implies that a net wealth tax may not be fairer than land-value or property taxes.

In the current context of (financial) capital mobility, the majority of EU countries have removed taxes on wealth, precisely because of the perception that mobility implied both an erosion of the tax base and difficulties in taxing those at the top of the distribution. In 2017, France, Norway, Spain, and Switzerland were the only OECD countries with net wealth taxes (OECD, 2018). The current French government has since removed the wealth tax and replaced it with a property tax, mainly as a reaction to the forces of globalization and the flight of major fortunes out of the country.

Overall, because the tax base consists of immobile factors, land-value or property taxes are an efficient source of revenue that governments could use more than they currently do, despite the drawback of not fully reflecting the ability to pay. A net wealth tax is in principle fair, yet international mobility and the ease of tax optimization imply that in practice, highwealth individuals can avoid the tax, reducing both the tax base and its distributional properties. If countries want to implement a net wealth tax, these arguments imply that they should consider the possibility of a dual wealth tax, with a higher rate on immobile assets and a lower one on mobile wealth. Wealth taxes should also be considered in interaction with income taxes and the overall tax burden on an individual should be assessed taking both into account.[12]

5.5 INHERITANCE AND ESTATE TAXES

5.5.1 Why Tax Inheritances?

An inheritance is income accruing to the recipient and as such it increases her ability to pay, implying that it should be taxed to maintain fiscal fairness. Inheritances are likely to become an increasingly important issue as the baby boomers age, a generation that has accumulated considerable assets and currently has a life expectancy of 10 to 30 more years. Given their weight in European populations and the fact that the quantitative importance of bequests has increased over the past few decades in slow-growing European economies,[13] the volume of bequests is likely to rise dramatically in the next few decades. For example, in France, in recent years bequests and donations amounted to about 20 percent of annual household income (France Strategie, 2017), while for the United States over USD 45 trillion of wealth (in 2002 dollars) has been predicted to be transferred as estates between 1998 and 2052 (Schervish and Havens, 2003). As the age pyramid is inverting, bequests and donations increase and greater taxation of such incomes would allow for a reduction in other distortionary taxes.

Governments may also want to tax inheritance for equity reasons.[14] The distribution of inheritances is highly skewed as a large fraction of young adults are born into households with little wealth where no bequests will be made. In France, for example, this is the case for about 50 percent of the population (France Strategie, 2017). Differences in inheritances received hence result in unequal opportunities across individuals of the same generation, and social justice objectives may call for reducing these differences.[15] Moreover, bequests also affect intergenerational equity. Over the past few decades, higher life expectancy has increased the age at which bequests are received. Figure 5.6 presents data on the age at which individuals inherit in the United Kingdom (for the period between 2014 and 2016) and indicates that the largest bequests are received by those above the age of 55. Piketty (2014) reports that in France, the average age at which an inheritance is received rose from 38 in 1950 to 49 in 2010, and is predicted to peak at 55 in 2040. These figures indicate that the bulk of intergenerational transfers occur relatively late in the individual's working life,

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[10] These often concern elderly individuals with high wealth but low income. See Boadway and Pestieu (2018) for a discussion on the wealth versus capital income tax.
[11] See Saez and Zucman (2019) for a discussion of how increased information exchange and better use of digital information can be used to evaluate a taxpayer's holdings. Note, however, that this comes at the cost of considerable invasion of personal privacy.
[12] One possibility is to have a ceiling on the share of income paid once both taxes are taken into account.

[13] See Piketty (2011) and Ohlsson (2011).
[14] Several countries, notably the United Kingdom, also use the inheritance tax system to encourage bequests to charities, for example by reducing the rates applicable to the rest of the estate if at least a certain share is bequeathed to a charity. We will not consider this potential use of the fiscal system, as it would require a broader discussion of the treatment of charitable donations out of other incomes and from the government itself.
[15] The role of inheritance taxes in the accumulation of wealth is highlighted by Piketty (2003, 2014). Dell (2005) simulates the cases of France and Germany, which have similar progressive income taxes but where the latter has a much higher exemption for inheritance taxes. He finds that the greater concentration of wealth in Germany at the very top can be explained by this difference.

Figure 5.6

Median Value of Individual Inheritances Received in the United Kingdom, 2014–2016
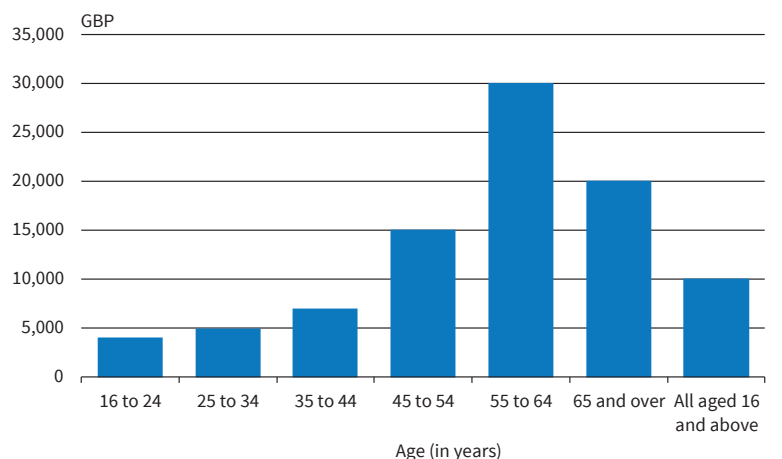
Source: Office for National Statistics (2018).   © CESifo

thus becoming a source of intergenerational inequality. The taxation of bequests hence has the potential to reduce income and wealth differences across generations.[16]

Fairness (and, potentially, redistributive aims) imply that governments should tax the transmission of wealth. The policymaker also has several options on how to define the tax base, by using either an estate tax or an inheritance tax and choosing whether or not the tax also applies to gifts and donations. Estate taxes are levied on the entire property of the deceased, while inheritance taxes are levied on the amount received by a particular individual from the deceased. Estate taxation is attractive in that it is a way of taxing the capital gains associated with the assets of the deceased, but is not fair as it does not take into consideration the heirs' capacity to pay, notably whether the entire state is bequeathed to a single individual or split among many. Inheritance tax, in contrast, considers the recipient as the tax unit and hence better captures the ability to pay. In what follows, we will focus on inheritance taxation, although many of the aspects discussed apply to the two fiscal instruments. Both have potential incentive effects that need to be evaluated, and face political-economy arguments that explain why such taxes are so unpopular.

5.5.2 The Economics and Politics of Inheritance Taxation

5.5.2.1 Tax Distortions

If bequests were all accidental and due to uncertain life spans, inheritance taxes would have no distortionary impact. Existing evidence, however,

indicates that bequests are at least in part intentional,[17] as people with children seek to pass on some of their accumulated wealth to the next generation, and consequently the fiscal treatment of bequests can affect their behavior. A first distortion resulting from the tax is international mobility of households that change country of residence in order to avoid the tax. As is the case with the net wealth tax, such mobility implies a loss of revenue and lack of fairness. Since it is usually the wealthiest individuals who engage in activities to avoid paying this tax, inheritance tax is mainly paid by the middle class. Unfortunately, data on the extent to which changes in fiscal residence are due to tax considerations does not exist, but casual observation indicates that the phenomenon is not negligible.

A second concern is that in the absence of the tax, people with children would work harder and save more in order to leave a larger bequest, thus increasing aggregate capital accumulation.[18] However, the impact crucially depends on the motive behind bequests. Bequests can be due to purely altruistic motives or the result of an exchange, with parents transferring wealth in exchange for care by their children. Observed behavior seems to be best explained by the individual deriving utility from the amount bequeathed rather than from the utility of the individual to whom she leaves the bequest, which is consistent with either a 'warm glow' effect or an exchange motive. In fact, the (limited) empirical literature that exists has had difficulty establishing an effect of inheritance taxes on savings.[19]

Inheritances have also been argued to affect the incentives of the recipient to work. For example, Brown, Coile, and Weisbenner (2010) find that, in the United States, inheritance receipt is associated with a significant increase in the probability of retirement, and using Swedish data, Elinder et al. (2012) estimate a significant reduction in labor income for old recipients. Receiving a bequest is also likely to create new opportunities, especially for younger recipients, as it relaxes credit constraints. Bequests

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[16] In the United Kingdom more than half of the recipients that were over 55 saved their inheritance, while younger recipients were more likely to spend it, often in buying a first home or using it in businesses (Office of National Statistics, 2018).

[17] For example, using US data, Kopczuk and Lupton (2007) find that about 75 percent of the population intends to leave a bequest; see also Poterba (2001) and Kopczuk (2013).
[18] See Stiglitz (1978), Kotlikoff and Summers (1981), McCaffery (1994), and Piketty and Saez (2013).
[19] Attempts to estimate the elasticity of savings to the US estate tax have faced considerable problems, from data availability to conceptual issues about relating short-term tax changes to long-term responses, as discussed by Kopczuk (2013). Kopczuk claims that: "Taken at face value these results would be consistent with the notion that tax avoidance is not the main driver of the [savings] response."

allow individuals to acquire education or train, thus improving future labor market opportunities, facilitate geographical labor mobility, and hence increase the range of jobs considered, and increase entrepreneurship.[20] These aspects point to the importance of the age of the recipient as a determinant of the potential effect of inheritance taxes.

Overall, the literature points towards considerable incentive effects of inheritance taxes. Mobility is a major concern, while the impact on savings is unclear. The age structure of recipients is also important. Inheriting late in life often results in anticipated retirement, which is costly both in terms of lost output and for public finances (if retirement pensions are public), while for young recipients a bequest may increase opportunities for employment and business activity.

5.5.2.2 Family Firms

A variety of tax exemptions exist in different countries, depending on the nature of the goods (for example, works of art) or the particular origin of the asset (parental home). One of the most frequent exemptions from inheritance taxes are family firms. Family-owned firms account for a substantial fraction of economic activity: according to Eurostat, over 60 percent of EU firms are family businesses, and in some countries they represent a large share of employment (for example, in Italy they account for 98 percent of all employees in firms of under 50 workers; Mandl, 2008). It is hence not surprising that how they are affected by intergenerational transfer of control has always been a major policy concern.

In most European countries, the transmission of a family firm is either not subject to inheritance taxation or faces substantial exemptions, and as a result, large inheritances may go untaxed. The argument usually put forward as a justification is that in many cases, the only way for the heirs to pay the tax would be to sell the firm, resulting in a reduction in economic activity and employment. Whether this is so is not clear,[21] and if it were, it is possible to conceive solutions that ease the payment of the tax bill over time.

Two issues are central to assessing the preferential treatment of family firms: whether such firms create externalities, and if existing exemptions entail costs. In terms of external effects, families may be more reluctant than corporate owners to sell or dismantle a firm during bad times, hence providing a source of stability in output and employment during reces-

sions.[22] If this were the case, it would justify a favorable fiscal treatment of family firms, although there is no reason for it to be restricted to inheritance and not encompass other aspects of firms' taxation. Concerning the costs, the special treatment of family firms is strongly regulated, with the family link between the deceased owner and the heirs being a crucial factor, and restrictions on changes in employment or on the sale of the family firm over a certain period of time.[23] As a result, firms may be run by relatives who are less suitable than external managers or they may avoid necessary adjustments in order to comply with the restrictions associated with the exemptions, both of which impose costs and inefficiencies.[24]

Overall, there seems to be no clear externality stemming from family firms that would justify differential inheritance taxation, while existing restrictions required in order to benefit from inheritance tax exemptions seem to impose costs on firms of which the policymaker needs to be aware.

5.5.2.3 Political Economy

Inheritance taxes are unpopular everywhere despite the fact that they have the potential to be fair. As is the case for wealth taxes, they are paid infrequently, which makes them more salient than taxes that are paid on a regular basis, and this probably partly explains their lack of popularity. The argument that they imply double taxation as they tax income that has already been taxed (when the deceased received that income) only makes sense if the tax unit is the dynasty. If, instead, taxes are borne by individuals, then an inheritance is an income for the recipient that has never been taxed as such.

An important aspect that opponents to such taxes have always put forward is the impact on small firms, emphasizing examples of hard-working business owners whose heirs had to dismantle or sell the firm to pay the taxman. The growing unpopularity of inheritance taxes is also probably related to the expansion of the middle class and of home ownership in the second half of the 20th century.[25] Such expansion has had two effects: a larger middle class with considerable housing assets now sees itself at risk of having to pay inheritance tax and as a result votes to remove it, while the sharp increase in housing prices may have accentuated the desire to transmit to their offspring assets that would allow entry into the housing market. If we add the fact that loopholes and mobility allow the very rich to optimize in order to avoid inheritance

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[20] On the relationship between inheritance and education, see García-Peñalosa and Wälde (2000), Farhi and Werning (2010), and Strawczynski (2014). Numerous studies find that receiving an inheritance has a positive impact on self-employment and business entry; see for example Blanchflower and Oswald (1998) or Hurst and Lusardi (2004).
[21] Brunetti (2006) finds, using US data, that the impact of inheritance taxes on the likelihood that a decedent's firm will be sold is at best small, while in the case of Greece, Tsoutsoura (2015) obtains a stronger effect.

[22] See James (2013) for a discussion of the historical importance of European family firms during periods of major social or economic disruption, and Foster and Kaplan (2001) on the long-run survival of firms.
[23] See for example KPMG (2018).
[24] If these restrictions were costly, we would expect worse performance from inherited family firms. Indeed, Bloom, Sadun, and Van Reenen (2015) find that family-owned inherited firms are less well managed than other types of firms.
[25] See Graetz and Shapiro (2005).

taxes, the majority of the middle class is likely to see taxing bequests as unfair. The overall outcome is that such taxes are deeply unpopular.

5.5.3 Policy Options for Inheritance Taxation

Our discussion above points to some general principles that should be considered when choosing the way in which inheritances and donations are taxed. The first is keeping it simple. The simplicity and readability of a tax system makes it harder to engage in fiscal optimization and hence prevents the erosion of the tax base. In most cases, existing exemptions have no economic rationale and can be justified only through social norms, which governments may or may not want to support. Certain countries also exclude from a deceased person's estate assets placed in a trust or in certain financial products (the so-called "assurance vie" in France). Again, the economic arguments for such special treatments are weak at best, while the existence of these exemptions considerably dampens support for inheritance taxes by creating the (largely correct) impression that they serve the rich by reducing their tax bill. As we have seen, the most common exemption is that concerning the inheritance of family businesses. The absence of externalities stemming from inheriting a family firm implies no efficiency justification for such an exemption, hence a family firm should be treated as any other asset. Cash flow considerations may come into play, but it is possible to devise a system that spreads payments over time.

A second consideration is *seeking greater fairness,* ensuring that individuals contribute (at least) in proportion to their ability to pay. Most countries that have an inheritance tax use a progressive tax schedule; some have a large allowance and a single bracket, such as the UK (with a non-taxable allowance of GBP 325,000 and a tax rate of 40 percent), others have several brackets, such as France (which has an exemption of EUR 100,000 and six brackets going from 5 percent to 45 percent). Yet most feature sufficient exemptions in terms of types of assets and inter vivos donations such that careful planning allows a parent to bequeath a considerable estate with little or no tax. For example, despite France's high tax rates and a highly skewed distribution of inheritances, tax revenues from this source amount to only 5.5 percent of the total amount bequeathed, and the top 0.1 percent of the distribution of bequests (which on average amount to EUR 5.5 million) are estimated to pay at most 20 percent (Dherbécourt, 2017). Simplicity is hence important, not only to avoid tax optimization, but also in order to prevent an unfair distribution of the tax burden.

If social preferences seek to foster intergenerational equity, it seems desirable to consider the *age structure* of the fiscal system, so as to encourage donations to younger heirs. A number of countries have schemes that result in lower (or zero) tax rates on inter vivo gifts, yet such schemes do not depend on the age of the recipient but rather on the age of the donor (if at all). Provisions that encourage transfers to the young could be used if a country wished to foster this particular form of equality.[26]

Setting the *appropriate tax rate* requires resolving the tension between two arguments. On the one hand, raising revenue calls for high tax rates. On the other, both theory and empirical work indicate that the higher marginal tax rates, the greater the extent of tax optimization and evasion.[27] In practice, this means that there is a trade-off between a high tax rate that raises more revenue and a low tax rate that is seen as politically acceptable and gives individuals little incentive to reduce the tax bill. The resulting question is whether there is a Laffer curve in inheritance tax, with high tax rates leading to substantial efforts to engage in tax optimization that result in low effective taxes. If so, it would be desirable to enlarge the tax base and lower the rates.

5.6 POLICY RECOMMENDATIONS

In a globalized world, the taxation of immobile factors should be a key element of fiscal systems. Although taxing immobile factors is efficient because it avoids the erosion of the fiscal base associated with international mobility, it is not always fair, and this imposes limits on the extent to which governments may wish to use such taxes.

Consumption taxes are widely used in the European Union and VAT has indeed few distortionary consequences. The limits on its use arise from its distributional implications. Because those with a greater ability to pay tend to consume a lower share of their income, they pay proportionally lower taxes, and as a result, consumption taxes need to be combined with other sources of tax revenue (such as a progressive income tax) to preserve fairness in the fiscal system. Moreover, VAT rates are marred by exemptions, many of which are the result of lobbying and for which it is hard to provide an economic rationale. Moving towards a more uniform taxation of consumption would reduce distortions, and governments should seek to allow for differential rates only on goods and services with clearly identified externalities.

Negative externalities imply that there are solid arguments for consumption taxes covering, for example, CO_2 emissions, and having them exceed standard VAT rates. The possibility of a calibrated VAT rate that imposes a higher rate on both imports and domestic sectors which are not currently covered by the European emission trading system is worth exploring. Coordination is particularly important in this case,

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[26] A simple way would be to make the tax-free allowance present in most systems decrease as the age of the recipient increases.

[27] See, for example, Crane and Nourzad (1987), Poterba (1987), Alm, Bahl, and Murray (1990), Pommerehne and Weck-Hannemann (1996), and Lang, Nöhrbab, and Stahl (1997).

and it would be desirable for the European Union to ensure that future trade negotiations include a discussion of carbon emissions and that the possibility of a calibrated VAT, if a country were to implement it, is understood not to be a disguised form of protectionism.

Policymakers should pay particular attention to the taxation of land and property, both of which are lightly taxed in most (though not all) EU countries. Both land-value and property taxes are levied on immobile assets and engender few distortions, making these attractive fiscal instruments. Their implications in terms of fairness are ambiguous. On the one hand, such taxes are not defined according to the individual's ability to pay, and although there is a positive correlation between income and property holdings, it is far from perfect. Notably, property represents a smaller share of wealth for those at the very top of the income distribution than for the middle class, implying that the tax burden falls heavily on the latter. On the other hand, property and/or land-value taxes allow for the taxation of capital gains associated with increases in land value, which in many fiscal systems go untaxed despite the fact that they reflect the household's ability to pay. The taxation of land value or property may raise considerable political opposition, yet in a globalized world it is a source of potential fiscal revenue that governments should seriously consider. An important caveat is that if such taxes were to be more intensively used, they should be implemented incrementally, in such a way as to spread the costs of the policy change over individuals and time.

A net wealth tax is attractive from a fairness perspective as it captures households' expenditure possibilities better than land-value or property taxes. However, it is problematic in that both households and certain assets are mobile, implying that the tax results in optimizing behavior. The combination of international mobility and numerous loopholes implies that not only is the de facto tax base reduced, but also that those with high wealth holdings manage to pay low taxes and thus erode the fairness of the tax. Whenever countries choose to implement a net wealth tax, it is hence essential that it has as few exemptions as possible and that there is an effort to close the (often highly distortive) loopholes that abound in EU economies so as to avoid tax optimization. Concerning the impact of international mobility, a possible policy option would be a dual wealth tax, with a higher rate on immobile assets and a lower rate on mobile wealth.

Taxing inheritances (or donations) is part of a fair tax system since receiving an inheritance increases an individual's ability to pay. Interest in such tax has been growing, both because it is seen by some as a major tool to reduce wealth inequality and because of the evolution of the age structure of European countries, which implies that the quantitative significance of transmitted wealth will increase over the next few decades. Two key aspects should be borne in mind. First, it is important to tax inheritances in a way that does not exempt large parts of inherited wealth (such as family firms). Second, just as in the case of the net wealth tax, international mobility and the use of the tax loopholes allow those at the top of the distribution to avoid or diminish the amounts paid, again reducing both efficiency and fairness.

Taxes on net wealth and inheritances share the same basic drawbacks and, if they are to be used, they should be designed with the same principles in mind. The first is to eliminate exemptions in order to broaden the tax base and keep the system simple so as to reduce the possibilities for tax optimization. Second, the incentives for capital flight and international mobility are strongly affected by tax rates. A rethink of rates involving both simplification and reduction so that they are politically acceptable is hence essential.

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