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# TURKEY

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BETTER POLICIES FOR BETTER LIVES

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# Basic statistics of Turkey, 2017

(Numbers in parentheses refer to the OECD average) [a]

| LAND, PEOPLE AND ELECTORAL CYCLE | | | | | |
|---|---|---|---|---|---|
| Population (million) | 79.4 | | Population density per km² b | 103.7 | (37.2) |
| Under 15 (%) | 23.1 | (17.9) | Life expectancy (years, 2016) | 78.0 | (80.7) |
| Over 65 (%) | 8.4 | (17.0) | Men | 75.3 | (78.1) |
| Foreign-born (%, 2016) | 2.3 | | Women | 80.7 | (83.3) |
| Latest 5-year average growth (%) | 1.1 | (0.6) | Latest general election | June | 2018 |
| **ECONOMY** | | | | | |
| Gross domestic product (GDP) | | | Value added shares (%, 2016) | | |
| In current prices (billion USD) | 851.1 | | Primary sector | 7.0 | (2.4) |
| In current prices (billion TRY) | 3 104.9 | | Industry including construction | 32.0 | (26.9) |
| Latest 5-year average real growth (%) | 6.1 | (2.1) | Services | 61.0 | (70.7) |
| Per capita (000 USD PPP) | 27.1 | (43.6) | | | |
| **EXTERNAL ACCOUNTS** | | | | | |
| Exchange rate (TRY per USD) | 3.645 | | Main exports (% of total merchandise exports) | | |
| PPP exchange rate (USA = 1) | 1.421 | | Manufactured goods | 42.4 | |
| In per cent of GDP | | | Machinery and transport equipment | 30.7 | |
| Exports of goods and services | 24.8 | (55.0) | Food and live animals | 9.1 | |
| Imports of goods and services | 29.3 | (50.5) | Main imports (% of total merchandise imports) | | |
| Current account balance | -5.6 | (0.4) | Machinery and transport equipment | 30.7 | |
| Net international investment position | -53.5 | | Manufactured goods | 21.5 | |
| | | | Commodities and transactions, n.e.s. | 16.1 | |
| **LABOUR MARKET, SKILLS AND INNOVATION** | | | | | |
| Employment rate for 15-64 year-olds (%) | 51.6 | (67.7) | Unemployment rate, Labour Force Survey (age 15 and over) (%) | 10.8 | (5.8) |
| Men | 70.7 | (75.4) | Youth (age 15-24, %) | 20.6 | (11.9) |
| Women | 32.2 | (60.1) | Long-term unemployed (1 year and over, %, 2016) | 2.2 | (2.0) |
| Participation rate for 15-64 year-olds (%, 2016) | 57.0 | (71.7) | Tertiary educational attainment 25-64 year-olds (%,2016) | 19.4 | (35.7) |
| Average hours worked per year (2016) | 1 832 | (1 765) | Gross domestic expenditure on R&D (% of GDP, 2015) b | 0.9 | (2.4) |
| **ENVIRONMENT, 2015** | | | | | |
| Total primary energy supply per capita (toe) | 1.7 | (4.1) | $CO_2$ emissions from fuel combustion per capita (tonnes) | 4.1 | (9.2) |
| Renewables (%) | 12.0 | (9.6) | Water abstractions per capita (1 000 $m^3$, 2014) | 0.7 | |
| Exposure to air pollution (more than 10 µg/$m^3$ of PM2.5, % of population) | 99.9 | (75.2) | Municipal waste per capita (tonnes, 2016) | 0.4 | (0.5) |
| **SOCIETY** | | | | | |
| Income inequality (Gini coefficient, 2015) | 0.404 | (0.312) | Education outcomes (PISA score, 2015) | | |
| Relative poverty rate (%, 2015) | 17.2 | (11.6) | Reading | 428 | (493) |
| Median disposable household income (000 USD PPP, 2015)c | 32.1 | (22.5) | Mathematics | 420 | (490) |
| Public and private spending (% of GDP) | | | Science | 425 | (493) |
| Health care | 4.2 | (8.9) | Share of women in parliament (%, 2016) | 14.9 | (28.7) |
| Pensions (2013) | 8.3 | (9.1) | Net official development assistance (% of GNI) | 0.95 | (0.38) |
| Education (primary, secondary, post sec. non tertiary, 2014) | 3.3 | (3.7) | | | |

Better life index: www.oecdbetterlifeindex.org

a. Where the OECD aggregate is not provided in the source database, a simple OECD average of latest available data is calculated where data exist for at least 29 member countries.
b. 2016 for the OECD average.
c. 2014 for the OECD average.
Source: Calculations based on data extracted from the databases of the following organisations: OECD, International Energy Agency, World Bank, International Monetary Fund and Inter-Parliamentary Union.

# *Executive summary*

***Growth is strong and living conditions have improved amid imbalances***

- *The Turkish economy has grown very fast in the past two years despite adverse shocks*
- *Sustained job creation outside agriculture, which accelerated in the 2010s, has improved well-being, notably in less-developed regions*

***Macroeconomic policies have become pro-cyclical***

- *Macroeconomic policies have been strongly expansionary since the coup attempt in mid-2016*

***Business sector modernisation is key to rebalance the economy and improve social cohesion***

- *Rebalancing the economy, while keeping up growth, calls for improved export performance*
- *Large numbers of successful medium-sized firms have emerged*

***Formalisation, digitalisation and deleveraging are key to improve firm performance***

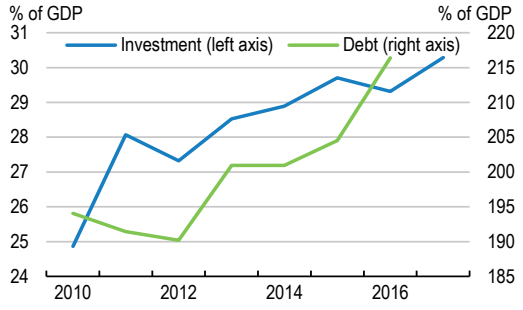
- *The government has committed to bringing Turkey's framework for doing business closer to international good practice*

***Comprehensive education, governance and regulatory reforms would foster domestic convergence and social cohesion***

## Growth is strong and living conditions have improved amid imbalances

**The Turkish economy has grown very fast in the past two years despite adverse shocks.** This performance has been driven by policy stimulus and a dynamic, well-diversified but fragmented business sector. However, the current account imbalance arising from excessive reliance on domestic demand and external savings amplifies foreign financing needs, pushes up risk premia and increases vulnerability to external shocks. Overall investment has been strong, but it is overly funded by debt, raising questions about its quality and allocation (Figure A). At the same time, inflation remains far above target, undermining the credibility of monetary policy. Moreover, questions about the quality of public governance and departures from the cautious Medium-Term Programme 2018-20, sharp exchange rate depreciation and uncertainties on the future orientation of economic policies have added to perceived risk. Prudent and transparent fiscal and monetary policies are warranted to uphold confidence in this fragile environment.

**Figure A. Investment is dynamic but increasingly funded by debt**




*Note*: SNA debt definition using consolidated accounts.
Source: OECD (2018), OECD Economic Outlook and OECD Financial Accounts (databases).
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**Sustained job creation outside agriculture, which accelerated in the 2010s, has improved well-being, notably in less-developed regions.** The low-educated and previously inactive women have benefitted most. Material living conditions have improved faster than other dimensions of quality of life, such as work-life balance, environmental quality and subjective well-being. Important well-being inequalities endure between socio-economic groups, genders and regions. They arise from large gaps in the education, skills and earning capacity of individuals, as well as from substantial differences in the quality of infrastructure and in the productivity of firms in a deeply fragmented business sector. The presence of nearly 4 million refugees (around 5% of the total population) magnifies social inclusion challenges.

**Table A. Real GDP growth is fast but inflation is high**
Per cent change unless noted

| | 2017 | 2018 | 2019 |
|---|---|---|---|
| **Gross domestic product** [1] | 7.4 | 5.1 | 4.8 |
| Private consumption | 6.1 | 9.0 | 6.7 |
| Gross fixed capital formation | 7.3 | 9.3 | 7.2 |
| Exports | 12.0 | 8.1 | 9.9 |
| Imports | 10.1 | 5.7 | 5.0 |
| Unemployment rate | 10.9 | 10.2 | 10.4 |
| Core consumer prices | 10.1 | 13.0 | 10.5 |
| Current account (% of GDP) | -5.6 | -5.7 | -4.3 |

*1. Working-day adjusted.*
*Source*: OECD Secretariat projections.

## Macroeconomic policies have become pro-cyclical

**Macroeconomic policies have been strongly expansionary since the coup attempt in mid-2016.** Government spending rose considerably and a series of new consumption, investment and employment incentives have been granted. The government has also scaled up loan guarantees, which are now among the highest in the OECD as a share of GDP. The Medium-Term Programme 2018-20 foresees fiscal restraint, but policy was strongly pro-cyclical before the early presidential and legislative elections in June 2018. In response to drifting inflation expectations and episodes of sharp currency depreciation, the central bank tightened its effective funding rate by 500 basis points over April-June 2018 and delivered the long-expected normalisation of monetary policy around a standard policy rate. Fully restoring the credibility of monetary policy requires the commitment of all stakeholders to central bank independence and to the inflation target. Absent any shocks to household, business and international confidence, GDP growth is projected to slow but to stay around 5% in 2018-19 (Table A).

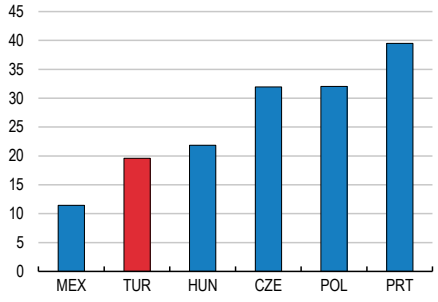
**Business sector modernisation is key to rebalance the economy and improve social cohesion**

**Rebalancing the economy, while keeping up growth, calls for improved export performance.** This requires productivity and competitiveness gains in the business sector. Turkish firms have successfully diversified into new sectors and export markets over the past decade but their relatively thin human capital base and very fragmented structure hold back further progress (Figure B).

**Large numbers of successful medium-sized firms have emerged** between low-productivity small informal businesses and state-of-the-art modern corporations. They have contributed importantly to the development of less advanced regions. However, their continued expansion requires stronger managerial and technical skills and additional investment capacity. The regulatory setting for enterprises remains more burdensome than in other catching-up OECD countries despite reform efforts, inflating the cost of operating formal rather than informal businesses and accounting for much of the current fragmentation (Figure B).

**Figure B. Productivity gaps between different types of firms are very large**

Labour productivity of small firms relative to large firms, large firms=100, 2014 or latest




*Note*: Small (large) firms are those employing less than 10 (more than 250) persons.
*Source*: OECD, Entrepreneurship at a Glance 2017.

StatLink https://doi.org/10.1787/888933798523

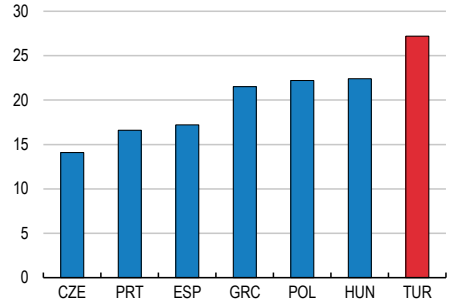
**Formalisation, digitalisation and deleveraging are key to improve firm performance**

**The government has committed to bringing Turkey's framework for doing business closer to international good practice.** This policy reinvigorates an earlier ambition which had fallen by the wayside in recent years. This Survey underlines three synergetic priorities:

i) **Informal and semi-formal firms should be incentivised to operate in compliance with laws and regulations.** This requires better adapted minimum wage, social security and tax provisions along international good practices. Regulatory forbearance should be avoided and full financial transparency vis-à-vis business partners and creditors should be secured. The provision of quality training programmes for their managers and workers to re-skill and up-skill would enable many of these firms to achieve steady productivity gains (Figure C).

**Figure C. Informality has declined but continues to obstruct progress**

Share of informal activities in total value-added, 2017, %



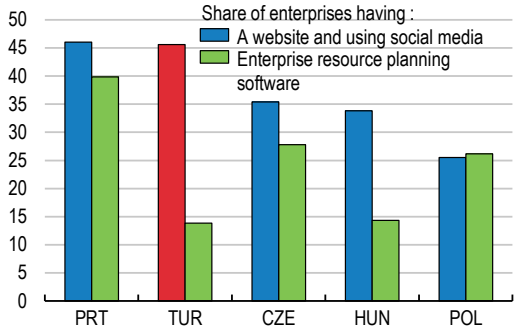

*Source*: Medina and Schneider, "Shadow Economies Around the World, 2018.

StatLink https://doi.org/10.1787/888933798542

ii) **Turkey's firms show active interest in digital media and communications, but fall behind in core applications** (Figure D). Ongoing digital innovations become accessible to firms of all types and sizes, with increasing benefits and decreasing costs. Interfaces with the government and tax authorities on the one hand (e-government and e-taxation), and with business, global value chain and financial market partners on the other hand, are becoming more fluid and less costly. New policy initiatives aim at accelerating digital innovations. Both internal and external transformations require more professional management, additional worker skills, and further investment. State-of-the art digital upskilling programmes can support these transitions.

**Figure D. Digitalisation advances but core applications fall behind**

2017, % of all enterprises




*Source*: Eurostat (2017), The Digital Economy and Society Index.

StatLink https://doi.org/10.1787/888933798561

iii) **Turkish firms have accumulated excessive debt over the past decade.** Leverage is higher than in other catching-up countries. Evidence suggests that easier access to debt improved productive capital formation in Turkey over the past decade, but excessive leverage is now curbing additional investments. The most productive and highest-growth firms, including in the regions that are catching up, are the most leveraged, suggesting that non-debt financing alternatives would relax constraints on their growth.

While debt has steadily risen, profitability and internal saving rates have declined in many firms. Young ones, particularly R&D-intensive firms in high-technology sectors, appear to have higher needs for external funding. Given the more immaterial composition of their assets, and their already high debt levels, their future investments and development will largely depend on their access to external equity sources.

Beyond young firms, the access by profitable, but debt-constrained medium-sized family-owned firms to outside equity sources is equally crucial – and problematic. These firms are generally not fully formal and may refrain from full financial transparency and independent monitoring, perpetuating the standard information asymmetries which hinder outside equity participation. Global institutional investors and FDI firms also face risks arising from the gap between local and international governance standards. In particular, state aid transparency falls short of national legal requirements for the monitoring and control of state aid, hinting at a risk of a non-level playing field, especially between large investment projects. The fight against corruption should also be strengthened to back open competition.

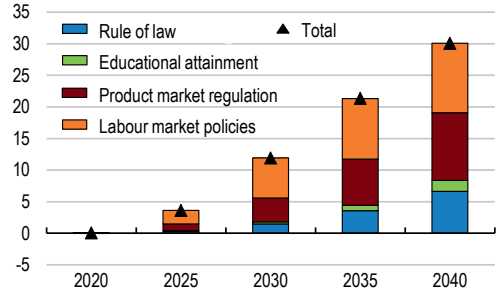
Freeing up equity participation in firms of all types, sizes and regions requires a supportive ecosystem. This includes legal and regulatory provisions, business practices and local professional expertise that Turkey largely lacks. One important component is equity-friendly corporate tax arrangements. There is also room to make public support to knowledge-based capital formation more efficient.

**Comprehensive education, governance and regulatory reforms would foster domestic convergence and social cohesion**

Furthering the modernisation of the business sector by accelerating the formalisation, digitalisation and re-capitalisation of firms of all types should be part of a long-term development and growth strategy. OECD research on long-term growth drivers highlights the importance of catching up with OECD good practices in the fundamental areas of i) education and human capital; ii) governance and rule of law; and iii) product, labour and capital market regulatory frameworks. Reforms in these areas would deliver very substantial growth and social cohesion benefits in Turkey (Figure E).

**Figure E. Growth prospects hinge on reforms**

Projected gains in real GDP per capita from gradual convergence with OECD good practices, % difference from baseline




Source: Estimations based on "OECD Long-term Scenarios for the World Economy" database.

StatLink http://dx.doi.org/10.1787//888933798580

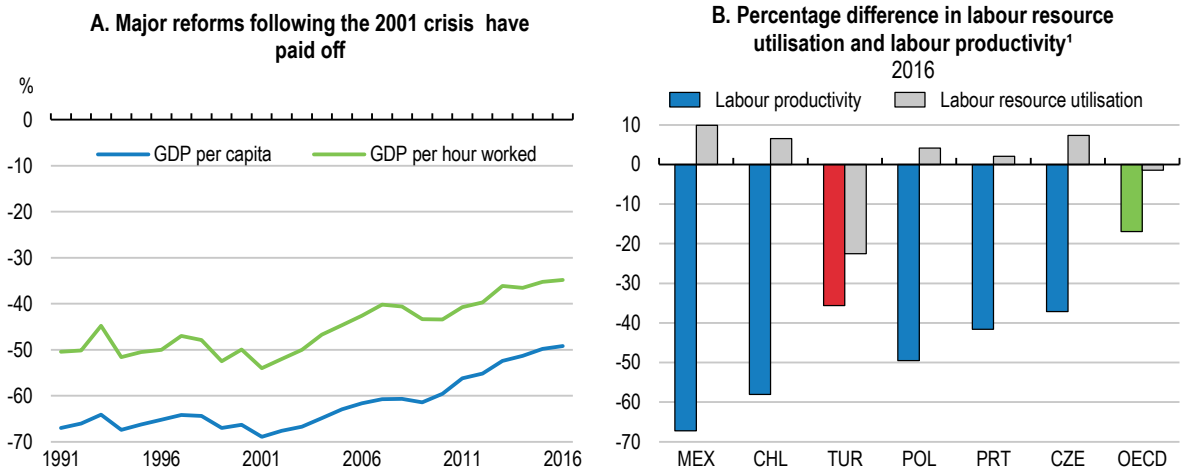
| MAIN FINDINGS | KEY RECOMMENDATIONS |
|---|---|
| **Strengthening fundamentals** | |
| Confidence in public governance and the rule of law has weakened, undermining domestic and international sentiment. | Strengthen the rule of law, judiciary independence and step up the fight against corruption. |
| Inflation and inflation expectations continue to vastly overshoot the target. Exchange rate depreciation pressures abated somewhat after the recent tightening and simplification of monetary policy. | Restore the credibility of monetary policy by committing all stakeholders to the independence of the central bank. Forward guidance should be provided on how the authorities plan to achieve the inflation target. |
| The level of fiscal transparency remains low. The actual fiscal stance cannot be accurately monitored. | Publish quarterly general government accounts according to international standards and a regular Fiscal Policy Report covering all contingent liabilities and quasi-fiscal activities of the government. |
| The Medium Term Programme 2018-20 foresees consolidation but actual policy is expansionary. | Tighten fiscal and quasi-fiscal policies, strengthen the macroprudential rules and rein in housing loans. |
| Macroprudential measures have been relaxed, quasi-fiscal expenditures have augmented and public banks have considerably expanded lending, raising risks of distortions in capital allocation. | Undertake a cost-benefit analysis of the credit guarantee system and normalise its size, tighten the macroprudential rules and contain the quasi-fiscal activities of public financial institutions. |
| There are major spending needs associated with structural reforms in education and social infrastructures (notably child and elderly care and early childhood education). | To reorient spending to top priority areas, implement the strategic and performance-oriented budgeting objectives of the Public Finance Law 5018 to help reorient spending. Grant more autonomy and resources per student to education institutions, against greater performance accountability. |
| There is a welcome momentum in digitalisation but it is unfolding unevenly in the economy and society | Complete and enforce a holistic strategy of digitalisation, encompassing education, life-long learning and infrastructure and internet access policies. |
| **Rebalancing growth by reinforcing the tradable sector** | |
| Investment is strong, but debt leverage has augmented considerably and more equity capital is needed to facilitate the physical and knowledge-based investments of high-potential firms. | Carry out a strategic review to identify and address the most binding constraints to the development of the currently weak ecosystem for equity financing of investment. |
| Knowledge-based capital expenditures fall below OECD averages and so does public support for R&D as a share of GDP. | Streamline the various R&D incentives schemes on the basis of cost-benefit analyses, and build on international best practices to improve take-up and efficiency of tax subsidies and grants. |
| Many family-owned medium-sized firms are over-leveraged. Even so, they refrain from reaching out to securities markets and external shareholders. | Encourage family firms through technical support and awareness campaigns to develop standard corporate governance, professional management and financial transparency. |
| FDI inflows and stocks are low, partly due to uncertainties about the policy framework and level-playing competition. | Streamline and stabilise business incentives. Report them according to state aid law, subject them to competition review, and monitor their impact on beneficiary firms' behaviour using the new Enterprise Information System (EIS). |
| Institutional and regulatory settings for firms remain rigid despite recent reform efforts, notably in labour markets, and continue to increase the costs of operating formally. | Evaluate the uptake of the various recent social security contribution cuts granted and make permanent those which have proven most supportive of formalisation, financing this through better tax enforcement. |
| **Improving the allocation of bank credits and of government capital cost incentives** | |
| The real cost of loans and equity in private markets is very high, reflecting high risk premia on sovereign borrowing rates. | To reduce the funding costs of the economy improve the international credibility of governance institutions, fiscal transparency and price stability. |
| A large share of small firms do not use bank loans, while bank financing of informal and semi-formal businesses is made more difficult by strict financial reporting obligations. | Enforce the compulsory auditing rules of the new Company Law. Reduce audit costs - while maintaining audit quality standards- via tax incentives in the early years of audited financial reporting. |
| **Further improving well-being** | |
| Despite rapid progress, female labour force participation remains very low in international comparison. | Facilitate further women's labour force participation, notably by increasing the provision and quality of early child education and child and elderly care. |
| Renewable energy sources are encouraged, but electricity generation from coal will continue to grow strongly. | Assess the additional impact on carbon emissions and use economic instruments such as harmonised pollution taxes and emission permits to reduce them. |
| Coastal protection initiatives appear insufficient to contain the damage caused by tourism. | Evaluate and manage more actively the environmental impact of massive transformations of land and sea. |

# Key Policy Insights

Turkish GDP per capita has continued to catch up with the more advanced OECD economies. Despite a series of adverse shocks including severe geo-political tensions at the southeastern border and an averted coup attempt in 2016, GDP growth averaged nearly 7% over 2010-17 (Figure 1, Panel A). Labour productivity now exceeds that of several other catching-up OECD economies (Panel B), notwithstanding the prevalence of low-productivity informal activity, especially in agriculture. This reflects the strong performance of a dynamic, albeit fragmented, business sector. Despite dynamic job creation and a labour force growing at above 3% per year, the employment rate of the working age population remains the lowest in the OECD.

**Figure 1. Per capita income has been catching up but productivity and resource use still lag behind**

Gap to the upper half of OECD countries

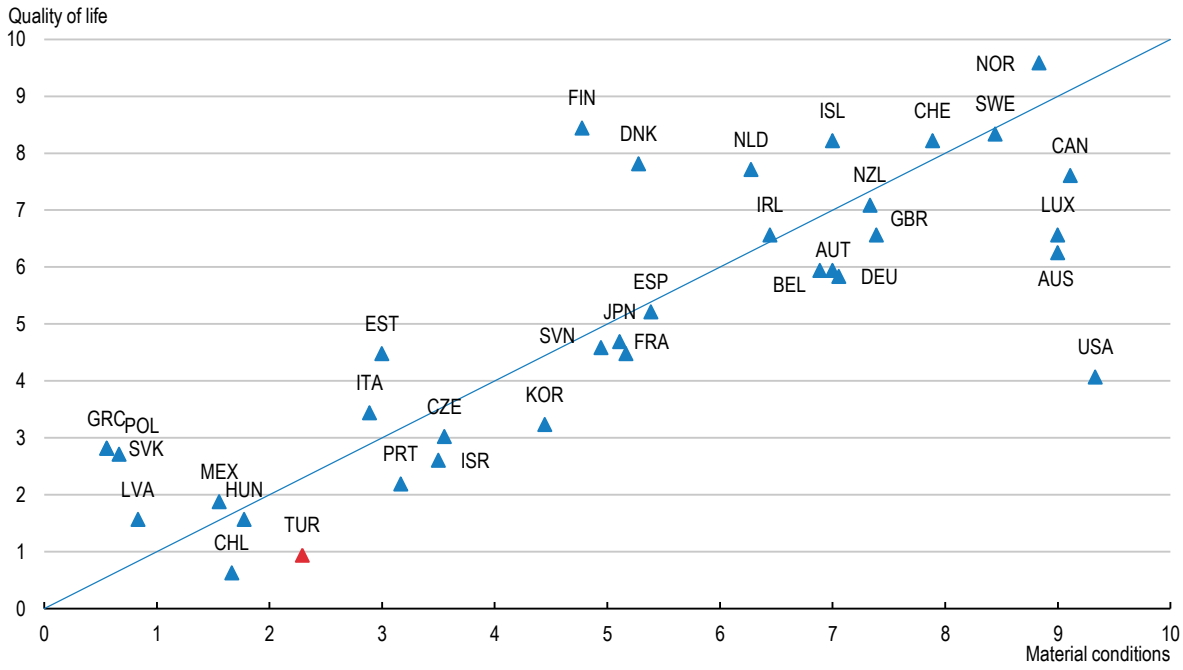



1. Labour productivity is measured as GDP per hour worked. Labour resource utilisation is measured as the total number of hours worked per capita.
*Source*: OECD (2018), Economic Policy Reforms 2018: Going for Growth Interim Report, OECD Publishing, Paris, http://dx.doi.org/10.1787/growth-2018-en.
StatLink https://doi.org/10.1787/888933798599

Against the backdrop of substantial population growth, expected further increases in labour force participation and massive refugee inflows, strong GDP growth and job

creation top the wish list of the population and the agenda of policymakers. Concurrently, living standards have improved but more so in terms of material conditions than in other measures of quality of life (Figure 2). A number of inequalities nevertheless endure, illustrating the challenge of making growth more inclusive.

**Figure 2. Material conditions and quality of life**




*Note*: Material conditions encompass 10 indicators across three dimensions: income and wealth, jobs and earnings, and housing. Quality of life is measured through 15 indicators spanning eight dimensions: work-life balance, health status, education and skills, social connections, civic engagement and governance, environmental quality, personal safety and subjective well-being.
*Source*: OECD (2017), How's Life: Measuring Well-being.
StatLink https://doi.org/10.1787/888933798618

Despite progress in recent years, income and wealth inequalities are indeed high in international comparison, due principally to the uneven labour markets position of family bread earners. This reflects first and foremost the divide of economic activities into informal, semi-formal and formal segments of the business sector. The extent to which high-productivity formal activities grow differs substantially across regions, and male workers are much more concentrated in the formal sector than their female counterparts. Overcoming this disparity is the fundamental condition for making productivity enhancements and growth more inclusive in Turkey. Higher-quality firms not only deliver better and more gender-equal working conditions and earnings, they also boost the national and local fiscal resources required for stronger social services.

## Growth remained strong but imbalances increased

At 7.4% annual growth in 2017 and with a strong first quarter in 2018, real GDP growth has been among the fastest worldwide, exceeding both market expectations and official projections. Robust foreign demand and sharp real exchange rate depreciation supported exports (Figure 3, Panel A). Domestic fiscal and quasi-fiscal stimulus, including a massive extension of the government credit guarantee scheme, boosted domestic demand.

Private business investment was more subdued over most of 2016-17, reflecting "wait and see" attitudes amid various domestic, regional and international uncertainties. However, it picked up in late 2017 and early 2018 on the back of strong export prospects and substantial government incentives. The share of machinery and transport equipment investment in GDP reverted to its long-time average of around 13%, one of the highest rates in the OECD.

The announcement of early presidential and parliamentary elections in April 2018 (brought forward from November 2019) could have reduced policy uncertainties by shortening the pre-electoral period but did not have this effect. It rather amplified the departures from the cautious macroeconomic framework of the Medium-Term Programme 2018-20 published in October 2017, which aimed at cutting the general government deficit from 2.4% of GDP in 2017 to 1.9% in 2018 and 2019 (a new Medium-Term Programme 2019-21 is under preparation). New questions also arose on the objectives and conduct of monetary policy. The exchange rate depreciated sharply and increased the debt burden and borrowing costs of the large number of non-financial firms carrying high foreign currency debt. Private consumption, in contrast, is expected to be backed by buoyant employment and pre-electoral social transfers. The expected increase in inflation should nevertheless weigh on households' purchasing power.

Against this delicate backdrop, re-anchoring macroeconomic policies to a cautious Medium-Term Programme, and resuming the reforms initiated in early 2018 to align Turkey's doing business conditions with international benchmarks, would help restore policy predictability and improve confidence after the presidential and legislative elections. The sharp increase in the effective funding rate of the central bank and the simplification of its monetary policy framework to align it with standard international practice in April-June 2018 will help. The increased fiscal spending should be offset by concomitant savings in order to maintain the structural fiscal balance in line with the programmed targets. Maintaining favourable conditions for the further integration of Turkish businesses into global value chains, and taming inflation to preserve international competitiveness will also be important to keep up export growth and business sentiment.

On the back of a particularly strong carry-over from late 2017 and early 2018, and absent any further severe tensions on exchange rates and external financing, GDP growth is projected at slightly above 5% in 2018 and just below in 2019 (Table 1). Tourism and service exports are projected to play an important role in both years. The impact on growth of the sharp increase in real policy interest rates in mid-2018 may be mitigated by a decline of risk premia embedded in commercial lending rates. The monetary policy tightening has also stopped the trend depreciation of the Turkish Lira, which should be supportive for the many non-financial firms heavily indebted in foreign currencies. Growth is on course to decline in the second half of 2018 as fiscal stimulus diminishes after the presidential and parliamentary elections, making for a weaker carry-over into 2019. The slowdown in growth and the normalisation of gold imports (which reached 1 to 2 % of GDP in some recent quarters) are projected to reduce the current account deficit.

Growth could turn out to be stronger if the post-electoral period allows a smoother than expected phasing in of the ambitious structural reform agenda, accompanied by more prudent and credible fiscal and monetary policy. If, on the contrary, additional uncertainties arise regarding the macroeconomic policy stance or the outlook for structural reform, or if regional geo-political conditions worsen further, additional pressure on exchange rates, capital movements and domestic sentiment may undermine investment, consumption and growth.

**Table 1. Macroeconomic indicators and projections**

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 |
|---|---|---|---|---|---|---|
| | Current prices TRY billion | Annual percentage change, volume (2009 prices) | | | | |
| **Real GDP**[1] | 2 044.5 | 5.9 | 3.2 | 7.4 | 5.1 | 4.8 |
| Private consumption | 1 242.2 | 5.3 | 3.7 | 6.1 | 9.0 | 6.7 |
| Government consumption | 288.1 | 2.9 | 9.8 | 4.4 | 6.5 | 5.4 |
| Gross fixed capital formation | 590.7 | 9.3 | 2.2 | 7.3 | 9.3 | 7.2 |
| Final domestic demand | 2 121.1 | 6.1 | 4.1 | 6.2 | 8.8 | 6.7 |
| Stockbuilding[2] | 2.8 | -1.6 | 0.0 | -0.7 | -2.5 | 0.0 |
| Total domestic demand | 2 123.9 | 4.6 | 4.2 | 5.7 | 6.2 | 6.6 |
| Exports of goods and services | 485.9 | 4.3 | -1.9 | 12.0 | 8.1 | 9.9 |
| Imports of goods and services | 565.3 | 1.5 | 3.8 | 10.1 | 5.7 | 5.0 |
| Net exports[2] | -79.4 | 0.6 | -1.4 | 0.1 | 0.3 | 1.0 |
| *Memorandum items* | | | | | | |
| GDP deflator | - | 8.0 | 8.1 | 10.9 | 14.6 | 13.0 |
| Consumer price index | - | 7.7 | 7.8 | 11.1 | 12.0 | 10.6 |
| Core inflation index[3] | - | 8.0 | 8.5 | 10.1 | 13.0 | 10.5 |
| Unemployment rate (% of labour force) | - | 10.3 | 10.9 | 10.9 | 10.2 | 10.4 |
| Current account balance (%of GDP) | - | -3.7 | -3.8 | -5.6 | -5.7 | -4.3 |

1. Based on working-day adjusted series.
2. Contributions to changes in real GDP, actual amount in the first column.
3. Consumer price index excluding energy, food, alcohol, tobacco and gold.

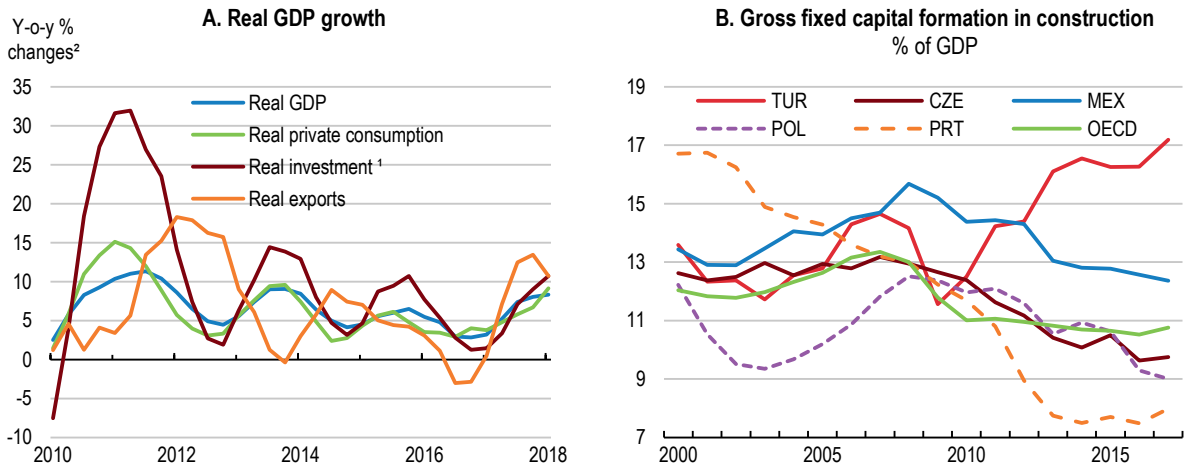
*Source*: OECD Economic Outlook database and Secretariat projections.

## Rebalancing the economy and containing vulnerabilities

Growth continues to suffer from the structural imbalances that have been emphasised in previous OECD Surveys (OECD, 2016[1]; 2014[2]): demand is overly driven by domestic consumption, domestic saving falls short of total investment, and external debt is on the rise. These imbalances remain evident following the major revision of the national accounts in 2016, which considerably modified the GDP, investment and saving series. Private and public saving are estimated at around 23% and 2% of GDP in 2017, against private and public investment of around 26% and 4%. Accordingly, the current account deficit widened anew to above 5% of GDP after having fallen below 4% in 2015-16. While the precise cyclical position of the economy is difficult to gauge as the unemployment rate remains very high and wage pressures are subdued, this persisting imbalance endangers the sustainability of strong growth and job creation needed for achieving inclusive growth. The uncertainties about the precise cyclical position of the economy, associated with the absence of general government accounts consolidated

according to national accounting standards (see below), complicates the assessment of the structural fiscal stance.

**Figure 3. Lately, exports and construction have driven growth**




1. Public and private business investment are not separately reported in Turkish national accounts.
2. Three-quarter moving average.

*Source*: OECD Economic Outlook (database).

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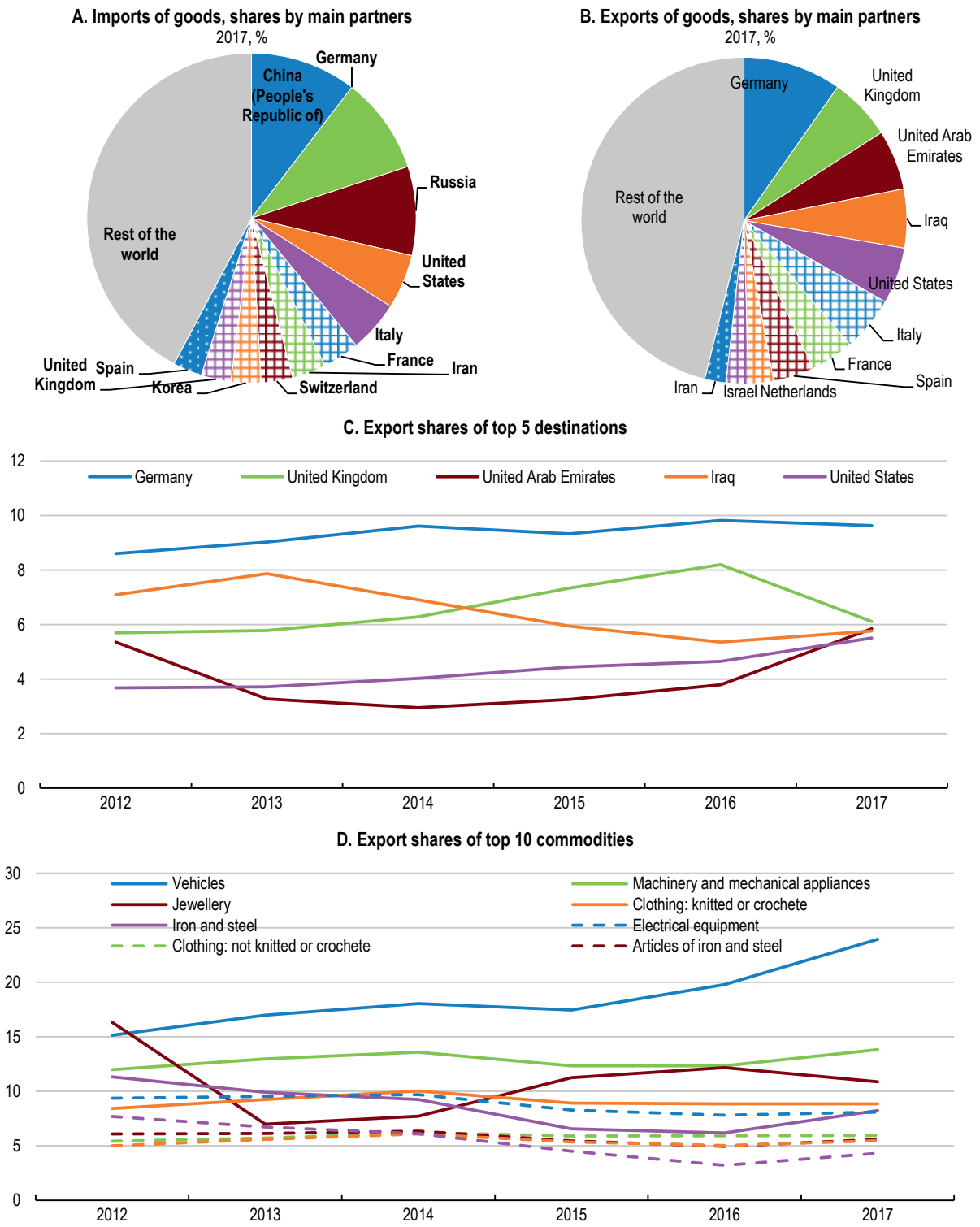
Housing and construction now account for a very large share of investment, employment and output compared to other OECD countries (Figure 3, Panel B). This is partly expected, given Turkey's urban renewal and infrastructure needs, amplified by high seismic risks and continuing internal migration. It nonetheless contributes importantly to the gap between investment and saving.

Both business and household saving can be increased. Policy action has been stepped up to raise household saving, notably via a rapidly expanding government-subsidised private pension scheme (see below). However, rebalancing the economy without dampening growth calls for improvement in export performance. Even though exports have diversified over the past decade (Figure 4), the weight of the export sector in GDP and the progress of Turkey's share in world exports fall short of the performance of the more dynamic comparable OECD countries (Figure 5). As a result, Turkey exhibits a lower share of employment sustained by foreign demand than comparable OECD countries (23% in 2014, against more than 40% in Poland and Portugal) (OECD, 2017[3]).

**Figure 4. Turkey's main trading partners**




*Source*: OECD (2018), OECD International Trade by Commodity Statistics (database).
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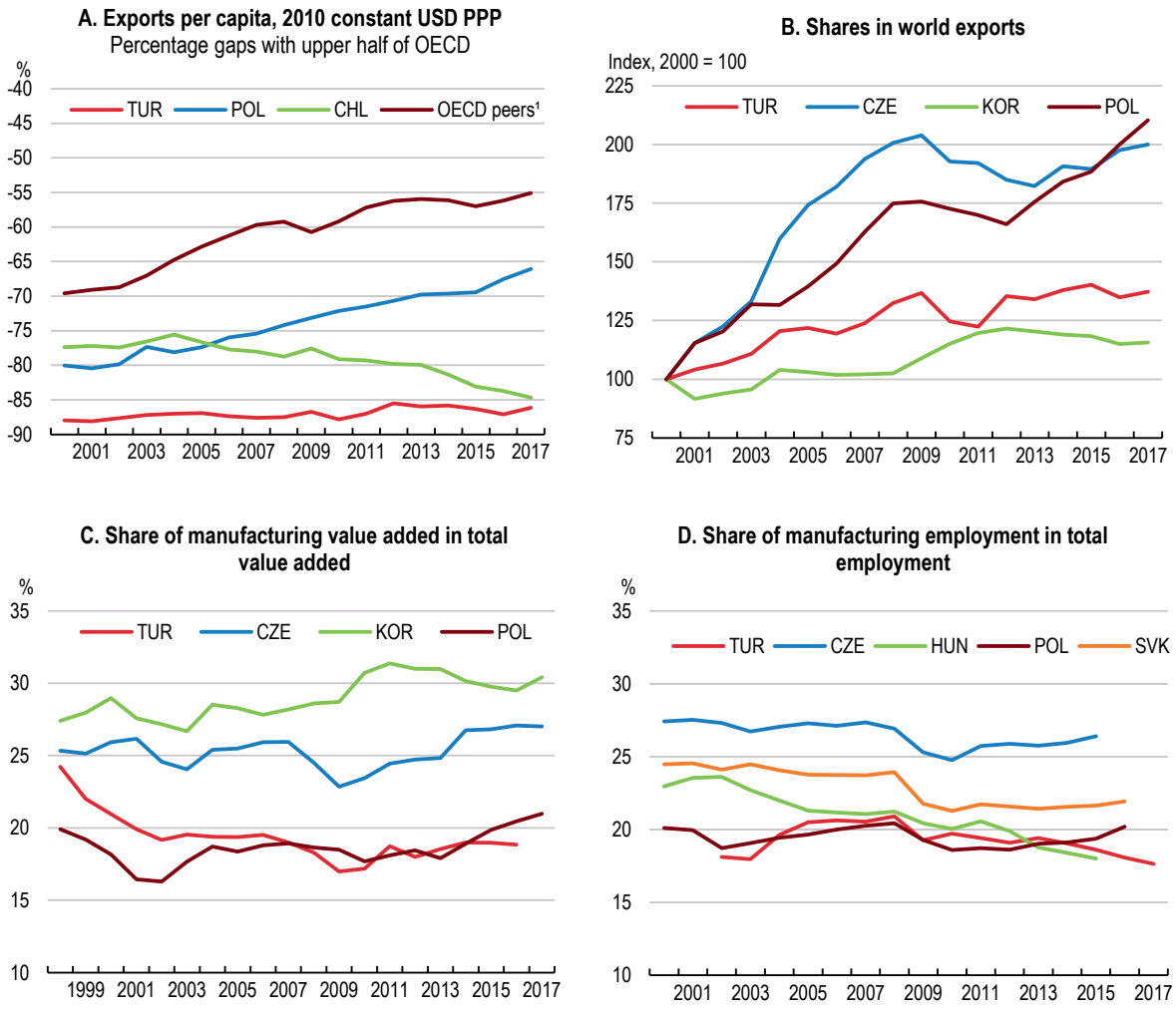
**Figure 5. Export and manufacturing performance remains below potential**




1. OECD peers comprise lower-income OECD countries: Czech Republic, Slovenia, Portugal, Slovak Republic, Estonia, Greece, Latvia, Hungary, Poland, Chile and Mexico. The selection of countries shown varies across panels depending on data availability.

*Source*: Calculations based on OECD National Accounts (database) and Turkstat.

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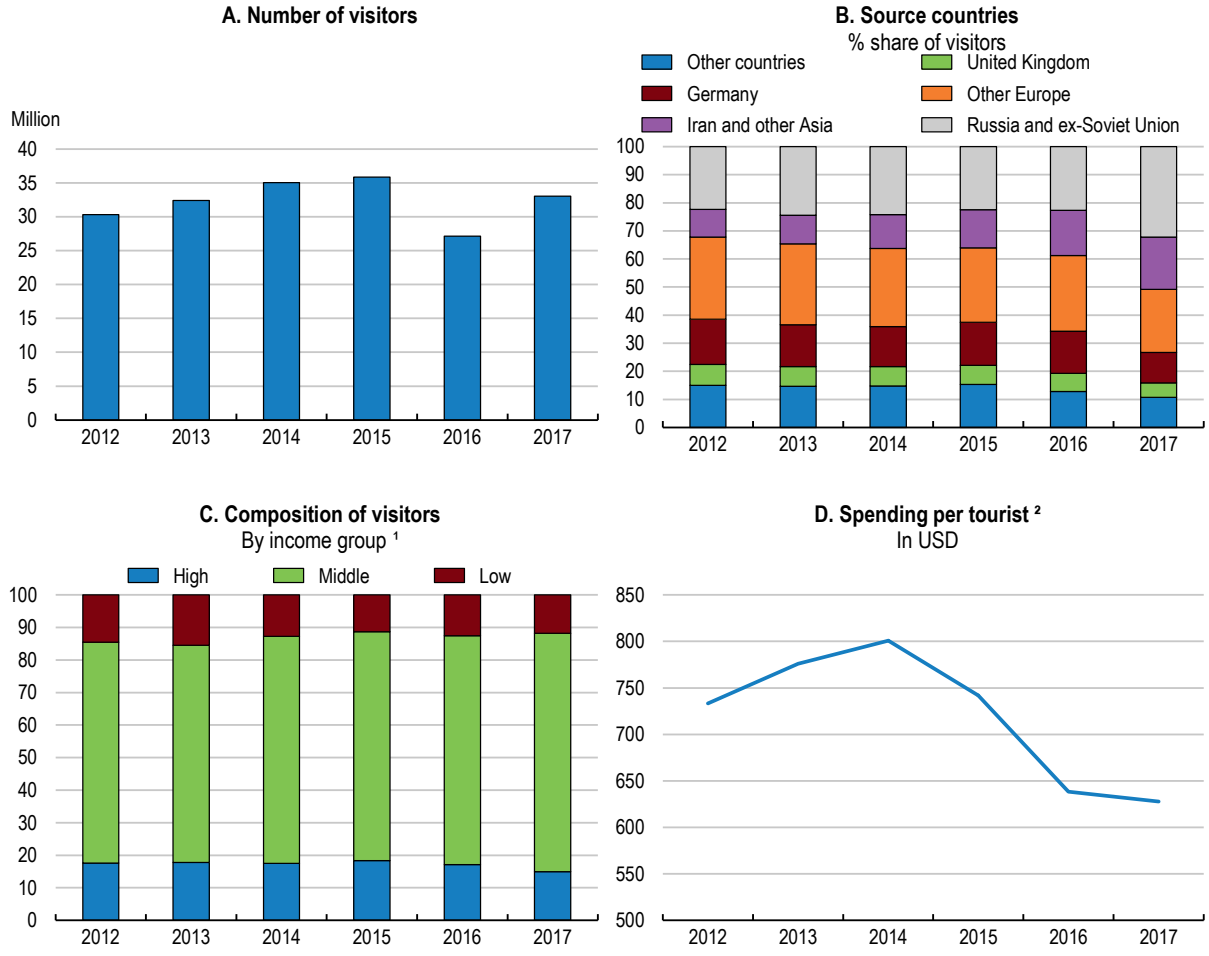
Tourism is a major export sector, accounting for one-fifth of total exports of goods and services. Tourist entries and revenues have expanded over the past decade, although with sharp fluctuations in headcount, composition and revenue per tourist, especially after the extraordinary events of 2016 (Figure 6). The number of visitors from Russia, Ukraine and the Middle-East has trended up while the share of higher-spending tourists from EU countries has declined. There are, however, signs of a recovery in tourist arrivals from Europe in 2018. While Turkey has considerable further potential in tourism, coastal protection measures appear insufficient to contain the environmental impact of massive transformations of land and sea (Ocean Health Index, 2016[4]). Raising awareness for trade-offs between different dimensions of wellbeing (e.g. air quality versus jobs) and regarding natural resources as determinants of growth (current versus future), would help shape a policy agenda targeting inclusive and ecologically sustainable growth.

**Figure 6. Tourism revenues are starting to recover**

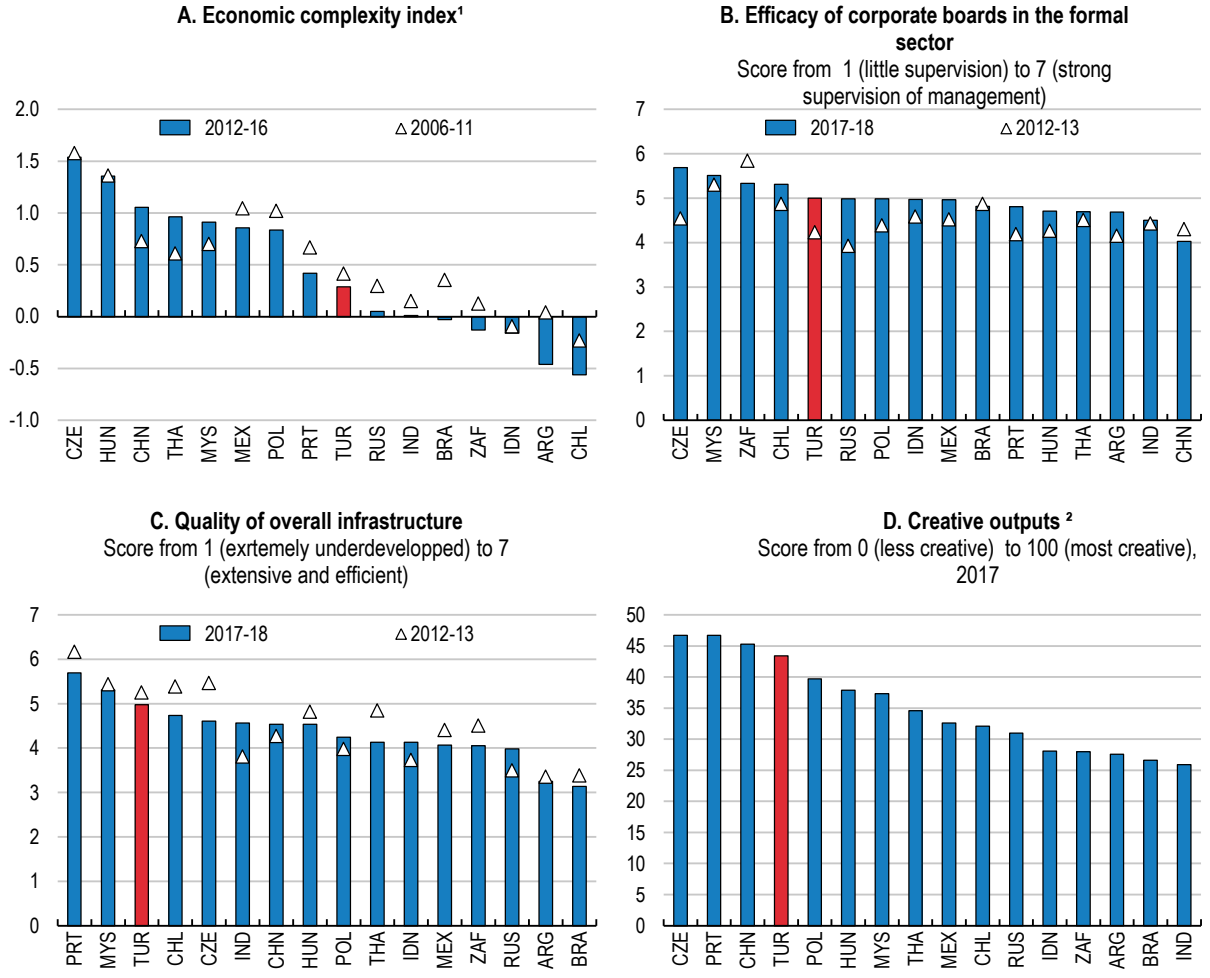



1. Income groups are defined along source country standards. For example, middle-income visitors do not refer to visitors from middle-income countries but to middle-income visitors from different countries.
2. Excluding Turkish nationals residing abroad.
*Source*: Turkstat.
StatLink https://doi.org/10.1787/888933798694

## *The business sector is dynamic but requires further upgrading to boost exports*

Backed by ongoing integration into global value chains and diversification towards other export markets, the tradable sector has improved its performance in many areas over the past decade. But its technological basis still falls behind (Figure 7 Panel A). Recent policy initiatives by the Ministry of Science, Industry and Technology and the SME agency KOSGEB target firms' technological capacities. There has been an upgrade in the structure of exports in terms of broad product categories: the share of medium-to-high- and high-technology goods in total manufactured exports reached 39% in 2017, up from 26% in 2012, even if Turkey is specialised in the less sophisticated segments of these industries. In particular, passenger car and car part-and-component exports expanded respectively by 13% and 22% in 2017, which exemplifies Turkey's transition to medium-to-high technology manufacturing. In February 2018, the Survey of Exporter Tendencies hinted at exceptionally strong confidence among exporters for the period ahead (TIM, 2018[5]).

**Figure 7. The business sector exhibits both strengths and weaknesses**




1. Economic complexity is measured by the knowledge intensity of an economy, as reflected in the diversity and ubiquity of its exports. It is measured net of the sophistication of imported inputs (Hausmann et al., 2014[6]) .
2. "Creative outputs" is a sub-index of the global innovation index which ranks the economies according to their innovation capabilities and outcomes. It covers intangible assets, creative goods and services and online creativity.
*Source*: Observatory of Economic Complexity, Economic Complexity Index; World Economic Forum, Global Competitiveness Index (database); Cornell University, INSEAD, and the World Intellectual Property Organization (2017), Global Innovation Index.
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A recent analysis of the composition and diversity of Turkey's exported goods suggests that the country's sectoral specialisation has reached a threshold which foreshadows additional sophistication and market share and GDP per capita gains in the future (Hausmann, 2017[7]). A more detailed investigation using the same methodology confirms that Turkey's expansion towards machinery, electrical equipment and chemical sub-sectors has built the basis for further diversification going forward (Yildirim, 2018[8]).

Other recognised strengths of the business sector include the quality of management in the formal sector, the quality of the physical infrastructures it is drawing on, and a proven

capacity for introducing creative products and services in a wide range of markets (Figure 7).

Meanwhile, Turkey's less-advanced regions have tended to rely increasingly on low-technology, low-skilled manufacturing. This development is welcome as these new activities replace inactive or low-productivity agricultural labour and provide a basis for learning-by-doing for the entrepreneurs and workers in the regions. Going forward, however, it will be important to help these businesses to upgrade the quality of their products and increase productivity. In this regard, the formalisation of informal and semi-formal activities in these less advanced regions has a long way to go and progress will be crucial for inclusive growth.

Concomitantly, all sectors and firms should keep up with digital transitions. Turkey's business sector appears more advanced in the early phases of this transition than in several comparable countries (Box 1). However, further progress with digitalisation requires substantial additional investment in the skills of entrepreneurs and workers. Broad-based digitalisation is expected to improve financial and tax transparency, facilitating the formalisation of businesses and additional productivity gains.

Turkey is among the OECD countries whose growth scenarios are particularly sensitive to policy reforms in these areas (Box 2).

**Box 1. Turkey's digital transition**

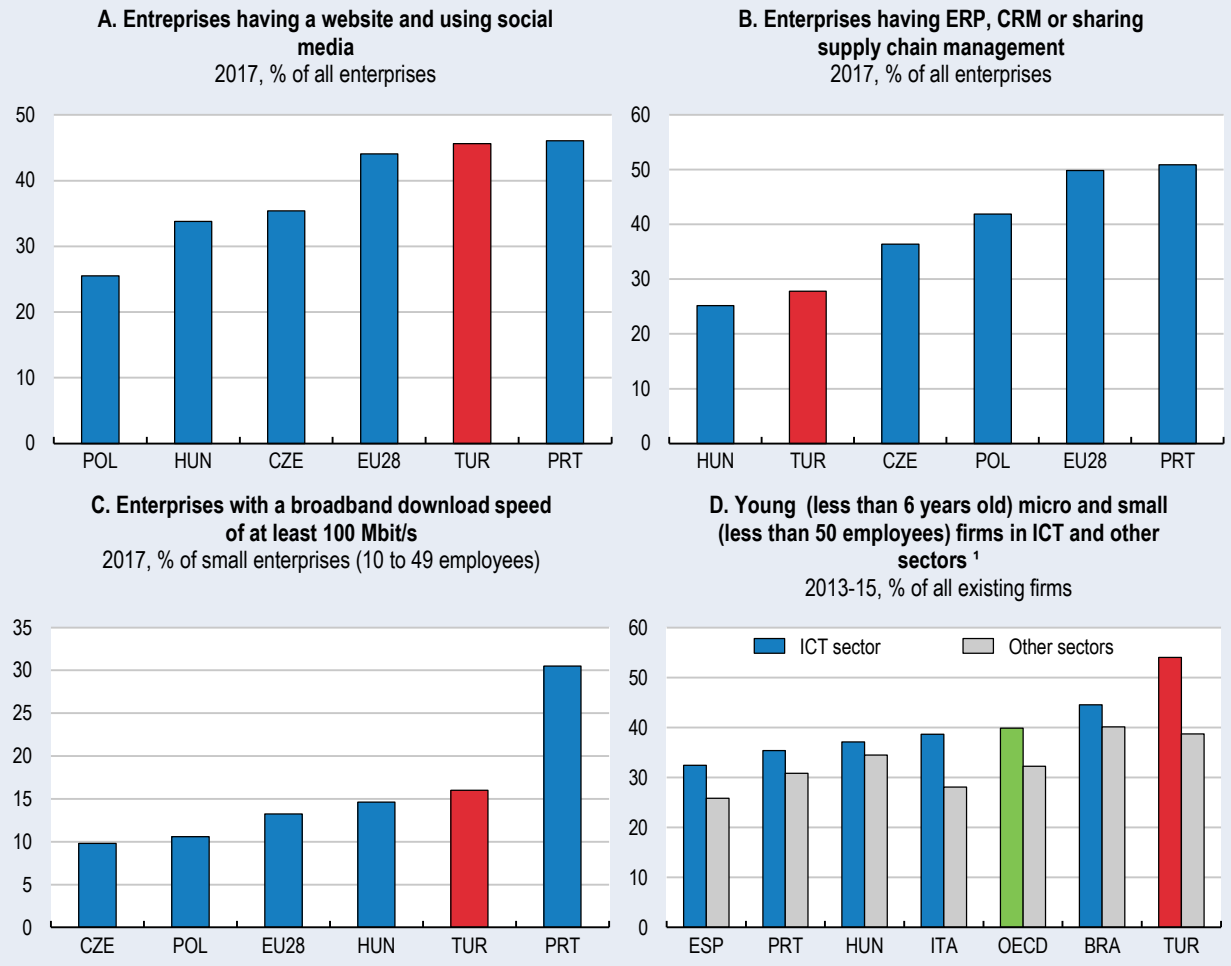
Digitalisation is gaining momentum in the Turkish business sector. The share of firms with a website and of firms present in digital social media is very high compared with peer countries in Europe (Figure 8, Panel A). However, use of core digital applications in businesses is less advanced. The share of firms using (functionally important) enterprise resource planning and customer relationship management software is lower than in other catching-up countries in Europe (Panel B), possibly reflecting skills gaps.

Nonetheless, small firms are trying to draw on digital technologies to make up for their size disadvantages. The share of small firms using the fastest available broadband Internet speed in Turkey ranks high compared to peer countries (Panel C). Turkey has also a significant share of young micro and small firms in the ICT sector, higher than in comparable countries (Panel D). The presence of these small and dynamic high-technology firms is promising.

Simultaneously, the gap faced by the mass of low-skilled, micro-size, informal firms in the area of digitalisation is a specific challenge for the Turkish economy. It calls for targeted awareness, information and education campaigns for these firms.

Various public and private initiatives seek to accelerate digitalisation. A Platform for the Digital Transformation of Industry was created with the participation of several business organisations under the aegis of the Ministry of Science, Industry and Technology. Six working groups were established and prepared policy-oriented reports on i) key trends in digital technologies, ii) advanced manufacturing technologies, iii) open innovation systems, iv) education and skill needs, v) infrastructure requirements, and vi) standardisation and patenting issues. The Ministry established a Department of Fourth Industrial Revolution to co-ordinate this activity and devise strategies and policies.

**Figure 8. Turkey's relative position in the digital transition in Europe**




1. The ICT sector includes the ISIC Rev. 4 sectors 26, 61 and 62-63: computer and electronics; telecommunications and IT and other information services. Other sectors cover manufacturing and the non-financial business services sector excluding the ICT sector, coke and refined petroleum products and real estate activities. Data refer to 2008-10 for Italy and 2010-12 for Portugal. OECD unweighted average calculated on the basis of the 18 available countries.

*Source*: Eurostat (2017), The Digital Economy and Society Index and OECD (2017), OECD Science, Technology and Industry Scoreboard 2017. For Panels A, B and C data is available only for European countries.

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The Turkish Enterprise and Business Confederation has initiated a nationwide project called Digital Anatolia, to raise widespread awareness and promote interaction between digitalisation professionals and SMEs across the country. Also, a first conference on practical artificial intelligence applications was held in February 2018, under the aegis of the Turkish Artificial Intelligence Initiative.

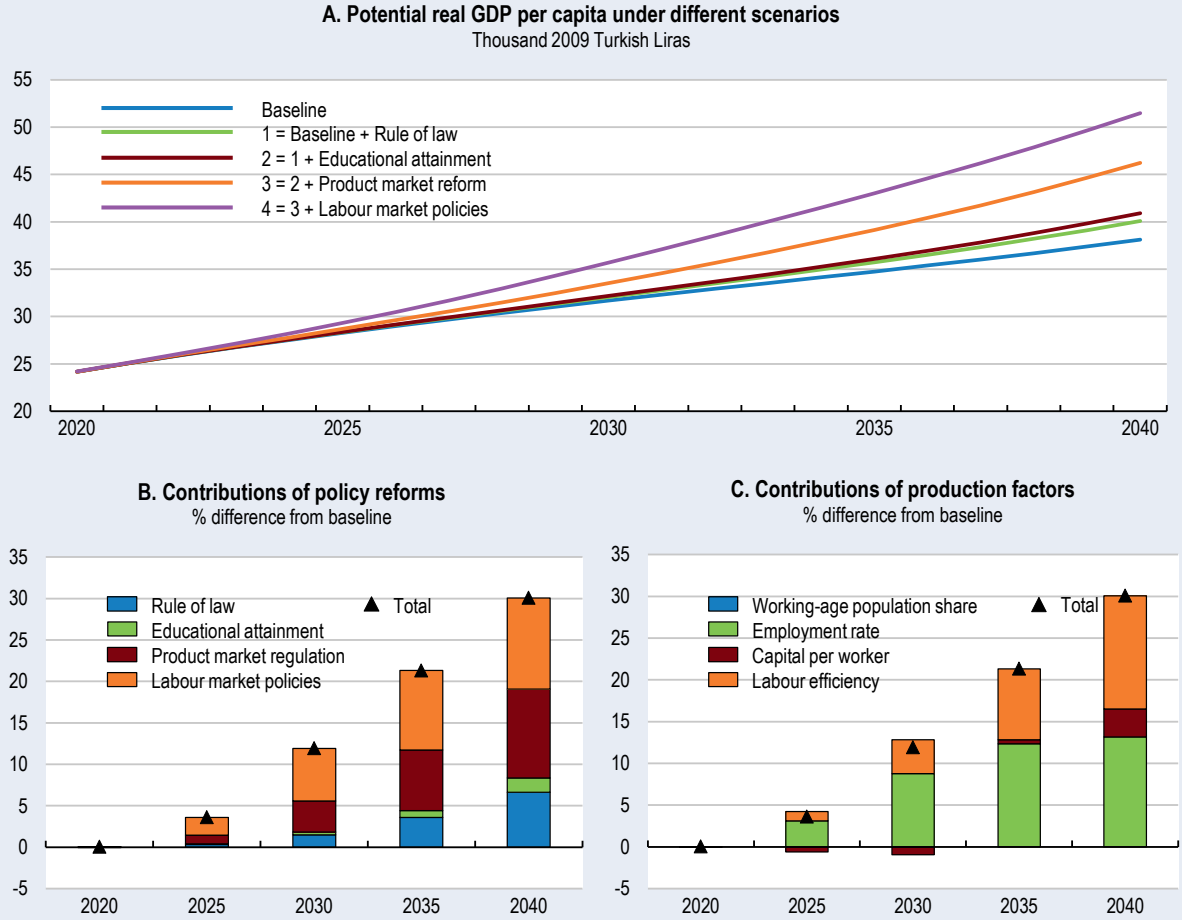
The experience of other OECD countries suggests that a holistic strategy encompassing technology, education, life-long learning and infrastructure and internet access policies can accelerate digitalisation on a broad and socially inclusive basis. Turkey should build on these experiences (OECD, 2018[9]).

OECD research suggests that, in addition to technological and skill formation initiatives, the adequacy of the general regulatory framework for doing business is essential for the pace of digitalisation. This research has identified Turkey as one of the top OECD countries in terms of potential for accelerating digitalisation by aligning market entry and labour market regulations with OECD good practices (Nicoletti, Andrews and Timiliotis, 2018[10]).

**Box 2. Long-term growth will hinge on policy reforms**

The OECD long-term projections for the world economy (OECD, 2018[11]) include scenarios based on the assumed evolution of policy frameworks in individual countries. This encompasses policy choices in areas where emerging economies tend to lag (education and rule-of-law), and in areas where advanced OECD economies display substantial heterogeneity (product and labour market regulations). As a middle-income country, Turkey has ample room for convergence with international good practices in both areas. It therefore faces a particularly wide spectrum of possible future growth trajectories depending on its policy choices (Gönenç, 2017[12]).

**Figure 9. Growth drivers in Turkey through 2040**




*Source*: Estimations based on "OECD Long-term Scenarios for the World Economy" database.

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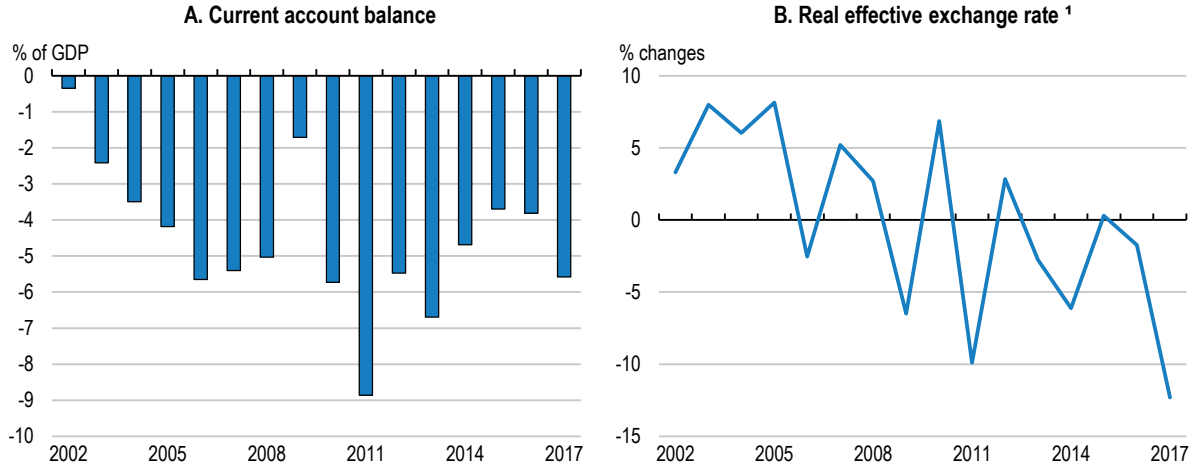
Drawing on a standard cross-country OECD methodology, country growth scenarios include a baseline which assumes no change in policies (although trend gains in educational attainment across cohorts are extended into the future); and reform scenarios assuming i) convergence with the rule-of-law standards of the top five OECD countries by 2060; ii) further progress in educational attainment with full convergence with the top five OECD countries by 2060; iii) alignment of product market regulations with best practice countries by 2030; and iv) halving of the distance from best practice labour regulations by 2030. The growth impacts are derived from cross-country econometric estimations, which also help appraise average time lags for their realisation.

Figure 9 presents the scenarios for Turkey. Panel A shows estimated GDP per capita paths under different policy assumptions, Panel B the contributions of reforms in each policy area, and Panel C the gains projected via specific production factors. These scenarios suggest that the combined implementation of standard reforms could help increase Turkey's GDP per capita and associated living standards by as much as one third within two decades.

### *Addressing external vulnerabilities*

The recent upturn in exports has been strong due to favourable external demand conditions, but not enough to prevent a renewed increase in the current account deficit to 5.6% in 2017 amid vibrant domestic demand, rising import prices, notably energy, and sizeable gold imports (Figure 10, Panel A). The concomitant increase in external debt and deterioration in underlying fundamentals, notably recurrent periods of substantial real depreciation of the Turkish Lira, have shed doubt on the sustainability of external liabilities. The external debt ratio remains relatively low in international comparison as a share of GDP, at around 50% in 2017, but is relatively high as a share of exports (Figure 11). Box 3 presents an analysis of the drivers of external debt and sets out four scenarios on the basis of alternative assumptions concerning their evolution.

**Figure 10. The current account deficit has widened and the exchange rate has depreciated**




1. The real effective exchange rate is the nominal effective exchange rate deflated by GDP deflators and using constant trade weights.
*Source*: OECD (2018), OECD Economic Outlook (database).
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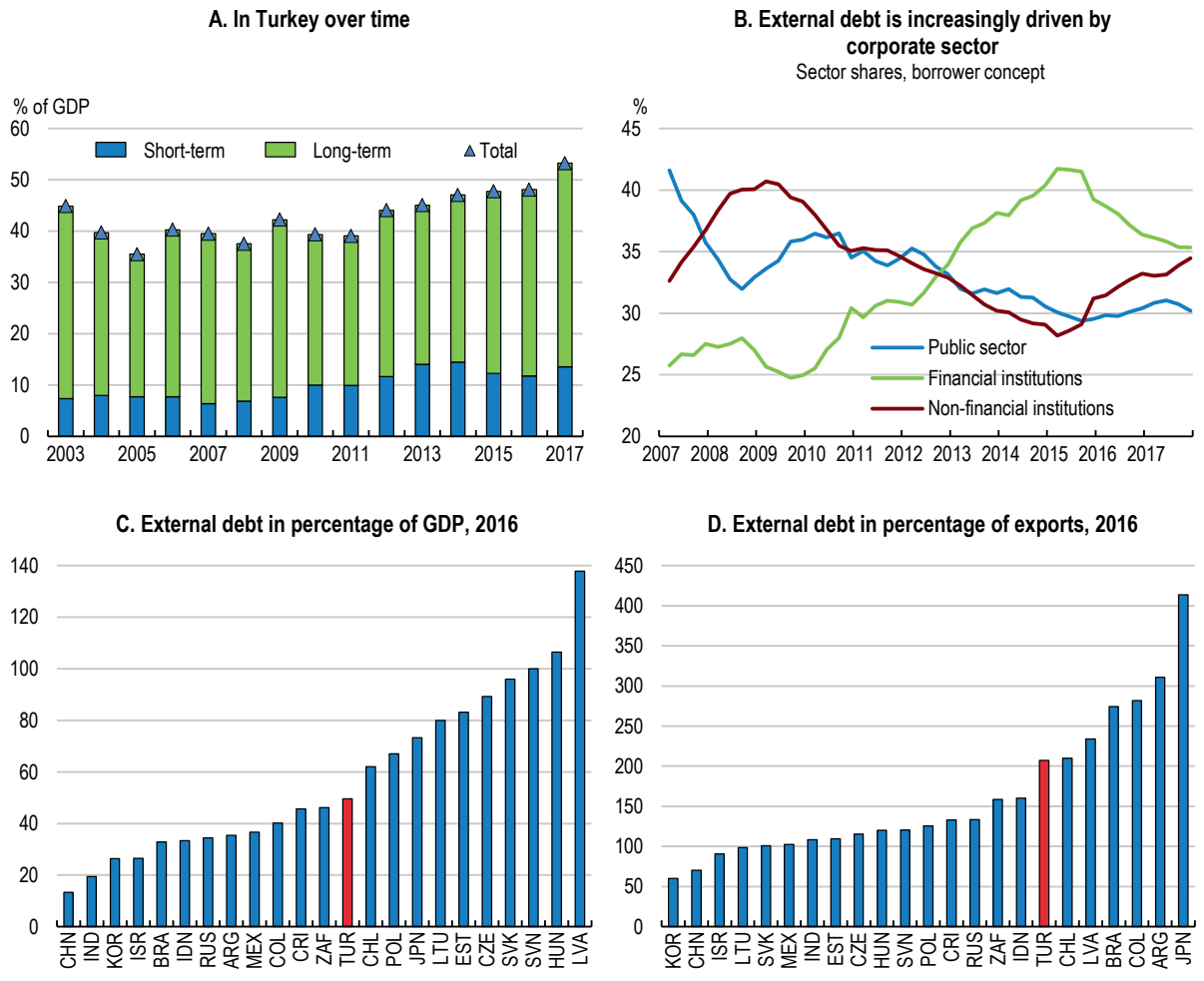
**Figure 11. The external debt ratio has increased**




*Note*: For presentation purposes, Panel C and D exclude advanced European countries that typically have substantially higher external debt ratios.
*Source*: IMF (2018), Balance of Payments Statistics (database).
StatLink https://doi.org/10.1787/888933798789

**Box 3. External debt scenarios**

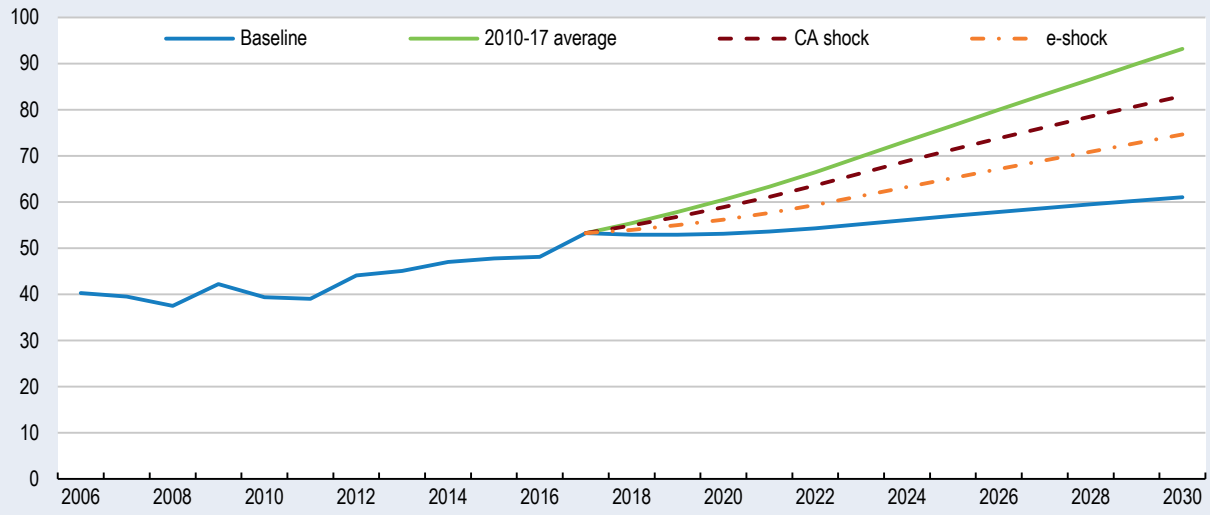
The evolution of the external debt-to-GDP ratio is a function of the initial external debt, the current account balance, net FDI inflows, real GDP growth, the exchange rate, foreign interest rates, inflation and the share of foreign-currency-denominated debt. Simulations have been run which are described in more detail in Annex A. A baseline scenario assumes 5% real GDP growth, real exchange rate stabilisation, a 4% of GDP current account deficit and net FDI inflows of 1.5% of GDP, in line with the historical average (Table 2). For all scenarios, the external interest rate is assumed to increase from 1.5% in 2018 to 4.0% in 2023 and to remain at this level thereafter.

**Table 2. Assumptions and outcomes of external debt scenarios[1]**

| | 2010-2017 | Baseline | CA shock | e shock |
|---|---|---|---|---|
| External interest rate | 1.5% | 4.0% | 4.0% | 4.0% |
| Real GDP growth | 6.3% | 5.0% | 5.0% | 5.0% |
| GDP deflator | 7.4% | 7.0% | 7.0% | 7.0% |
| Nominal exchange rate | -9.8% | -5.0% | -5.0% | -7.0% |
| Current account deficit | -5.4% | -4.0% | -6.0% | -4.0% |
| Convergence limit (% of GDP) | 704 | 89 | 161 | 307 |
| Half-life time to convergence (years) | 128 | 24 | 24 | 85 |
| Critical interest rate | 3.5% | 7.0% | 7.0% | 4.9% |

1. Convergence limit is the level towards which the external debt-to-GDP ratio converges. Half-life time is the number of years required to get mid-way to the convergence limit. The critical interest rate denotes the maximum external interest rate Turkey can afford to remain on a convergent debt path. See Annex A for details.

**Figure 12. External debt scenarios**
Gross external debt, in per cent of GDP




*Note*: The "`2010-17 average" scenario extends average parameters observed over 2010-17 until 2030. The "baseline" scenario assumes an interest rate of 1.5% in 2018 rising by 0.5 percentage points per year and stabilising at 4.0% from 2023 onwards, real GDP growth of 5%, inflation of 7%, effective exchange rate depreciation of 5%, a current account deficit of 4% and net FDI inflows of 1.5% of GDP per annum. "CA shock" assumes a current account deficit of 6% while the "e-shock" scenario assumes 7% nominal depreciation par year (all other fundamentals equal to baseline for both shock scenarios).
*Source*: OECD calculations based on IMF (2018), Balance of Payments (database) and OECD (2018), OECD Economic Outlook (database).
StatLink https://doi.org/10.1787/888933798808

Under this baseline scenario, the external-debt-to-GDP ratio would be capped at around 89% (Table 2 and Figure 12). Under the alternative scenario assuming a current account deficit that remains at its recent level of 6% of GDP, the external-debt-to-GDP ratio would rise from 59% to 161%. Relaxing the assumption of real exchange rate stabilisation and assuming the Turkish lira depreciates by 2% per year in real terms, the long-term external-debt-to GDP ratio would increase much more.

The four factors identified as drivers of external debt (Box 3) point to high and increasing risks to its sustainability. These four factors interact and improvements in all of them are needed to ensure a sound external position:

i. *The current account balance*. The recent drift of the current account deficit, if not reversed, heralds a significant worsening in the external debt path. Stronger productivity growth and competitiveness gains in the business sector would help reduce it.

ii. *The exchange rate.* The sharp depreciation of the Turkish lira has pushed up the debt ratio. A permanent 2 percentage point increase from the 5% baseline annual nominal exchange rate depreciation would significantly increase the convergence level of the external-debt-to-GDP ratio to above 300%.

iii. *The critical interest rate.* The maximum interest rate that Turkey can afford to pay while remaining on a convergent external debt path, called the critical interest rate, has been on a declining trend since 2005.

iv. *The share of foreign direct investment (FDI).* Stronger net FDI inflows would help contain the build-up of external debt. The stock and flow of FDI are currently both well below comparable countries.

Among the drivers of external sustainability, the external interest rate depends on the global risk-free interest rate, which is expected to increase, and on Turkey's risk premium. Recent OECD research found that countries' risk premia are affected by their political stability and institutional credibility (Fournier et al., 2018[13]), in line with the findings of earlier OECD Surveys of Turkey (OECD, 2012[14]). New estimates for this Survey confirm that Turkey's risk premia remain highly sensitive to the perceived quality of governance institutions (Box 4). They also reveal that the quality of the business sector (captured by its position in the international product space) facilitates cheaper borrowing from abroad. The presence of well-performing firms reduces risk premia, holding all other factors constant. Therefore, strengthening Turkey's business sector would reduce external vulnerability not only by reducing the current account deficit via productivity and competitiveness gains, but also by securing cheaper external funding.

The composition of debt also matters for external vulnerability. The share of currency and deposits held by non-residents is relatively low in Turkey (10% against 20% of total external debt on average in the OECD), which limits financial risks in the face of volatile international capital flows. More broadly, the share of short-term debt is relatively low as well although it has increased from below 20% prior to the global financial crisis to over 30% in 2014, before declining to around 25% in 2017. Still, total debt service as a share of exports of goods and services and primary income approached 40% in 2017, the highest value among comparators after Brazil. At the same time, international reserves represent less than half a year of imports, which is fairly low compared to most other emerging countries, though similar to OECD peers such Poland, Mexico or Chile.

**Box 4. Turkey's international risk premia and domestic capital costs**

GDP growth, inflation and public debt are standard indicators influencing the risk perceptions of international investors. The quality of institutions also bears on these perceptions, not least the efficiency of the judicial system, the strength of regulatory institutions and political stability. Furthermore, a country's possession of advanced know-how and its capacity to produce sophisticated goods and services may affect its ability to resist competitive pressures and to withstand shocks and can therefore reduce its riskiness.

To assess the impact of these factors on Turkey's risk premia, panel regressions have been carried out for a sample of OECD and non-OECD countries (Table 3). The standard drivers of risk premia are shown to be relevant. The estimations accurately track the evolution of Turkey's risk premia over the past decade. They also corroborate the view that an improvement in business sector sophistication helps reduce risk premia, highlighting the potential available for progress in this area in Turkey.

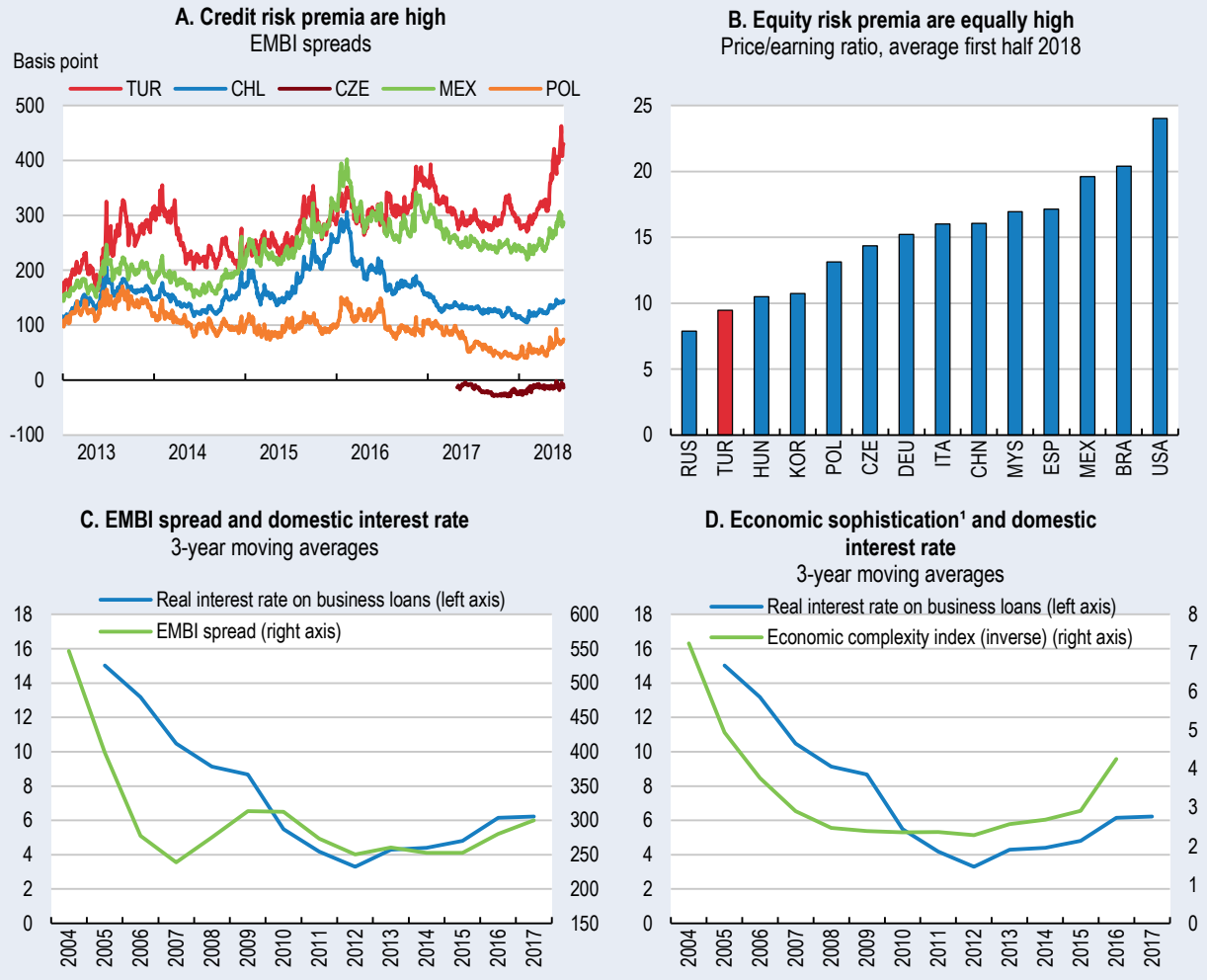
**Table 3. Determinants of international risk premia**

| | Determinants of risk premia indicators | | | | | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| Dependent variable: | Log CDS | Log CDS | Log CDS | Log CDS | Log EMBI | Log EMBI |
| Inflation (annual average, %, log) | 0.219* | 0.0592 | 0.400** | 0.228 | 0.203 | 0.118 |
| | (0.109) | (0.102) | (0.143) | (0.139) | (0.120) | (0.0977) |
| General government gross debt (% of | 0.00782 | 0.00623 | 0.0114** | 0.0129*** | 0.0124** | 0.0131*** |
| | (0.00457) | (0.00522) | (0.00405) | (0.00310) | (0.00451) | (0.00403) |
| GDP growth rate (%) | -0.0161 | -0.0589** | -0.0392** | -0.0678*** | 0.0188 | -0.0132 |
| | (0.0256) | (0.0231) | (0.0173) | (0.0175) | (0.0294) | (0.0163) |
| Economic complexity index | -0.416** | -0.486** | -0.496** | -0.747*** | -0.559** | -0.704*** |
| | (0.199) | (0.204) | (0.204) | (0.161) | (0.230) | (0.230) |
| Regulatory quality index | -3.595*** | -4.657*** | -2.329*** | -3.028*** | -1.618** | -1.971*** |
| | (0.677) | (0.780) | (0.737) | (0.679) | (0.702) | (0.575) |
| VIX | | 0.0537*** | | 0.0352*** | | 0.0285*** |
| | | (0.0106) | | (0.0110) | | (0.00763) |
| MSCI world | | -0.000278 | | -0.000514 | | -0.000243 |
| | | (0.000260) | | (0.000297) | | (0.000271) |
| Constant | 7.193*** | 8.009*** | 6.165*** | 6.628*** | 5.772*** | 5.938*** |
| | (0.652) | (0.759) | (0.836) | (0.859) | (0.804) | (0.785) |
| Year fixed effects | Yes | No | Yes | No | Yes | No |
| Advanced economy fixed effect | Yes | Yes | -- | -- | -- | -- |
| Region fixed effects (Emerging econ.) | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 239 | 239 | 169 | 169 | 173 | 173 |
| R-squared | 0.774 | 0.712 | 0.756 | 0.687 | 0.680 | 0.648 |
| Sample | Full sample | Full sample | Emerging Economies | Emerging Economies | Emerging Economies | Emerging Economies |

*Note*: Credit Default Swap (CDS) spreads on 5-year bonds and Emerging Markets Bond Index (EMBI) spreads have been used as risk premia indicators. GDP growth and inflation rates and gross government debt to GDP ratios were used as explanatory macroeconomic variables, the World Bank's regulatory quality indicator as a proxy for institutional quality, and MIT's Economic Complexity Index as an indicator of the supply side strength of the business sector. The global factors that influence risk premia across the board were proxied by either MSCI World and VIX indices or by year fixed effects. Robust standard errors are in parentheses. ***, ** and * denote statistical significance at 1, 5 and 10% respectively. The emerging economies sample includes Argentina, Brazil, Chile, China, Hungary, India, Indonesia, Malaysia, Mexico, Poland, Russia, South Africa, Thailand and Turkey. The full sample also includes the Czech Republic, Germany, Korea, Italy, Portugal and Spain. Regions for emerging economies include Eastern Europe, Asia, Latin America, North America and Africa. Estimation period: 2003-2016, annual data.

International risk premia paid by sovereign borrowers spill over to the cost of borrowing and equity of domestic firms. Turkey's open capital account and competitive banking sector imply that changes in sovereign funding costs are promptly and fully reflected in business funding costs (Figure 13).

**Figure 13. Turkey's risk premia and capital costs in international comparison**




1. Economic sophistication (complexity) is measured by the knowledge intensity of an economy, as reflected in the diversity and ubiquity of its exports. See Note 1 in Figure 7 for more details. In the figure the inverse of the ECI (1/ECI) is plotted.

*Source*: Thomson Reuters Datastream (database); Central Bank of the Republic of Turkey; Observatory of Economic Complexity, Economic Complexity Index.

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### *Keeping private credit and financial leverage in check*

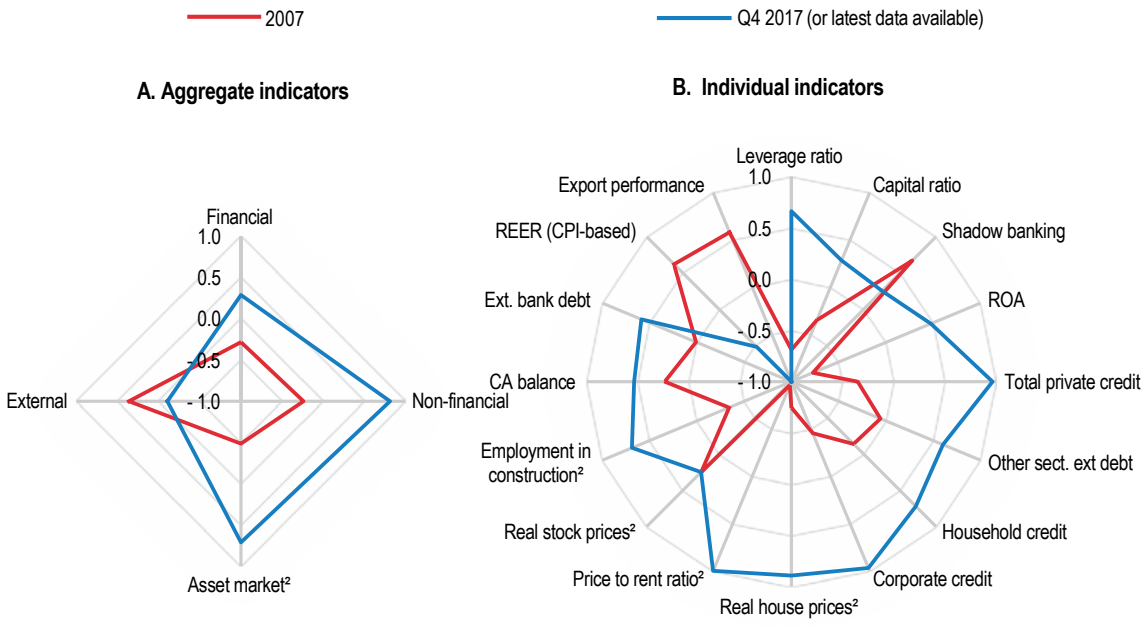
Turkey's financial vulnerabilities have increased over the past decade. The debt of non-financial corporations as well as banks' dependence on external non-deposit funding have strongly increased (Figure 14). The massive government loan guarantees offered in 2017 alleviated short-term financial strains, but the share of own capital in the financing of

businesses and banks is too low and must be increased to improve financial resilience. Bank capital ratios have also declined over the past decade. On the one hand, banks' capital adequacy remains strong in international comparison but, on the other hand, underlying risks, in particular currency mismatches, warrant stronger buffers.

Rising shares of foreign exchange (FX) deposits in total liabilities, and falling shares of FX loans in total loans, both largely reflecting the weakness of the Turkish Lira, have led to an increase in banks' on-balance FX positions from around TL 32 billion on average between 2014 and 2016 to more than TL 50 billion on average over the first quarter of 2018. At the same time, banks generally hedge open FX positions with off-balance sheet instruments leaving the total banking system's net FX position approximately at par (and even long during the first quarter of 2018).

**Figure 14. Macro-financial vulnerabilities have increased**

Index scale of -1 to 1 from lowest to greatest potential vulnerability, where 0 refers to long-term average, calculated for the period since 2000[1]




1. Each aggregate macro-financial vulnerability dimension is calculated by aggregating (simple average) four normalised individual indicators from the OECD Resilience database. Individual indicators are normalised to range between -1 and 1, where 0 refers to the long-term average, and a higher value denotes greater vulnerability. Financial dimensions include: leverage ratio, capital ratio (regulatory capital), shadow banking (% of total financial sector assets) and return on assets. Non-financial dimensions include: total private credit (% of GDP), other sector external debt (% of GDP), household credit (% of GDP), and corporate credit (% of GDP). Asset market dimensions include: real house prices, price-to-rent ratio, real stock prices and share of employment in the construction sector. External dimensions include: current account balance (inverted), external bank debt (% of GDP), real effective exchange rate, and export performance.
2. 2010 instead of 2007.
*Source*: Calculations based on OECD (2018), OECD Resilience Database, May.
StatLink https://doi.org/10.1787/888933798846

The latest IMF Financial Sector Assessment recommended to reinforce the surveillance of non-performing loans and loan classifications to reduce risk exposures (IMF, 2017[15]).

The significant increase in the share of loans reported as being "under close monitoring" between late 2017 and early 2018 (from around 4% to around 7 % of total bank portfolios) reflects progress in loan classifications and hints at a higher share of potentially problematic loans than previously assumed (CBRT, 2018[16]). Against this backdrop, relatively high loan loss provision rates of well above 70% provide a welcome buffer in the face of potential increases in non-performing loans.

The total debt of firms, households and government has been fairly stable since 2010, at around 200% of GDP, slightly above the OECD median according to national accounting standards. However, private leverage (debt-to-equity ratio) is considerably higher than in most OECD countries, in particular in the non-financial corporate sector where Turkey exhibits the highest leverage ratio across the OECD, illustrating the dearth of equity capital (OECD, 2017[17]). Total credit to private non-financial firms as a share of GDP increased from 20% in 2003 to 53% in 2010 and over 85% in 2017. Bank deposits increased more slowly, and the banking sector's loan-to-deposit ratio reached the internationally high level of 120%, although it has stabilised since 2016. This ratio is particularly high in Turkish Lira as banks convert foreign currency liabilities (with low nominal costs) into domestic currency assets with higher nominal returns. The regulations introduced in May 2018 to align non-financial firms' foreign exchange borrowing capacity with their ability to generate foreign exchange revenues, and the plans to extend these limits to all firms will increase business funding costs but are necessary given the magnitude of exposures and the associated risks (Figure 11, Panel B). As of March 2018, the foreign exchange debt of the private sector had attained USD 294 billion (35% of 2017 GDP), 85% of which was due by 2300 firms owing more than USD 15 million each and 50% by around 500 firms indebted by more than USD 100 million (CBRT, 2018[16]).

In contrast with the corporate sector, the soundness of household balance sheets has improved in recent years. The accumulation of credit card debt by potentially insolvent families has been contained by restricting the use of instalments and tying credit card limits to income levels. As a result, households' financial leverage has been on a declining trend since 2014 (CBRT, 2017[18]). The pace of deleveraging has slowed recently, as some of the prudential rules concerning housing loans, consumer loans and credit card instalments were relaxed. In September 2016, the loan-to-value limits of housing loans, the maturity limit of consumer loans and the instalment limit of credit cards were respectively extended from 75 to 80%, from 36 to 48 months, and from 9 to 12 months. This triggered an acceleration of retail and housing credit, which has stimulated housing demand, prices and construction (Figure 15).

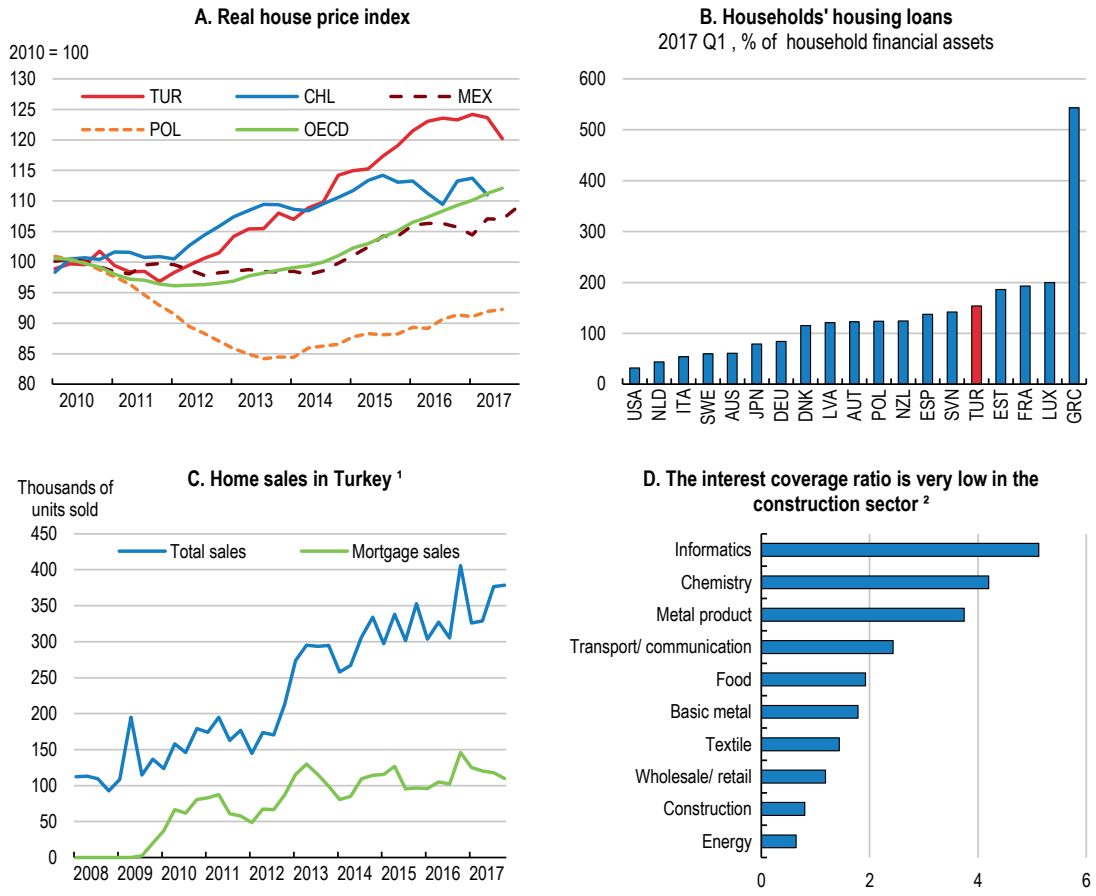
There have been recurrent concerns about overvaluations in the Turkish housing market (IMF, 2016[19]). Some indicators suggest that the sector's current cycle may have peaked in 2017. Real prices have started to fall, notably in Istanbul, newly granted housing occupation permits are down, and the unsold stock of apartments reached a historical level at above one million units at the end of 2017. The unsold stock is particularly large in the so-called "brand house" upper segment of the market. Against this backdrop the state-owned banks extended housing loans at concessional rates in Spring 2018. This is expected to stimulate housing demand in the short term, but risks re-fuelling excessive debt build-up among households.

Construction firms' debt also remains among the highest in the business sector, and their interest cover ratios are among the lowest (Figure 15, Panel D). Any serious financial strains in the construction cluster could easily spill over, given the weight of the sector in

the economy. Debt build-up in the construction cluster should be closely monitored and contained.

Higher housing debt calls for an increase in household savings in the future. In the short term, the strongest impulse to household savings is coming from the expansion of the voluntary pension system (BES). A government subsidy of 25% tops up the savings in long-term individual pension accounts managed by private fund managers. Automatic enrolment of all public and private sector employees in 2017 (with opt-out options) increased the number of participants from 6.6 million in 2016 to 10.3 million in 2017. As of June 2018, total savings of TL 84 billion were accumulated in these accounts, less than 2000 euros per person on average, but more than all other household investment vehicles in Turkey combined. However, due, among other factors, to the low returns achieved by BES-eligible funds so far, many participants (including half of all automatically enrolled participants in 2017) opted to withdraw from BES. Stronger competition between eligible funds and higher transparency of their performance would help improve their credibility and help the BES system to better fulfil its objectives.

**Figure 15. House prices are adjusting but debt remains high**




1. Number of units sold per quarter. It covers main cities and districts in 2008-12 and all settlements thereafter.
2. Interest coverage ratio (ICR) = Net operating profit (EBIDTA)/Interest expenses (including hedging costs) of firms listed in Borsa Istanbul. An ICR below 1.5 is generally considered as a sign of financial tension.
*Source*: OECD (2018), OECD Resilience (database), March; Turkstat and Central Bank of Republic of Turkey (2017), Financial Stability Report, May.
StatLink https://doi.org/10.1787/888933798865

On top of the macro-financial vulnerabilities and challenges arising from the accumulation of aggregate external and internal debt, Turkey faces various domestic, regional and sectoral uncertainties (Table 4).

**Table 4. Possible shocks to the Turkish economy**

| Vulnerability | Possible outcome |
|---|---|
| The normalisation of advanced countries' monetary policies may trigger more tightening than expected in global monetary conditions. | If Turkey does not improve its macroeconomic credibility it may unfavourably decouple from comparable emerging markets and face costly capital flight. |
| Recurrent departures from the cautious macroeconomic framework of the Medium-Term Programme 2018-20 may generate an abrupt decline in confidence. | Any severe impacts on risk premia, exchange rates and capital flows may exacerbate tensions in the non-financial and financial sectors, undermining growth. |
| Escalation in regional geopolitical crises, including longer and broader cross-border military conflicts. | Tourism revenues may fall. Household and business confidence may suffer, curbing aggregate consumption and investment. Global value chain activities may suffer. |
| New tensions in oil markets may raise oil prices to their 2014 levels and above (from USD 75 in June 2018, to USD 110 and above). | An increase of USD 10 in the Brent price worsens Turkey's current account deficit/GDP ratio by 0.5 percentage points. External sustainability challenges and inflationary pressures would be further amplified. |
| A debt crisis in the housing and construction sector. | House prices may dwindle and the solvency of mortgage-exposed households, real estate firms and creditors may be threatened, with broader impacts on the rest of the economy. |

## Macroeconomic policies

The macroeconomic policy stance has been supportive after the coup attempt in July 2016. Government spending increased strongly in the second half of 2016, and various tax incentives have been granted in 2017 and 2018. Additionally, the government has massively extended its Credit Guarantee Fund (KGF). Monetary policy remained supportive in the aftermath of the coup attempt, but was then tightened in several steps in 2017 and in the second quarter of 2018. The latest round of sharp monetary tightening and the simplification of the policy framework along international standard practices in June 2018 were highly welcome, but to fully restore the credibility of monetary policy the commitment of all stakeholders to central bank independence and actual progress with disinflation are indispensable.

### *Resuming fiscal consolidation and containing contingent liabilities*

The headline fiscal position remained strong until early 2018, despite the considerable fiscal stimulus imparted in 2016 and 2017 partly due to stronger than expected growth. However, new spending pressures arose before the early elections in 2018, which are likely to override the consolidation objectives announced in the Medium-Term Programme 2018-20 published in Fall 2017. Whereas the MTP had projected a lower headline general government fiscal deficit, from -2.6% of GDP in 2017 to -2.2% and -2.1% respectively in 2018 and 2019, the IMF, after an analysis of the spending measures taken in early 2018, projected a widening to -2.9% of GDP in 2018 and -3.2% in 2019 (Figure 16). Furthermore, additional quasi-fiscal spending channels are being activated. Overall public finance transparency should be improved to monitor the actual fiscal stance to take account of all these developments, as underlined in past OECD Economic Surveys of Turkey (OECD, 2016[1]; 2014[2]).

The main areas where non-budgeted spending pressures augmented in 2018 include:

i. The conversion of 750 000 contract workers in the public sector into permanent government employees is increasing the public payroll and reducing the flexibility of public spending.

ii. New investment and employment subsidies not foreseen in the Medium-Term Programme 2018-20 have been introduced. One measure alone (the prolongation of the minimum wage subsidy which was to be discontinued at the end of 2017) will increase general government outlays (from the Unemployment Insurance Fund) by 0.2% of GDP. Other new subsidies have been announced, including a monthly subsidy of TL 883 (55% of the employment costs of a minimum wage earner) for each additional employee hired in 2018, and a new package of "project-based incentives" offered to selected investment projects.

iii. Defence spending will likely overshoot targets despite a significant increase in the 2018 defence budget, as a result of ongoing cross-border military operations.

iv. Two bonuses of TL 1000 each will be offered to all pensioners on the occasion of the two religious holidays in 2018, at a total fiscal cost of 0.7% of GDP.

v. A price compensation system is put in place, guaranteeing maximum diesel and gas oil prices to users at the price levels prevailing in mid-May 2018. Any changes in international oil prices and in the exchange rate which may entail domestic price increases after that date will be offset by symmetrical cuts in special oil taxes. The preparation and publication of revenue loss scenarios under alternative international and domestic/regional oil price and exchange rate assumptions would help measure the contingent fiscal liabilities of this scheme.

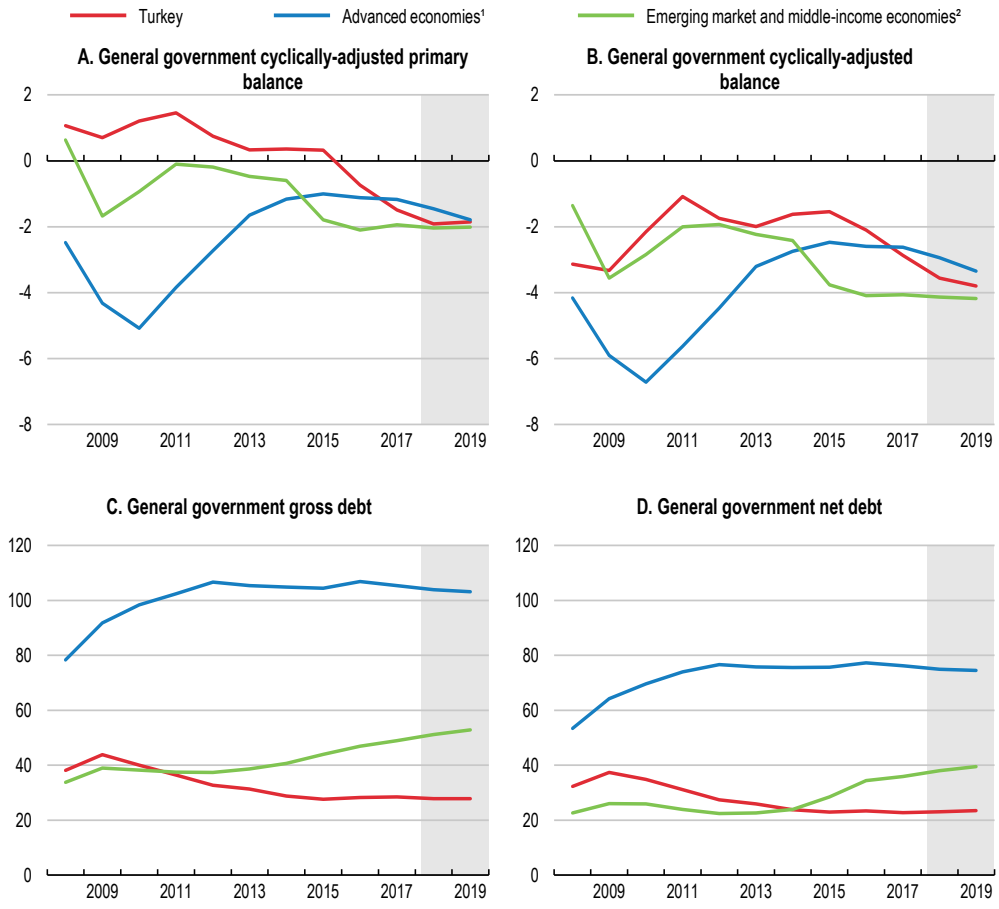
vi. The contingent liabilities of public-private partnerships (PPPs) in infrastructures are materialising, as a result of lower-than-predicted traffic in transportation facilities and of exchange rate depreciation (even though contingency payments for roads and direct payments for health sector PPPs stayed lower than budgeted in 2017, and likely in 2018). Public-private partnerships may entail further fiscal costs in the future as many of them contain minimum revenue guarantees denominated in foreign currency. This renders the contingent liabilities vulnerable to macroeconomic shocks. PPP liabilities are included in Medium-Term and Annual Budgets and in Annual Investment Programmes, and technical co-operation is ongoing between the Ministry of Finance and the World Bank and the IMF on the monitoring of the related fiscal risks. Nonetheless, only liabilities associated with PPP projects of a value of USD 14.6 billion, which were subject to debt assumption in case of early contract termination by the Treasury, have been included in the Treasury's regular Public Debt Management Report so far. The total amount of PPP projects where different types of credit enhancement tools are provided as government liability including debt assumption by the Treasury is approximately USD 45.5 billion.

vii. Additional government guarantees will be provided to small business and trader and craftsmen loans in 2018, both from the Credit Guarantee Fund (KGF) and the Union of Craftsmen and Traders' Credit Co-operatives (TESKOMB). Also, subsidized credits will be provided by the Union of Chambers and Commodity Exchanges of Turkey (TOBB) and by the SME agency KOSGEB. Additional credit facilities have been announced by public financial institutions in 2018, notably by the agricultural bank Ziraat, SME bank Halkbank and Turkish Eximbank. To the

extent there is a support element in these loans, this subsidy content should be made transparent.

**Figure 16. The programmed fiscal consolidation is at risk**

In per cent of GDP




*Note*: Figures for 2018 and 2019 are IMF projections taking into account the targets of the Medium-Term Programme 2018-20 published in October 2017 but also the measures announced in early 2018.

1. 35 countries listed as advanced economies by the IMF.
2. 40 countries listed as emerging market and middle-income economies by the IMF.

*Source*: IMF (2017), Fiscal Monitor, April 2018.

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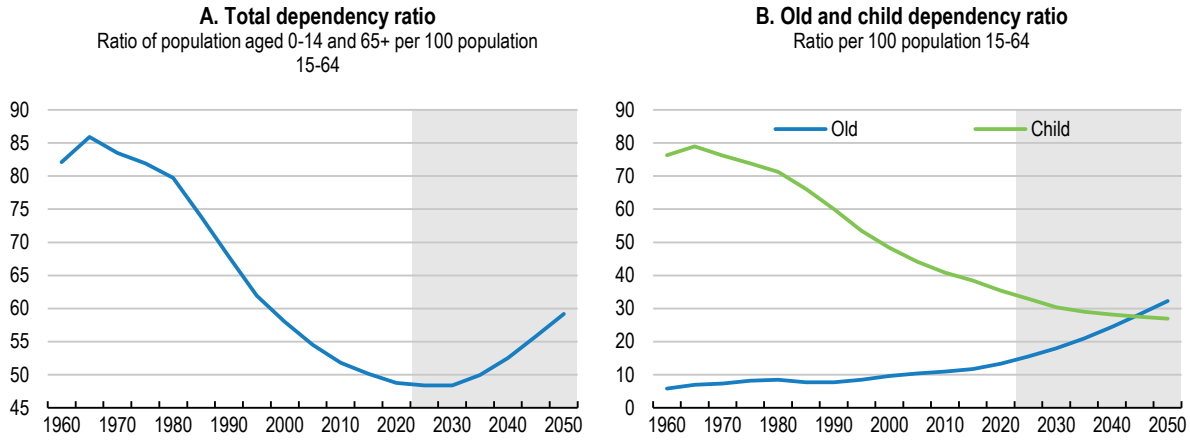
While Turkey is one of the few OECD countries which still enjoy a "demographic window" - the working age population is growing more rapidly than dependent age cohorts – the window is rapidly closing. Even if the current trend increase in labour force participation - notably by female workers – and the increase in effective retirement age will partly alleviate the immediate impacts, both pension and health systems will face new pressures within less than a decade (Figure 17). Per capita public health spending is below OECD averages, but health spending pressures are building up due to ongoing transition to universal health insurance and the medical care provided to more than 3.5 million refugees. The fiscal implications of the ageing-related pressures on the pension system have not been formally quantified and discussed so far, but should be gauged and

actively managed. Progress with respect to earlier OECD recommendations has been very limited in this area (Table 5).

**Figure 17. The demographic window of opportunity is closing**




*Note*: The projection variant presented is the "zero-migration" one assuming medium fertility, normal mortality and no migration in 2015-50.
*Source*: United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Prospects: The 2017 Revision.
StatLink https://doi.org/10.1787/888933798903

**Table 5. Past OECD recommendations on pensions**

| Recommendations in past *Survey* | Actions taken since the previous *Survey* |
|---|---|
| Make continuing work in the formal sector after official retirement age more attractive and actuarially neutral. | Since March 2016, retired individuals working on their own account are exempt from social security contributions. |
| Speed up increases in the statutory retirement age. | No action taken. |
| Establish a health insurance contribution for young retirees. | No action taken. |

## *Re-prioritisation of expenditures*

Public spending needs to be re-oriented to promote growth, job creation and social cohesion. The task is complicated by the fact that more than 70% of central government spending is earmarked, with half of that absorbed by the government wage bill. A recent study based on the Medium-Term Programme projects the share of earmarked spending to rise above 75% by 2020 (Dag, 2017[20]). Spending flexibility could be further reduced if borrowing costs of the Treasury continue to increase. The high level of rigidity limits room for additional public spending in crucial areas for inclusive growth, such as education, skills development, health and judicial infrastructures (Box 5).

**Box 5. Public spending needs in education**

Student enrolment rates have risen over the past decade at all levels, but quality has fallen short. Parents' satisfaction with school quality is one of the lowest in OECD. Numeracy skills of 15 year-old students and working age adults are far below the OECD average (Figure 18). The relationship between these shortcomings and resource constraints has

been empirically established (OECD, 2012[21]). Some key aspects of under-resourcing in the education system include:

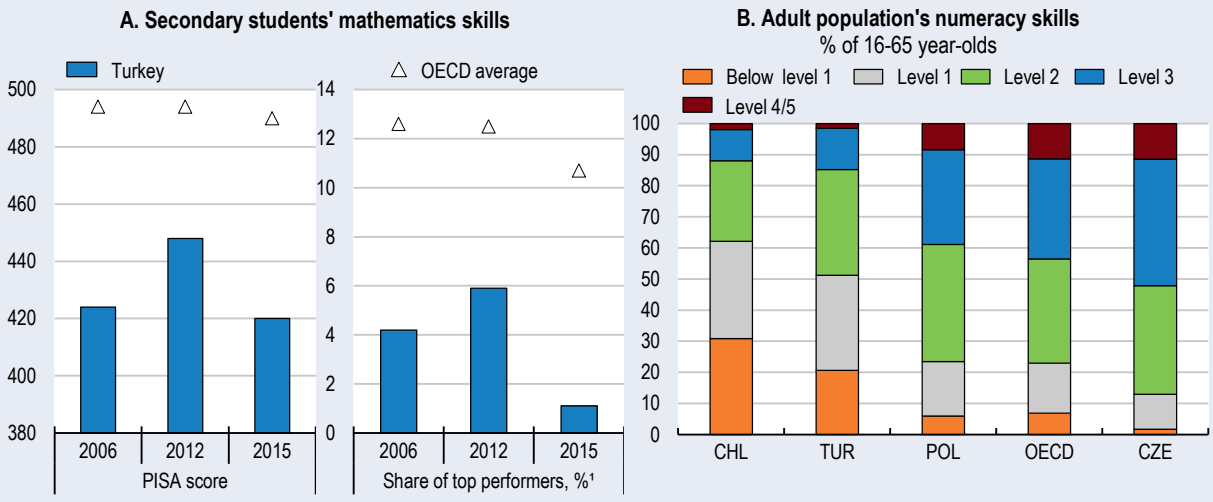
i. Very few young Turkish citizens are enrolled in early childhood education, even though these early years lay the foundations for future skills acquisition, productivity and earning capacity. Only 9% of three year-olds are enrolled, against the OECD average of 78%. Enrolment rates of the 4 and 5 year olds reached respectively 50% and 70%, but remain below targets.

ii. Public expenditure per student is the lowest in the OECD. At purchasing power parity, public spending per student through primary and secondary school (ages 6-15) was USD 43 000 in 2014, against the OECD average of USD 124 000.

iii. Turkey has one of the largest differences in learning environments between public and private institutions: class sizes and student-teacher ratios are twice as large in public as in private institutions, implying inequalities in learning outcomes (OECD, 2017[22]).

iv. A large proportion of tertiary students study business administration and law, which are less onerous to teach than scientific and technical fields but offer below-average employment prospects. As tertiary education capacity is limited in these branches, the share of science, technology, engineering and mathematics (STEM) professionals is low, both among students and graduates, despite high demand by labour markets. Less than 20% of new university entrants can engage in these fields against the OECD average of nearly 30%.

**Figure 18. Numeracy skills of students and adults**




1. Proficiency level 5 or above on a scale of 1 to 6.
*Source*: OECD (2016), PISA 2015 Results: Excellence and Equity in Education (Vol. I) and OECD (2016), Skills Matter: Further Results from the Survey of Adult Skills.
StatLink https://doi.org/10.1787/888933798922

Additional spending in education should be managed in the most effective possible way, to provide higher value for money. According to the performance budgeting goals of the 2003 Public Finance Law 5018 (which could not be implemented in the area of education

so far), Turkey should engage in an ambitious effort to develop evidence-based spending rationalisation in education. A possible starting point could be the OECD's evaluation and assessment frameworks for improving school outcomes (OECD, 2013[23]). Turkey's domestic ABIDE database provides a good supportive infrastructure.[1]

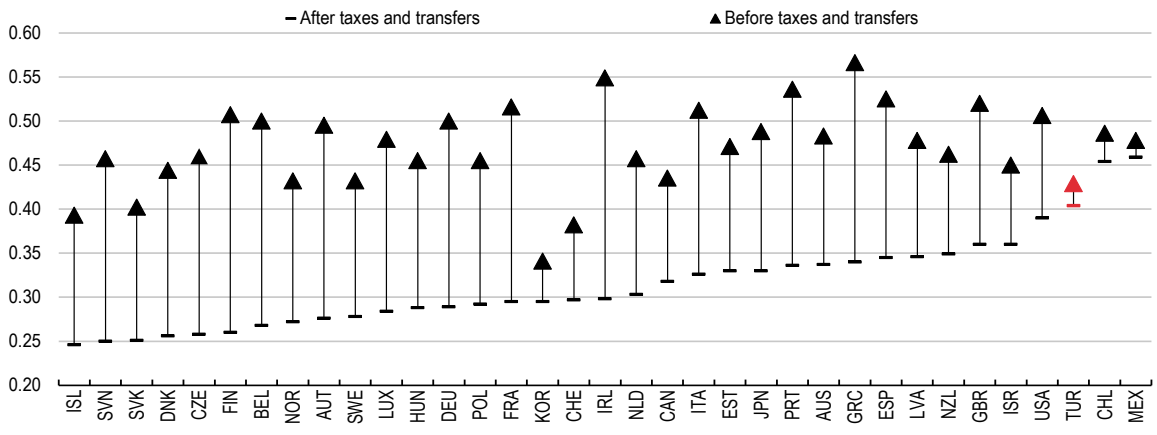
1. This database covers all secondary school pupils and can help analyse the academic achievements of students exposed to different school contexts and curricula. Impact assessment controlling for socio-economic backgrounds and other personal characteristics would provide an evidence basis for detecting the school contexts, curricula and pedagogical approaches offering the best educational outcomes.

### *Redesigning the tax and benefit system to foster inclusive growth*

On the revenue side, the low level and the composition of tax receipts are growth-friendly, but significantly less redistributive than in other OECD countries (Figure 19). In 2016, with a tax-to-GDP ratio of 26%, Turkey ranked 32nd out of 35 OECD countries. Compared to other countries, the tax structure is characterised by substantially higher revenues from goods and services taxes (including energy taxes) and higher revenues from social security contributions and value-added taxes. In contrast, the share of taxes on corporate income, personal income and property is low (OECD, 2017[24]). This notably reflects extensive tax evasion, calling for a more transparent and even-handed tax structure. The ongoing extension of digitised tax administration provides a basis for future reform initiatives in this area (Digitalisation in Taxation, 2018[25]).

**Figure 19. Tax and transfers play a very limited role**

Gini coefficient, 2015 or latest year




*Source*: OECD (2018), OECD Income Distribution (database).
StatLink https://doi.org/10.1787/888933798941

Subsidies and tax incentives to the business sector have recently been expanded considerably. The Working Group on the Efficiency of Incentive Measures of the National Development Plan 2019-23 identified 75 different incentive and subsidy schemes in place in 2017. These state aid instruments available to particular types of regions, as described in Table 6, are also made available to particular types of projects:

"Priority projects" cover investments in 17 specific areas (spanning from rail and sea transportation to "high-technology" sectors according to the OECD definition). If these investments are realised in Type 6 regions and in the Organised Industrial Zones (OIZs) of Type 5 regions, they benefit from additional supports on top of existing incentives in these regions (Table 6). An exceptional extension was recently granted to investments in these sectors in all regions of Turkey, which then qualified for Type 5 region incentives irrespective of their regional location (see below) (Ministry of Economy, 2018[26]).

"Large-scale projects" concern investments of a minimum size (defined separately for each sector) in 12 selected sectors. Minimum investment scales span from TRY 50 million in car components, to TRY one billion in oil refining. Due to their large size these projects are expected to embody leading-edge technologies. They benefit from additional supports on top of the incentives available in the regions where they are implemented (Ministry of Economy, 2018[27]).

"Strategic projects" cover investments with a high promise to reduce import dependence. Projects fulfilling four conditions are eligible: i) a minimum investment scale of TRY 50 million, ii) implementation in an area where domestic production capacity is below current import volumes, iii) a firm-level value-added rate of at least 40%, and iv) upon completion, offering a potential to reduce imports by at least USD 50 million. They are granted additional benefits on top of the existing incentives in the regions where they are implemented (Ministry of Economy, 2018[28]).

"Regional Attraction Centers" are settled by the decision of the Council of Ministers, to benefit from the incentives available in Type 6 regions.

In March 2018, a set of 23 large-scale investment projects by 19 firms have been granted a package of aids denominated "project-based incentives", which combined various elements described in Table 6, including a temporary extension of eligibility criteria for "priority projects". The total volume of eligible investments was estimated at USD 34 billion (4% of 2017 GDP). The supported projects span a large set of sectors, from special metals, aluminium sheets and carbon fibers to railway engines, car batteries and diesel motors. The package was introduced with a special focus on the reduction of intermediate input imports that these projects are expected to deliver in the future.

To clarify the policy objectives set for these programmes, and to be less costly for public finances and less distortive for competition, the available set of incentives should be simplified and made more transparent. For this purpose, the legislated but not implemented annual report on state aids (which draws on the extensive monitoring and incentive-transparency experience of EU countries) can be utilised.

A regular Fiscal Policy Report, long advocated by the OECD (Table 8), would make the short- and long-term strengths and vulnerabilities of the fiscal system more transparent. Such a report should cover the general government sector as a whole. It would serve to implement the strategic and performance-oriented budgeting and the public sector reform objectives of the well-designed but still-pending 2003 Public Finance Law 5018. Its full enforcement would help achieve the fiscal savings needed to re-orient spending towards more growth and employment friendly uses.

**Table 6. Main tax and subsidy incentives according to regions**

| Support instruments | | Region types | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 |
| VAT exemption | | Yes | Yes | Yes | Yes | Yes | Yes |
| Customs duty exemption | | Yes | Yes | Yes | Yes | Yes | Yes |
| Corporate income tax allowance (%) | Outside OIZs | 15 | 20 | 25 | 30 | 40 | 50 |
| | In OIZs | 20 | 25 | 30 | 40 | 50 | 55 |
| Employers' social sec. contribution exemption | Outside OIZs | 2 yrs | 3 yrs | 5 yrs | 6 yrs | 7 yrs | 10 yrs |
| | In OIZs | 3 yrs | 5 yrs | 6 yrs | 7 yrs | 10 yrs | 12 yrs |
| Employees' social security contribution exemption | | No | No | No | No | no | 10 yrs |
| Land allocation | | Yes | Yes | Yes | Yes | Yes | Yes |
| Interest rate subsidy (pp) | Turkish lira loans | No | No | 3 | 4 | 5 | 7 |
| | Foreign currency loans | | | 1 | 1 | 2 | 2 |
| Personal income tax reduction/exemption | | No | No | No | No | No | 10 yrs |

*Note*: The country is divided into six different types of regions: Type 1 are the wealthiest and Type 6 the least advanced. OIZ stands for "Organised Industrial Zones". Further support schemes subsidising R&D activities, Technoparks, SMEs and exporters are also available, but do not feature in this table.
*Source*: Unpublished Report of the Working Group on the Efficiency of Incentive Measures of the National Development Plan 2019-23.

### *Restoring monetary policy credibility requires joint commitment*

Headline and core inflation have steadily risen from 6% in 2011 to double-digit levels in 2017, well above the official target of 5% (Figure 20, Panel A). Turkey had the highest average inflation rate among peer countries over the past five years (Panel B), with harmful impacts on economic predictability and competitiveness. Several measures including relaxed macro-prudential policies, public incentives and the Treasury-backed Credit Guarantee Fund (KGF) have improved overall credit conditions and strengthened aggregate demand, but in turn also weighed on the inflation outlook. Central banks do not generally respond to temporary shocks hitting headline inflation. Nonetheless, the worsening outlook in core inflation, which played a central role in the deterioration of expectations, pushed the central bank to increase its effective funding rate through 2017, without, however, modifying the standard policy rate and merely shifting its funding operations toward higher-cost late liquidity window instruments. These interventions did not suffice to re-anchor expectations and failed to avoid sizeable subsequent currency depreciation.

The central bank took more decisive action in the second quarter of 2018. The policy rate was successively increased by 75 and 300 basis points in April and May respectively. In June, the monetary policy framework was simplified around a standard one-week policy rate with a symmetric adjustment corridor of overnight (borrowing and lending) rates, and the policy rate itself was raised by an additional 125 basis points – above average expectations. A range of foreign exchange liquidity easing measures was also announced to the market, via the central bank's reserve option and export rediscount credit channels. The return to a standard monetary policy framework responds positively to one of the past OECD recommendations (Table 8), and, together with the concurrent sharp tightening, should help restore credibility. The central bank should now present forward guidance as to how it plans to bring inflation toward the target – which is its sole mandate. Plausible inflation forecasts should help spell out the targeted disinflation path and the intended orientation of policy interest rates required to achieve it.

The upward trend in inflation expectations calls for a joint and explicit commitment of the central bank, the government and social partners to the inflation target. A credible commitment by all stakeholders to the central bank's independence could bring down inflation expectations and contain exchange rate volatility, even without further tightening. In addition, the government can make increases in indirect tax, administrative price, public wage and official minimum wages more predictable, to minimise unexpected shocks to headline inflation which unsettle wage demands and pricing behaviour. These shocks also make the reading of the underlying inflation trends more difficult and disturb long-term inflation expectations. A commitment by the social partners to credible official inflation projections and to the long-term inflation target in private sector wage negotiations would also be highly supportive.

Several features of the economy magnify the challenge faced by the central bank. As in all open economies, inflation is highly sensitive to import prices and the exchange rate, which are in turn highly affected by inflation overshooting (Figure 20, Panel E). In line with (Borio and Filardo, 2007[29]) and (Zhang, 2015[30]), who found that global factors play an increasing role in inflation outcomes in open emerging economies, recent empirical analyses on Turkey confirm that the contribution of exchange rate and import prices to inflation is higher than that of domestic cyclical conditions (Kara, Ogunc and Sarikaya, 2017[31]), with only one-third of the components of the consumer basket found to be responsive to the domestic output gap (Atuk, Özmen and Sarikaya, 2018[32]). In addition, the stickiness of prices in several product and services markets (notably in unprocessed and processed food markets), the large weight in the consumer basket of goods and services whose prices are either administered or influenced by indirect taxes, and strong nominal increases in official minimum wages irrespective of labour market conditions, all contribute towards weakening the responsiveness of prices to cyclical developments and policies.

Against this backdrop, the Food and Agricultural Product Markets Monitoring and Evaluation Committee, an interministerial committee supported by the central bank, is seeking to address some of the structural factors underpinning inflation developments. The targeted trade liberalisation measures that it has recommended to control the periodic excesses observed in the price of food products such as cereals, pulses and red meat and to prevent speculative movements, have already been partly implemented. It is also advocating more structural measures to stimulate agricultural and livestock production, rationalise supply distribution chains and logistics in food products, and competition in wholesale and retail food products markets. The authorities hope that these efforts will serve to reduce food price volatility and improve the efficiency in food production and distribution in the longer term.

Turkey also faces the standard dilemma of catching-up economies with high inflation and an open capital account: tensions occasionally arise between price and real exchange rate stability (inflation and competitiveness) objectives (Rey, 2015[33]), (Obstfeld, Issing and Ito, 2015[34]). As shown in Box 6, the sensitivity of the central bank to the deviation of inflation expectations from the inflation target had weakened in recent years, while its sensitivity to output deviations from potential had increased. Strengthening the institutional setup by reinforcing central bank independence will be important to help improve the responsiveness of monetary policy to the deviation of inflation expectations from target.

**Box 6. A Taylor rule for Turkey**

The interest rate policy of an inflation-targeting central bank can be observed through the lens of a simple Taylor rule linking the policy interest rate to the deviation of inflation from target and the size of the output gap (Güney, 2016[35]); (Turkay, 2017[36]). This Box estimates Taylor rule specifications for different periods. The results suggest that the central bank responded significantly to the deviation of inflation expectations from target before the so-called taper tantrum in 2013, but no longer did so thereafter. Meanwhile, its response to output deviations and to exchange rate depreciation became significant and its reaction to the policy rate of the US Federal Reserve strengthened.

**Table 7. Responsiveness to inflation deviations in policy rate determination**

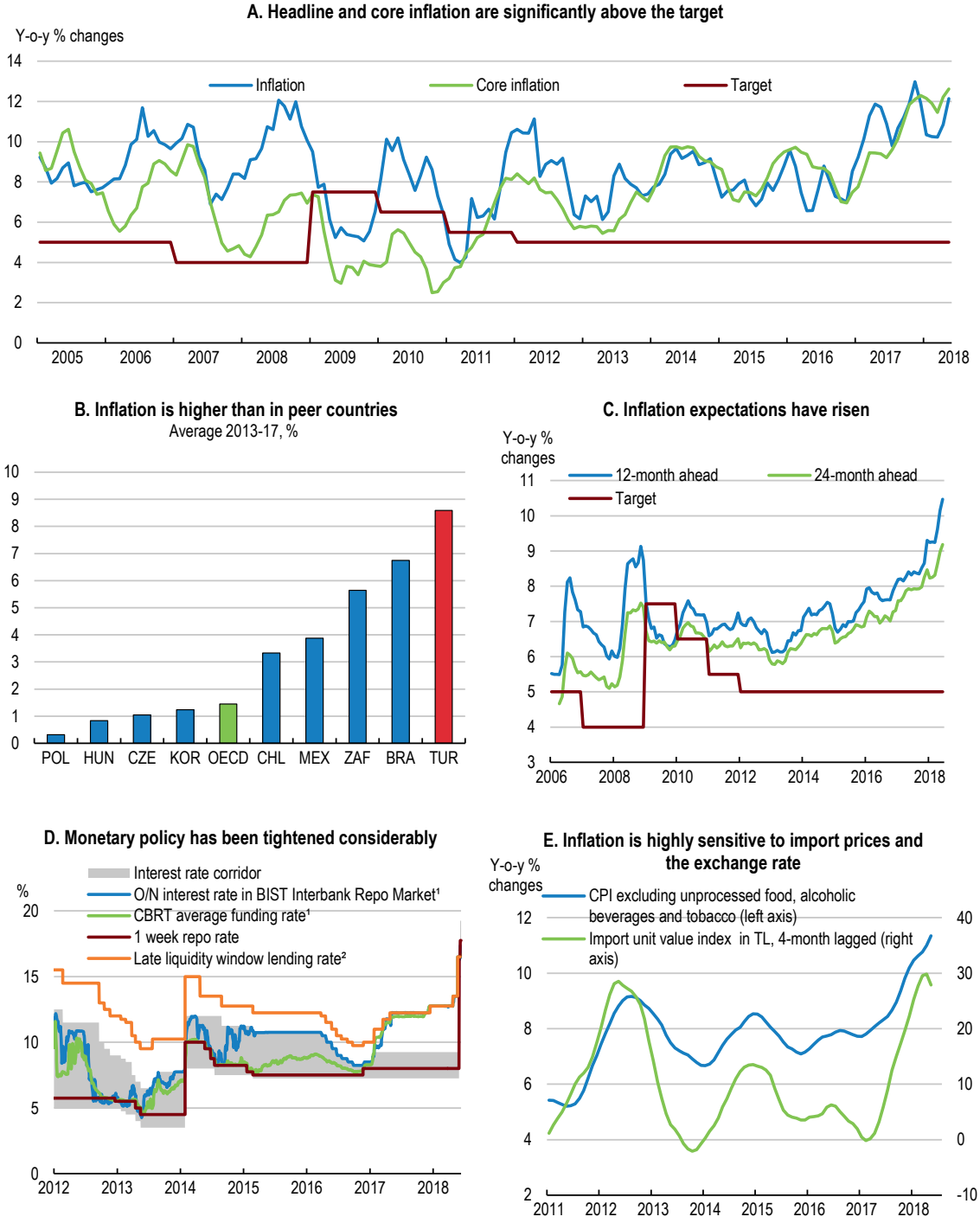
| Dependent variable: policy rate* | 01/2005-05/2013 | 06/2013-11/2017 |
|---|---|---|
| Policy rate$_{t-1}$ | 0.716*** | 0.206 |
| | (0.0902) | (0.212) |
| Inflation deviation $_t$ | 0.337*** | -0.585 |
| | (0.106) | (0.528) |
| IP gap$_{t-2}$ | 0.00216 | 0.186* |
| | (0.0251) | (0.0928) |
| US Fed policy rate | 0.254* | 2.048* |
| | (0.149) | (1.191) |
| Reer | -0.0357 | -0.0842** |
| | (0.0284) | (0.0324) |
| Constant | 6.032* | 11.63*** |
| | (3.535) | (4.123) |
| Observations | 98 | 54 |

*Note*: The columns compare the response of the CBRT to inflation and output deviations in two successive periods. The cut-off date refers to May 2013 when the US Federal Reserve first hinted at a future tapering of its asset purchase programme (Sahay, Arora and Arvanitis, 2014[37]); (Estrada, Park and Ramayandi, 2016[38]). The policy rate is approximated by the average funding rate of the CBRT for the period after November 2014. Inflation deviation is the percentage point difference between the 12-month-ahead inflation expectations and the inflation target. The industrial production (IP) gap is the percentage difference of the seasonally adjusted industrial production from the HP filter trend. Reer is the real effective exchange rate. Regressions include year fixed effects. Heteroscedasticity and autocorrelation robust standard errors are in parentheses. ***, ** and * denote statistical significance at 1, 5 and 10% respectively.

**Table 8. Past OECD recommendations on macroeconomic policies**

| Recommendations in past *Surveys* | Actions taken since the previous *Survey* |
|---|---|
| Tighten monetary policy unless inflation declines faster than projected. | The average cost of funding provided by the CBRT was raised by 947 basis points between January 2017 and June 2018. |
| Simplify the monetary policy framework. | The monetary policy was simplified as of June 2018 with the reintroduction of the one week repo rate as the main policy rate and a symmetric +/-150 basis points corridor. |
| Continue to contain consumer credit. | Macroprudential rules were relaxed in Fall 2016. |
| Increase foreign exchange reserves. | There has been no FX intervention since 2016. The "rediscount credit" scheme (central bank granting TL loans to exporters, which are reimbursed in FX) contribute around US $ 18 billion per year to foreign reserves. |
| Publish timely quarterly general government accounts according to international standards, in a unified format with the Medium-Term Programme. | Compilation of related data has started but consolidated accounts according to national accounting standards will not be available before end 2018. |
| Publish a regular Fiscal Policy Report including all contingent and long-term liabilities (possibly including the legislated but not yet operational state aids report). | No action taken for a comprehensive report (Note: The Ministry of Finance is developing, in co-operation with the World Bank and the IMF, a reporting system covering the direct and contingent liabilities of PPPs). |

**Figure 20. Monetary policy and the credibility of the inflation target**

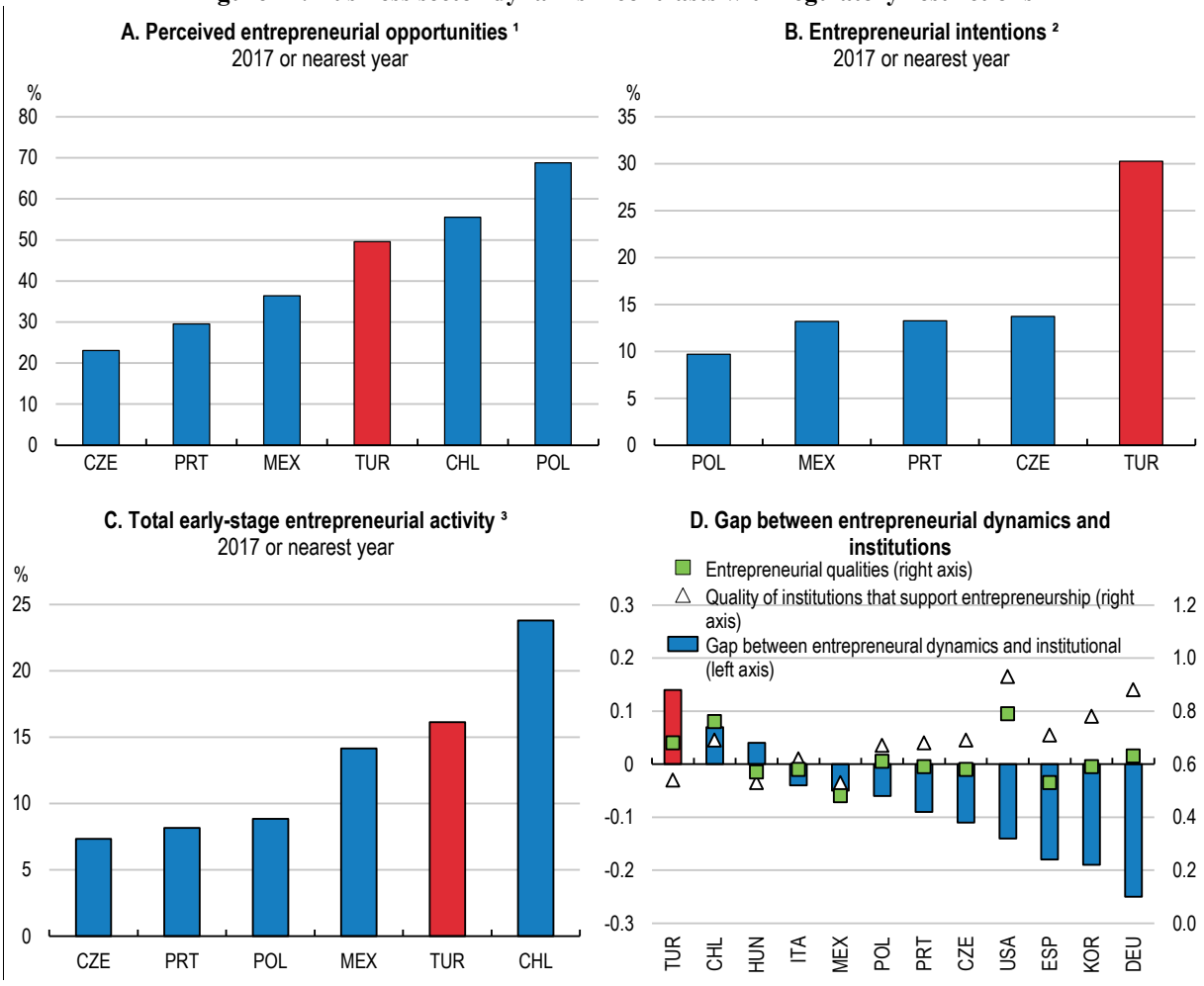



1. 5-day moving average.
2. This is the rate at which the central bank lends unlimitedly to banks, under the lender-of-last-resort function, within the last hour of the market days.
From January 2017 to May 2018, the central bank used this rate for funding and it became the main policy rate as of late November 2017 since all funding was provided through this facility.
*Source*: Turkstat; Central Bank of the Republic of Turkey and OECD (2018), Main Economic Indicators (database).
StatLink https://doi.org/10.1787/888933798960

## Structural policies

Turkey's entrepreneurial dynamism stands out, despite challenging conditions for doing business (Figure 21). A large number of medium-sized firms now constitute a "growing middle" between large formal businesses and small, informal, low-productivity activities. This vibrant business sector underpins the Turkish economy's resilience and helps achieve more inclusive growth. Nonetheless, human capital as well as institutional and regulatory frameworks still fall behind internationally. As analysed in previous OECD Surveys and despite several reform initiatives in recent years (OECD, 2016[1]; 2014[2]), these shortcomings continue to lead many firms to operate semi-formally in order to circumvent the most rigid regulations. This hinders the growth of the firms with the highest potential and slows down the transfer of resources to the best-performing parts of the economy.

**Figure 21. Business sector dynamism contrasts with regulatory restrictions**



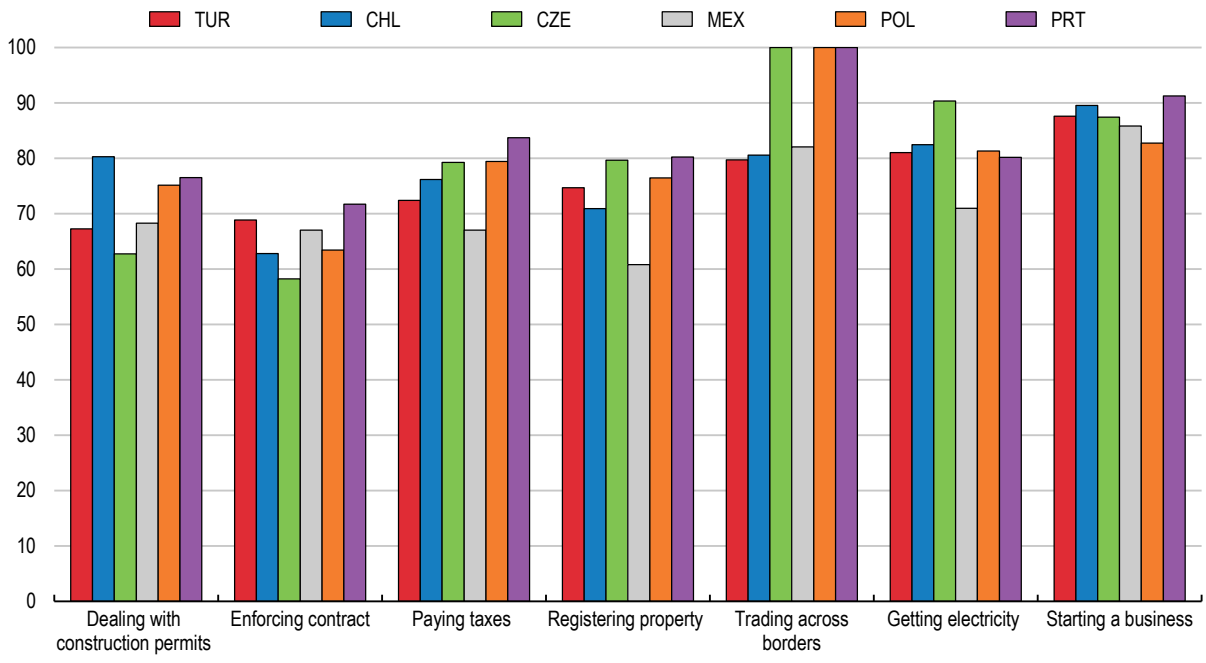

1. Percentage of 18-64 population who see good opportunities to start a firm in the area where they live.
2. Percentage of 18-64 population who are latent entrepreneurs and who intend to start a business within three years.
3. Percentage of 18-64 population who are either a nascent entrepreneur or owner-manager of a new business.
*Source*: Global Entrepreneurship Research Association, London Business School, Global Entrepreneurship Monitor (database, http://www.gemconsortium.org/data) and Global Entrepreneurship and Development Institute, Global Entrepreneurship Index 2018.
StatLink https://doi.org/10.1787/888933798979

### *Promoting formalisation in the business sector*

To overcome this "informality trap", policymakers have recently expanded the financial incentives offered to formal businesses - including substantial social security contribution cuts for newly hired workers, and corporate tax allowances for up to 55% of eligible investment costs (Table 6 above). In contrast, regulatory reforms addressing the root causes of informality and semi-formality more directly have been delayed. Fresh OECD indicators of product and labour market regulation are not available but the yearly updates of the World Bank's Doing Business indicators show that there is room for improvement in Turkey's business-making environment in international comparison (Figure 22).

**Figure 22. Room for improvement in the business environment**

2016/17, frontier = 100




*Source*: World Bank, Doing Business Indicators 2018 (database, http://www.doingbusiness.org/). These scores do not take into account the impact of the measures which started to be introduced in 2018.
StatLink https://doi.org/10.1787/888933798998

Labour market regulations remain more rigid than in comparable countries (Figure 24, Panel A), despite important reform efforts in recent years. These included the liberalisation of temporary work agency services (under still restrictive conditions), the introduction of a simplified dispute resolution mechanism, new legislation covering remote work (including telework), and easier hiring of qualified foreign workers. The rigidities documented in earlier OECD Surveys on the basis of the OECD Employment Protection Indicators (OECD, 2016[1]; 2014[2]) were only partly alleviated. The fixed-term employment contracts and the redundancy rules remain restrictive. Turkey also stands out as the OECD economy with the highest minimum/median wage ratio (Figure 24, Panel B). Following the substantial minimum wage increase in 2016, a slight

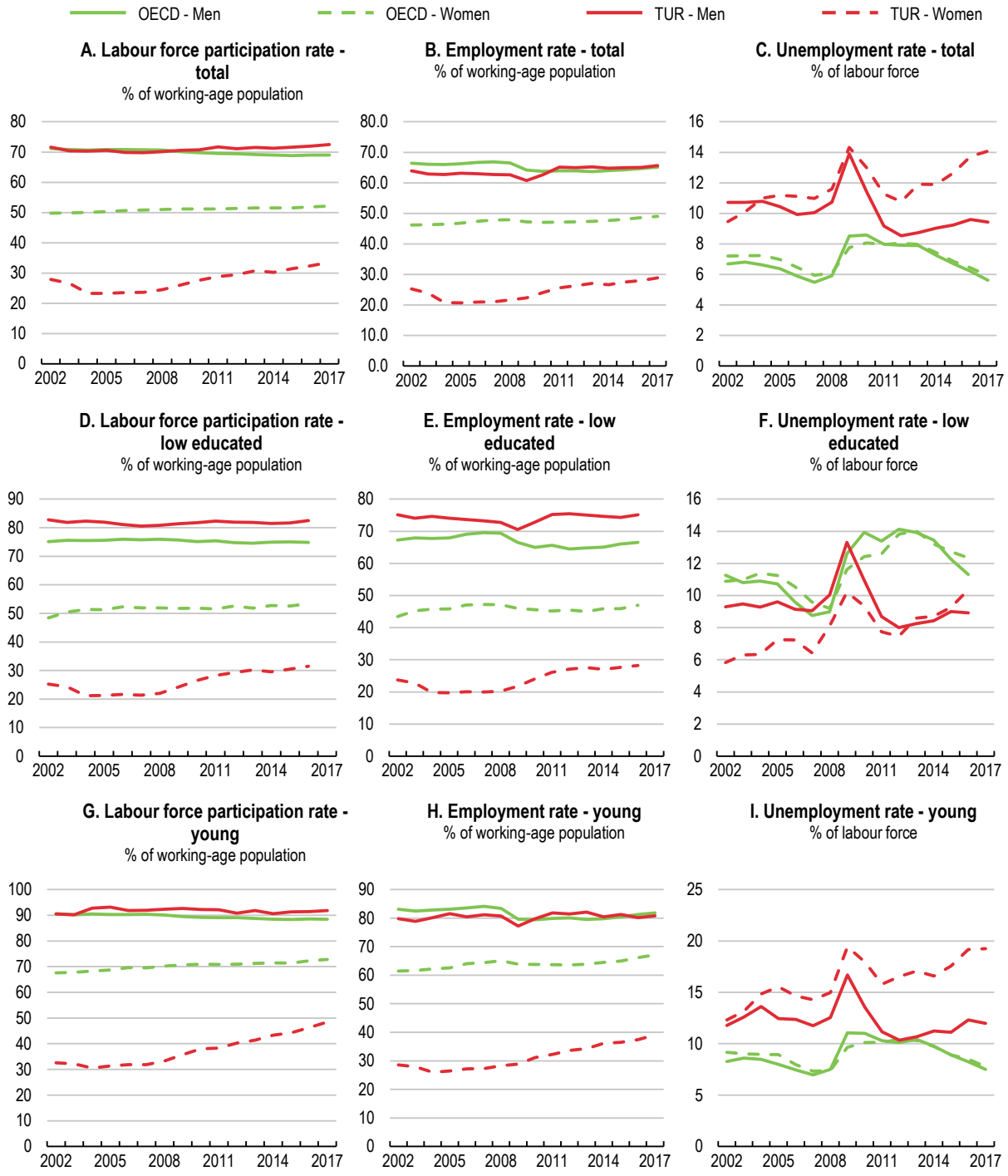
increase in informality has been observed, somewhat contrasting with its trend decline. In the presence of large productivity and price disparities across regions, setting minimum wages regionally may be less damaging for employment, and for higher-productivity formal activities. The recent increases of the minimum wage at national level were nonetheless in line with the earlier OECD recommendation to maintain its real growth rate below labour productivity growth (Table 10).

Turkey faces also important challenges stemming from sizeable inflows of refugees. According to the Ministry of Interior figures, there were more than 3.5 million refugees from Syria alone in June 2018, 2 million of whom are of working age. Including refugees from Iraq and other countries, the total number of refugees approached 4 million. In 2017, around 600 000 refugees were employed as unregistered (informal) workers (Kaygisiz, 2017[39]). Ministry of Labour and Social Security figures indicate that, in contrast, only around 40 000 Syrian refugees had been granted official work permits by March 2018 (Milliyet, 2018[40]). The implied rate of informality of at least 95% eases the activation of refugees but is a formidable challenge for the operation of the Turkish labour market, where the authorities try to reduce informality. It also complicates the social inclusion of refugees.

Policymakers are aware of the need to further improve the employability of the low-educated majority of the working age population in the formal sector, as major imbalances persist in the labour market. Participation rates – including for low-skilled, young and female workers – are trending up and so is the employment rate, albeit from low levels. Net job creation is strong throughout the country but the labour force expands by around 3½% per annum on average and unemployment rates remain high, at around 10% (Figure 23).

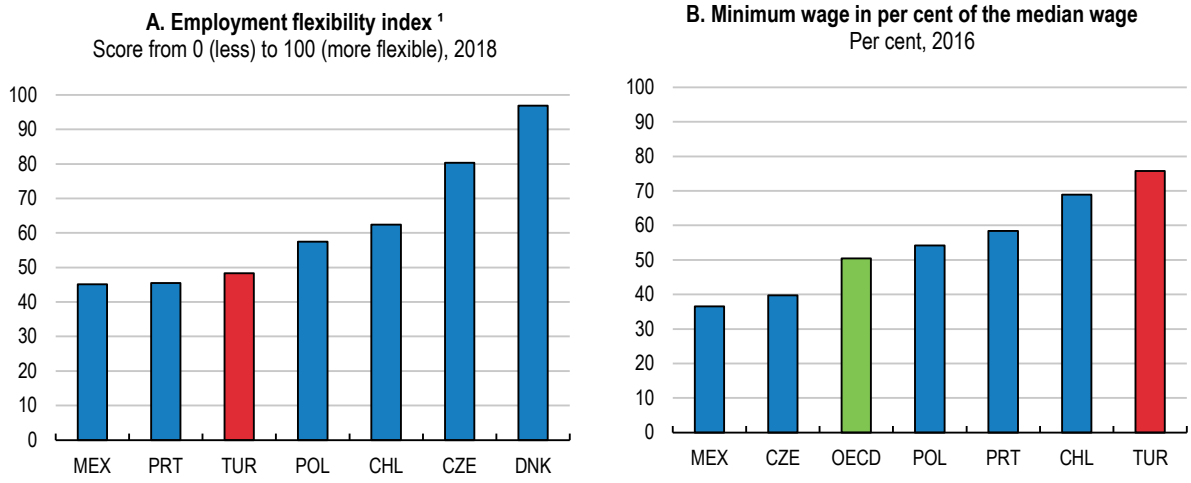
The authorities are developing active labour market programmes and are reducing the formal employment costs of certain types of workers in given types of firms. The schemes are limited in coverage and duration, but should help test if upskilling efforts, combined with significant cuts in actual employment costs, may tangibly foster formal employment (Table 9). In addition to these measures, the government has more recently introduced a 100% social security exemption for young entrepreneurs (amounting to 35% of their declared earnings for up to a year), and extended the duration of one of the expiring regional social security contribution exemptions by one year.

**Figure 23. Labour market indicators**




*Note*: The low educated population refers to the population who attained below upper secondary education. The young population refers to the population aged between 25 and 29.
*Source*: OECD (2018), OECD Labour Force Statistics (database); and OECD (2017), Education at a Glance (database).
StatLink https://doi.org/10.1787/888933799017

**Figure 24. Labour market flexibility should be enhanced**




1. The higher the score (from 0 to 100), the more flexible labour regulation is.
Source: Lithuanian Free Market Institute (2018), Employment Flexibility Index 2018: EU and OECD countries, on the basis of the World Bank methodology and questionnaire for measuring labour regulations and OECD Labour Force Statistics (database).
StatLink https://doi.org/10.1787/888933799036

### *Improving institutions and upgrading the business environment*

The 2016 *OECD Economic Survey of Turkey* argued that attracting additional FDI, facilitating integration in global value chains and encouraging high-quality start-ups requires progress with the credibility of the rule of law, the fight against corruption, and the reduction of distortions affecting competition between formal and informal sectors (OECD, 2016[1]). In some of these areas, gaps vis-à-vis international good practices have widened lately (Figure 25). The EU Accession process, which played a major role on this front in the past, has stalled.

The Government has recently set itself a new ambitious goal of raising Turkey's rank in the World Bank Doing Business indicators from 60th among 190 countries in 2017, to 20th within two years. A first law was adopted by Parliament in March 2018, to facilitate procedures for company establishment, and for the obtention of permits for construction and for access to infrastructure, telecommunications and municipal services. A companion law simplified the insolvency and bankruptcy procedures: firms can apply for rescue agreements before filing for bankruptcy, creditors are allowed to participate in procedures, and liquidations must be completed within 24 months.

Intellectual property protection has also improved. A new Law on Industrial Property Rights entered into force in 2017, replacing all existing decree laws in this area with a single compact law with specific chapters on Patents, Trademarks, Industrial Designs, Geographical Indications and Traditional Specialties. The administrative capacity of the Patent Institute (Turkpatent) has been reinforced for effective implementation. In the area of copyrights, new legislation on Intellectual and Artistic Works was forwarded to Parliament in April 2018. It aims at further alignment with the EU acquis, better fighting digital infringements and easier settlement of licencing disputes.

More generally, the material and human resources for judicial procedures, notably for economic cases, have been strengthened. Regional appeal courts were created to alleviate

the burden of an excessive number of appeals to the Supreme Court and the ensuing delays. Courts specialised on commercial litigations are being established, which will have rapid access to expert witnesses. The budget of the Ministry of Justice was lifted from 1.4% of the government budget in 2012 to 1.7% in 2017 - amid a strong increase of the total budget itself.

Policymakers also intend to make Turkey's Organised Industrial Zones (OIZs) and Technological Development Areas (TGBs) more attractive for business investment, to improve the business and technological services available for SMEs in OIZs, and to provide public support for digital transformations in small and large firms alike (Box 1). The National Development Plan 2019-23 is expected to spell out further policy objectives.

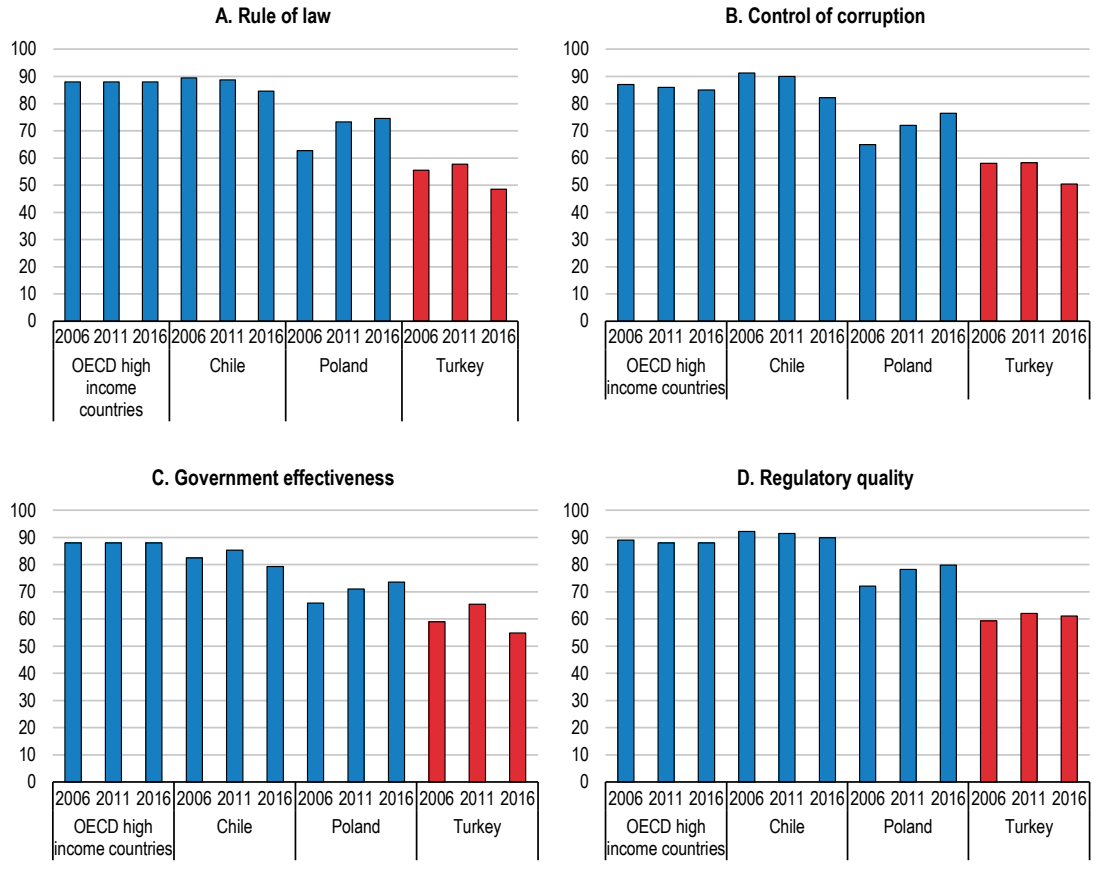
**Table 9. New active labour market and employment cost reduction programmes**

| Active labour market programmes (figures as of end-2017) | | | | | |
|---|---|---|---|---|---|
| | Description | Number of courses/ trainer firms | Female participation | Male participation | Total number of participants |
| Vocational training courses | The unemployed registered with the public employment service (Iskur) are offered certified vocational courses of 120-160 days. Participants receive a daily allowance of roughly half the minimum wage. Iskur guarantees a formal job to 50% of the graduates of the courses, for a period of at least as long as the course period. | 5 650 | 82 000 | 36 000 | 118 000 |
| On-the-job training programmes | Employer firms can hire and train for a period of 3 to 6 months according to sectors, unemployed workers receiving an Iskur allowance (on top of their regular unemployment allowance). The employer guarantees a regular job to at least 50% of the workers trained, for a period of at least as long as the duration of the programme. | 107 000 | 151 000 | 146 000 | 297 000 |
| Entrepreneurship training programmes | The unemployed registered with Iskur are offered basic legal, financial and management training courses to set up and run a business. Courses last about a week and participants receive an allowance of about 25% of the minimum wage (on top of their regular unemployment allowance). | 3 700 | 46 000 | 48 000 | 94 000 |
| Employment cost reductions | | | | | |
| | Description | Subsidy rate | Duration | | |
| Additional employment incentive* | Between 1 January 2018 and 31 December 2020, the employment cost of all Iskur registered unemployed workers that a firm hires in addition to its employment level at the end of the previous calendar year will be subsidised. | 37 % of total employment costs (including withheld personal income tax). Reference salary capped at the gross minimum wage level for manufacturing and information technology firms and at the net minimum wage level for other firms. | Maximum 12 months; 18 months for young (18-25), female and disabled workers | | |
| "One from firm one from state" incentive* | Between 1 January and 31 December 2018, the employment costs of all Iskur registered unemployed workers that a small firm, formally employing 1 to 3 workers, will hire in addition to its employment level at the end of the preceding calendar year will be subsidised. | 50% of total employment costs (plus a separate allowance for personal income tax). Reference salary capped at net minimum wage level. | Maximum 12 months | | |

*This programme replaces a similar one applied in 2017 for all sizes of firms.

**Figure 25. Turkey compares poorly on governance indicators**

Percentile rank, 0 to 100 (higher the better), 2017




*Source*: World Bank (2017), Worldwide Governance Indicators, www.govindicators.org.

StatLink https://doi.org/10.1787/888933799055

**Table 10. Past OECD recommendations on structural policies**

| Recommendations in past *Surveys* | Actions taken since the previous *Survey* |
|---|---|
| Align the Customs Union agreement with the EU with the most open and all-encompassing international trade agreements, and develop similar agreements with other countries. | Turkey has concluded the necessary internal consultation and preparation processes with the aim of starting update of the EU-Turkey Customs Union negotiations. Negotiations can be initiated once the Commission gets the mandate from the Council. |
| Identify the remaining obstacles to the opening of network sectors to competition, with the help of an OECD Competition Assessment Review. | In 2016 and 2017, the Turkish Competition Authority (TCA) produced reports on the television broadcasting, cement and cinema services sectors to better understand the competitive nature of these sectors, in line with the "Competition Assessment Guideline" prepared by TCA in 2014.<br>In 2017, Organised Natural Gas Wholesale Market Regulation and Market Usage Procedures and Principles were published in the Official Gazette. Accordingly, the market transactions will start no later than September 1, 2018. |
| Delink agricultural support from production and shift its composition away from price measures towards direct support. | No action taken. |
| Keep the growth of the official minimum wage below average productivity gains for a while. | The minimum wage increased by 0.2% and 3.0% in real terms in 2017 and 2018 respectively, both below the preceding year's labour productivity growth. |
| Allow regional differentiation of minimum wages through local consultations between government, employer and employee representatives. | No action taken. |
| Grant further social contribution cuts for low-skilled workers in the entire country, financing them by widening the tax base. | Minimum wages continue to benefit from subsidised social security contributions.<br>Starting from 2018, employer contributions for each newly hired worker in eligible firms are reduced by 50% (the government pays all taxes and insurance premiums of additional employment for 1 year). |
| Replace the costly severance payment regime (available only for a minority of formal sector workers) with "portable" severance saving accounts available for all workers. | No action taken. |

## Key well-being challenges

### *Material living conditions have improved considerably*

Relative to other OECD countries, Turkey has achieved substantial gains in well-being over the past decade. These improvements were largely generated by the employment and income gains from strong growth, thanks to the effective macroeconomic stabilisation and EU-convergence reforms of the 2000s, which benefitted all social groups. The main areas of progress included (OECD, 2017[41]):

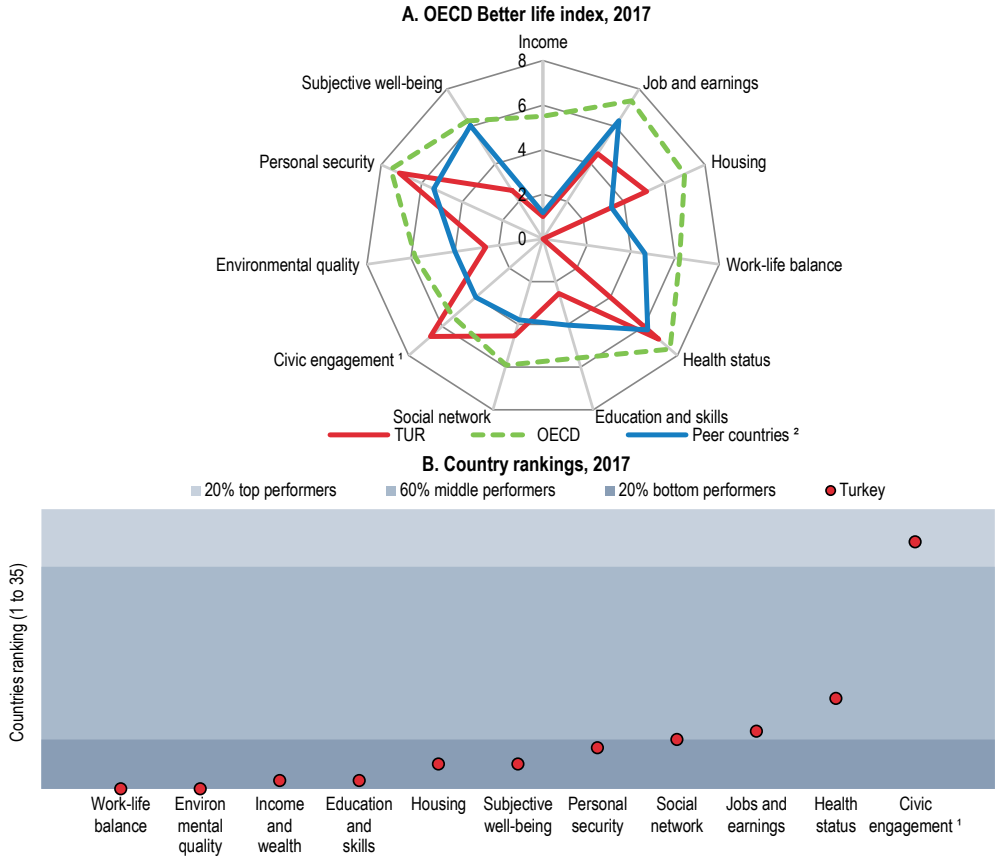
- *Jobs and earnings*. The rate of employment of the working age population rose by more than 6 percentage points since 2005 (versus 1.2 for the OECD average).
- *Unemployment.* Amid rapid labour force growth and despite robust job creation, the rate of unemployment was close to 10% in early 2018, against an OECD average of 5.8%. Still, the long-term unemployment rate, at 2.2% in 2016, was half its 2005 level, and below the OECD average of 2.6%. The share of 15-29 year olds neither in education nor in employment (NEET) fell by 14 percentage points between 2008 and 2016, but remains high, at 28% (twice the 14% OECD average).
- *Housing*. Housing affordability has improved and the average number of rooms per person remained stable. The share of people living in dwellings without basic

sanitary facilities has fallen substantially but remains high at 6.5% – over three times the 2.1% OECD average.

- *Work-life balance*. The proportion of employees working regularly more than 50 hours per week declined from 50% in 2006 to 34% in 2016, still far above the 13% OECD average
- *Life satisfaction*. Turkey's citizens have reported improving life satisfaction since 2005. The average life satisfaction score is 5.5 on a scale of 10, against the 6.5 OECD average.
- *Environment.* The proportion of people satisfied with their water quality is 4 points higher than 10 years ago. In contrast, exposure to PM2.5 air pollution increased by 12% between 2005 and 2013 and reached hazardous levels in many regions. Average exposure to PM2.5 was 21.8 μg/m$^3$ in Turkey in 2015, exceeding the 14.5 μg/m$^3$ OECD average.

Even so, quality of life is still below OECD averages on many dimensions (Figure 26), with important inequalities, both vertical (within population groups) and horizontal (between population groups such as men and women and residents in different regions).

**Figure 26. Well-being**




1. The OECD civic engagement benchmark is based on voter turnout and Turkey is ranked 6th. Other sub-indicators measuring participation in political activities are also available, but only for a smaller number of countries and are not included in the standard benchmark. Turkey ranks lower in these sub-indicators.
2. Chile, Mexico and Poland.
*Source*: OECD (2017), Better Life Index database, www.oecdbetterlifeindex.org.
StatLink https://doi.org/10.1787/888933799074

### *Vertical inequalities in well-being*

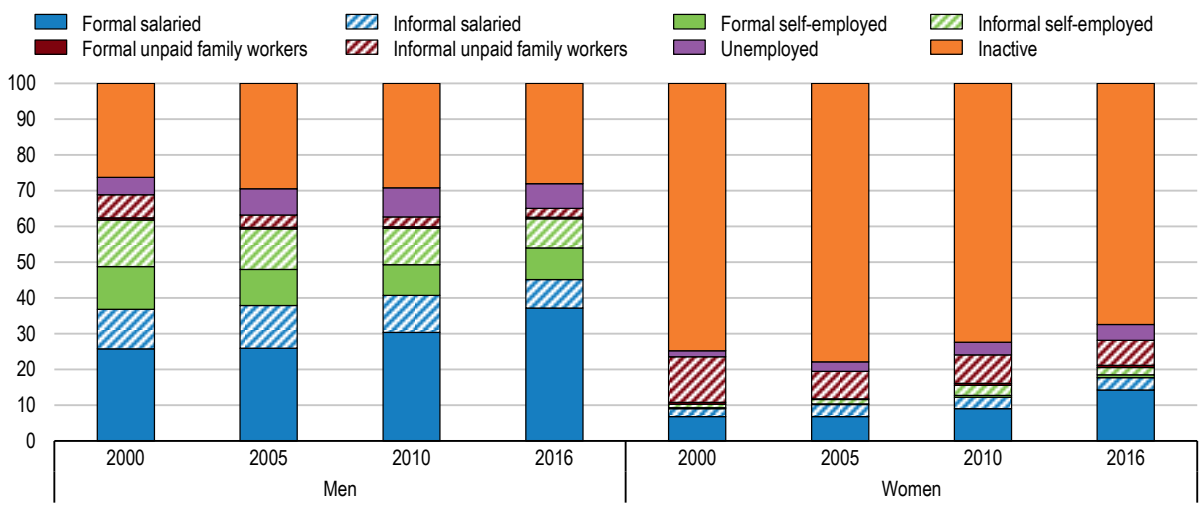
The most important vertical inequality in well-being concerns wealth and income distribution. Income gaps are driven by secular differences in inherited wealth, and by significant inequalities in the labour market positions of family bread-earners.

Concerning wealth distribution, according to one private sector study in 2014 (which is the only recent information source in this area), the share of the 1% wealthiest citizens in total financial and real estate wealth in Turkey is estimated to have grown from 41% in 2005 to 54% in 2014, higher than in comparable OECD countries such as Mexico and Chile; the share of the following 9% declined from 28% to 23%; and that of the following 90% declined from 31% to 22%, lower than in comparable OECD countries (Credit Suisse Research Institute, 2014[42]). A periodic wealth distribution survey by Turkstat would help generate official data in this important area. As the share of wealth and inheritance taxes is one of the lowest in OECD (at 1% of GDP despite the inclusion of lottery and hazard game taxes in this category) the tax system plays a negligible role in wealth redistribution.

The labour market positions of family bread-earners are very uneven. Despite an expansion of formal sector wage earning jobs over the past decade, only 40% of the male working-age and 15% of the female working-age populations are formally salaried. Informal jobs, including informally self-employed (mainly male) and unpaid family workers (mainly female), remain widespread (Figure 27). The pace of labour force growth at above 3% per year is putting permanent pressure on the labour market, and the supply of high-quality jobs by high-quality firms is falling short of demand. Past OECD Surveys showed that transition rates from lower-quality to higher-quality jobs were low in Turkey (OECD, 2014[2]) and they have not improved recently: the rate of informality outside agriculture even rose slightly in 2017. One third of Turkey's total value added is estimated to be generated by informal activities (Medina and Schneider, 2018[43]).

**Figure 27. Uneven labour market positions**

Composition of the working-age population (over 15 year-old), in per cent

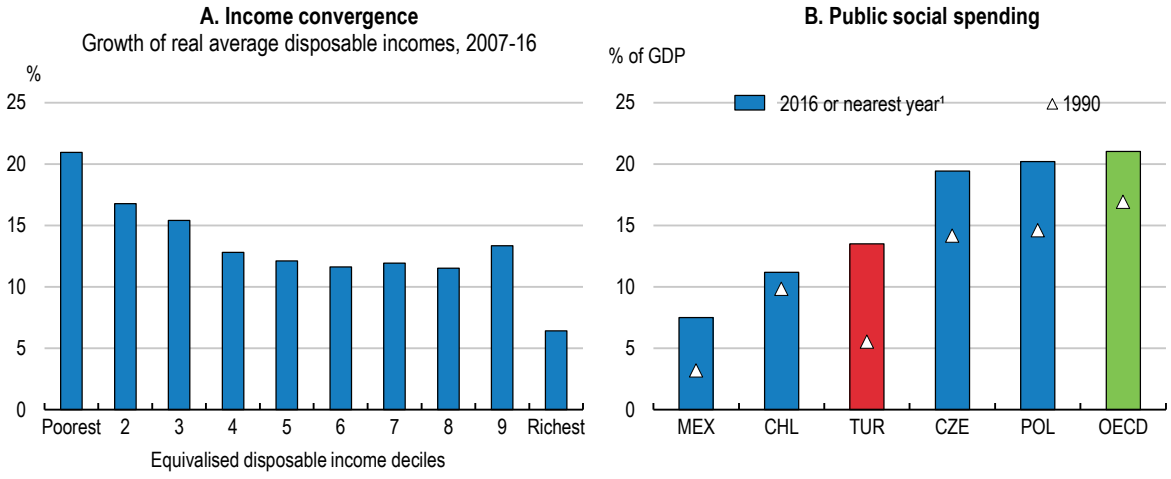



Note: Formal unpaid family workers are family members doing household work, paying social security contributions and earning pension rights.
*Source*: Turkstat.
StatLink https://doi.org/10.1787/888933799093

Median household earnings grew more rapidly than average incomes – showing that growth has been inclusive (Boarini, Kolev and McGregor, 2014[44]). The lowest income deciles obtained the fastest income gains over the past decade, and the highest income decile the lowest. As a result, Turkey is one of the few OECD countries where the Gini coefficient of the income distribution has improved over the past decade. Nonetheless, partly due to the limited redistributive power of the tax and benefit system (OECD, 2016[1]), Turkey still exhibits one of the highest Gini coefficients at 0.40 in 2015 against the OECD average of slightly below 0.32.

Social expenditures, including cash transfers and in-kind services to the disadvantaged, grew more rapidly than in the other OECD countries ( (OECD, 2016[45])). (Figure 28, Panel B) benefitting mainly low-income elderly, people with disabilities, and families with members with special health problems (Kızıler, 2017[46]). The poverty rate (defined as persons living with less than USD 4.3 per day) fell from 13% in 2006 to 1.6% in 2016. Relative poverty (persons living with less than 60% of median income) decreased from 25% to 21%.

**Figure 28. The position of low-income groups has generally improved**




1. 2015 for Chile, 2014 for Turkey and 2012 for Mexico.
Source: Turkstat and OECD (2017), OECD Social Expenditure (database).
StatLink https://doi.org/10.1787/888933799112

Vertical well-being inequalities are also affected by the interaction between material living conditions and broader measures of quality of life. In Turkey, lower income groups are becoming more satisfied with their lives, possibly as a result of improvements in material living conditions. In contrast, higher-educated and higher-income groups appear to experience a slight decline in life satisfaction. This may be related to their unfulfilled expectations in areas such as the educational opportunities for children, the cultural environment, civic life standards and environmental quality. Between 2012 and 2015, on a scale from 4 to 8, the average life satisfaction of Turkish citizens with only compulsory education increased from below 5 to 5.5, while that of citizens with high education edged down from 7.1 to 6.9 (OECD, 2017[47]). Nationwide, Turkey is among the countries where the relationship between material living conditions and quality of life appears weak (Figure 2).

Recent international surveys shed new light on Turkish citizens' perceptions of their living standards. Turkish citizens appear more upbeat than the EU citizens about the gains they expect in their material living conditions over the next two decades (Vodafone, 2017[48]). The youth believe that they will live better than their parents, in higher proportion than in most other countries. Nevertheless, an earlier survey in 2014 had found that three quarters of young Turkish citizens declared that they may find better opportunities abroad, and a majority of them were prepared to move for this purpose (Vodafone, 2014[49]). Indeed, the proclivity to emigrate appears on the rise among the highly educated (Sirkeci, 2017[50]), pointing to risks of economically and socially costly brain drain.

### *Horizontal inequalities in well-being*

#### *Gender gaps*

Gender gaps remain large in Turkey. They have long been driven by inequalities between men and women in educational attainment, labour force participation and decision-making. They were initially rooted in cultural patterns discouraging women's labour force participation in urban areas, and were then entrenched by the ensuing severe shortage of child and elderly care facilities. While practically eliminated for the education age cohorts, adult women are still 20% less likely than men to have attained upper secondary or tertiary degrees, and their average rate of labour force participation is only 34% in 2016 against a 64% OECD average. In contrast to men, whose participation rate is close to the one observed in other OECD countries (above 70%), more than two-thirds of the women are inactive (Figure 27).

Recent initiatives to further develop pre-school education and to help families to better reconcile work and child care responsibilities (including an important increase in nursery support for working women and the option offered to both mothers and fathers to work part-time at the termination of paid maternity leave) may help to reduce this gap (Table 11). For those who work, however, the earnings gap vis-à-vis men is below the OECD average - at around 8% for median earnings of full-time employees against an OECD average of 14% (OECD, 2017[41]). Even so, overall, gender equality falls short of its expected level, given Turkey's economic, social and educational achievements (Box 7).

The inequalities between male and female workers are particularly sensitive to their respective educational backgrounds on the one hand, and to the quality of their employer firms on the other hand. Higher educated women, who represent 30% of the 25-34 and 8% of the 45-54 cohort experience much smaller pay and employment status gaps than lower educated counterparts. The vast majority of highly educated women are employed formally. In formal enterprises, the average education level of women is above the average education level of men (OECD, 2016[51]). Moreover, women working for high quality enterprises appear to enjoy better opportunities than their counterparts in other countries. According to a 2016 survey, 41% of top management positions in the 100 most "female-friendly" companies in Turkey were occupied by women, not significantly below 53% in the United States. In the financial sector, the proportion is 56%, above many other countries. Such gender-friendly outcomes, however, are not observed in the remainder of the business sector: in the vast majority of firms there are no women in top management (McKinsey, 2016[52]).

The consequences of gender gaps for both well-being and economic growth are significant (McKinsey, 2016[52]). Should Turkish women's labour force participation

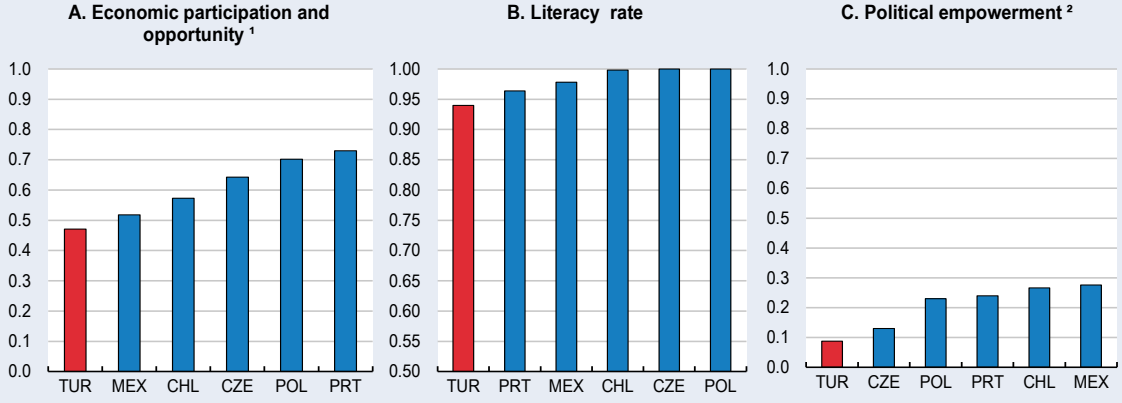
converge to today's OECD average within 10 years, Turkey's GDP per capita level could be around 20% higher than the baseline trend. Several measures over the past decade which reduced the employment costs of female workers in the formal sector stimulated higher quality job creation for women (Uysal, 2013[53]; Gürsel, Uysal and Acar, 2014[54]). Pilot projects have shown that good quality child and elderly care infrastructure at affordable costs are also crucial for Turkish women's labour force participation (Ministry of Development, 2018[55]). If a comprehensive gender equality strategy encompassing this full range of factors is implemented, gender gaps may be reduced more rapidly in the future than they have been in the past.

**Box 7. Global benchmarking of gender equality in Turkey**

On a range of 83 quantitative indicators covering economic participation and opportunity, access to education, political empowerment and health, Turkey ranked 131st among 144 nations in gender equality in 2017 (Figure 29).

**Figure 29. Gender gaps**

2017 scores from 0 (imparity) to 1 (parity)




1. Includes labour force participation; wage equality for similar work (survey); estimated earned income (in USD PPP); legislator, senior officials and managers; and professional and technical workers.
2. Includes women in parliament; women in ministerial positions; and years with female head of state (during the past 50 years).
*Source*: World Economic Forum (2017), The Global Gender Gap Report 2017.
StatLink https://doi.org/10.1787/888933799131

In economic participation and opportunity (which captures labour force participation, earned incomes and professional advancement), Turkey ranked 128th. Its ranking was also weak in political empowerment, at the 118th place: it ranked 108th in terms of the number of women deputies in parliament, and 135th for ministerial positions. Turkey ranked 59th in the health dimension, which is based on the sex ratio at birth (where Turkey tops the ranking) and on healthy life expectancy (where Turkey ranks 68th).

### *Regional gaps*

Regional income disparities shrunk during the 2000s (Ministry of Development, 2014[56]) but remain higher than in most other OECD countries. A deep West-East divide persists in living and well-being standards, reflecting large inequalities in job quality and earnings (OECD, 2016[1]) (Yeldan et al., 2013[57]). Annual equivalised disposable income levels

per person in 2016 ranged from around TRY 25 000 in large Western cities to around TRY 10 000 in Eastern and Southeastern provinces.

The broad Istanbul area captures a large part of the national income and wealth. Three provinces around Istanbul (Istanbul, Kocaeli and Bursa), with only 24% of the population, produced 38% of the country's GDP in 2014 (the latest year for which data is available). Seven provinces in the East, with 20% of the population, produced 9% of GDP.

Geographical disparities across Turkey's 81 provinces reflect differences in human capital endowment and in the quality and productivity of their business sectors (EDAM, 2016[58]). Istanbul and Ankara lead in almost all productivity drivers, but many of them do tend to converge over time. Middle-income provinces have been catching up economically but face enduring gaps in local social capital and education quality. The lowest-income provinces fall behind in primary factors of economic development such as labour force participation and job creation outside agriculture.

The Southeastern region faces special socio-political challenges. The average income level has improved over the past decade, but the fortunes of the different cities in the region appear to have diverged. For example, Gaziantep in the area of industrial development and Sanliurfa in agricultural development have achieved remarkable growth gains. Massive inflows of refugees from Iraq and Syria, which exert strong pressures on already strained local labour markets, are a common challenge in the region. The towns hosting the highest numbers of refugees experience positive demand effects in the short-term, but also face important strains on their education, health and housing infrastructures. Only 6% of the refugees live in camps, the rest are dispersed in the region and part of them in the larger Western cities.

A National Strategy of Regional Development 2014-2023 was adopted in 2014 as the basic reference document for regional policies. It provided a unified framework to the numerous regional development initiatives. These included the creation of 26 Regional Development Agencies in 2006 and a multitude of oft-changing regional tax incentives. The new Strategy aimed at distinguishing policies to foster inter-regional convergence (such as a standard regime of regionally differentiated but stable tax incentives) and policies promoting local efforts to cultivate technology, industry and service clusters. Yet, a new programme of Regional Attraction Centres (unforeseen in the National Strategy) was adopted in 2016 and amended in 2017. It aims at reducing disparities by offering substantial additional tax subsidies in the lowest-income regions.

High-quality job creation by high-quality firms is a prerequisite for enhancing well-being and reducing vertical and horizontal inequalities. There is ample room for progress in this area. Reducing the quality and productivity gaps between informal, semi-formal and formal activities by upgrading the former (with the help of training and technical support programmes) and facilitating the transfer of employment to the latter (with the help of regulatory reforms reducing the costs of operating in compliance with law) is key for income and working conditions to improve, in particular in lagging regions. Progress on this front would also help increase national and local tax resources for public services. Their provision at a higher level of quality for all, notably in education (from early childhood to adult education) and health services, is crucial for reducing well-being inequalities.

**Table 11. Past OECD recommendations on education**

| Recommendations in past Survey | Actions taken since the previous Survey |
|---|---|
| Reduce the wide quality gaps persisting among schools, school types and universities, by granting them more autonomy and resources per student, against greater performance accountability. | An orientation programme is implemented to prevent absenteeism, class repetition and school dropouts in all types of upper-secondary schools as from the 2017-18 school year.<br>Beginning with the 2017-18 education year, the performance of all vocational and technical secondary education school/institutions' will be evaluated via a Quality Monitoring and Evaluation System. |
| Further develop pre-school education. | The Ministry of National Education has started to implement half-day education practices to ensure that all children benefit from pre-school education services.<br>A conditional cash transfer is paid for pupils aged between 48-66 months who are attending pre-school education institutions.<br>Summer schools and mobile kindergarten practices are implemented to help disadvantaged children to continue pre-school education. |
| Continue to strengthen vocational education in co-operation with the business sector and evaluate the outcomes of the many recent initiatives in this area. | Vocational and Technical Education School Boards were constituted in all cities to upgrade the contribution of the business sector to vocational education and boost the cooperation between schools and industry.<br>The School Protectorate Project has been launched in 2016 based on the principle that all vocational and technical secondary education institutions should link up with at least one sector organisation in order to strengthen school-sector collaboration. So far, 839 protocols in 415 schools have been put into practice. |

## Environmental challenges

Turkey remains one of the lowest per capita emitter of $CO_2$ in the OECD (Figure 30). In the past this was partly because carbon intensity in Turkey was well below most other countries, but it has increased in Turkey and fallen greatly in the OECD area. The difference in per capita emissions now largely reflects lower incomes in Turkey, but emissions are rising rapidly as the country grows. The current emphasis on the development of environment-friendly technologies is timely (Figure 30, Panel F). Turkey has also some of the highest taxation in the OECD on motor fuel, which is welcome, but action will be needed in other areas to keep $CO_2$ intensity in check.

Strong growth has necessitated a rapid expansion in energy supply, which increased by 60% between 2005 and 2016. Electricity consumption rose even faster, by 70% over the same period. Most of the extra demand was met from imported energy, now supplying around three quarters of total energy needs. One of the government's core policy objectives is to reduce import dependence. Renewables, especially hydro power, account for about a third of total electricity generation and the share has been increasing.

Turkey's only significant conventional energy source is coal and there are plans for a significant expansion of coal-fired electricity generation. While this will increase energy independence, it will greatly increase $CO_2$ emissions. Safety in coal mines has also been a challenge, with loss of life in mining accidents due to inadequate attention to safety measures according to a State Supervisory Council Investigative Report prepared following a particularly severe accident in 2014 (Küçük and Ilgaz, 2015[59]). As recommended by the International Energy Agency, policymakers should support investment in best-available technology for both mining and power generation, should encourage the upgrading of coal plant efficiency by rehabilitation, and should phase out old and inefficient coal-fired power plants. They should ensure safe conditions for coal

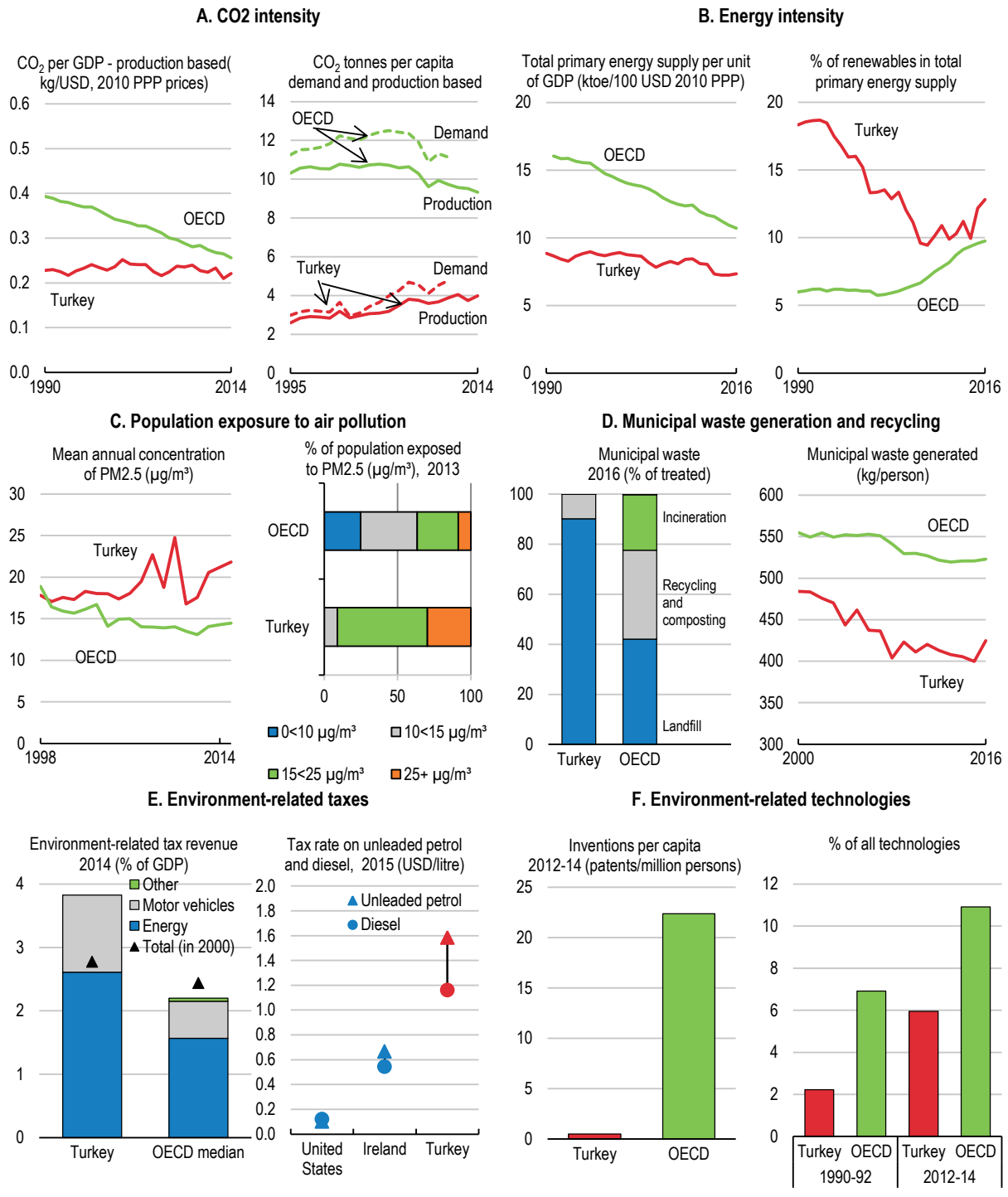
miners, making the most of international experience and best practice and reinforcing inspections and monitoring (IEA, 2016[60]). The authorities indicate that important measures were taken in this area in the most recent period, including the reinforcement of safety inspection capacities with the ongoing creation of a Mining Safety Administration and the introduction of new safety procedures, including the introduction of systematic risk analyses in mines,

The decline of air quality is a major concern, due partly to burning coal in older power stations, and partly to geographic and landscape conditions with high exposure to Saharan and Middle-East dust and lower precipitations resulting in higher concentrations of suspended particles in the air. All in all, population exposure to dangerous levels of particulate matter far exceeds the EU and OECD averages, as well as the standards set by the EU and the World Health Organisation (Figure 31). Recent initiatives to improve the monitoring of local air and water pollutants are promising, as Turkey will have aligned its air pollution norms with EU standards in 2019, and 64 provinces among 81 which are identified as presenting "high air pollution risks" have started to implement "provincial clean air action plans" (Table 12). Rigorous surveillance of the health consequences of the decline in air quality should be made a priority.

**Table 12. Past OECD recommendations on environmental challenges**

| Recommendations in past *Surveys* | Actions taken since the previous *Survey* |
|---|---|
| Improve the monitoring of polluting activities and the actual enforcement of environmental regulations. | Based on a risk-based approach, the Ministry of Environment and Urbanization conducted around 50,000 inspections per annum in 2016 and 2017. The 7% non-compliant cases led to an administrative fine or the cessation of operations.<br><br>In May 2017, a 2-year project was launched to create a system compatible with the European Pollutant Release and Transfer Register (E-PRTR).<br><br>Large industrial facilities were mandated to setup Continuous Emission Monitoring Systems and Continuous Wastewater Monitoring Systems, which are inspected by the Ministry. |
| Use economic instruments such as pollution taxes, carbon taxes and emission permits. | No action taken. |

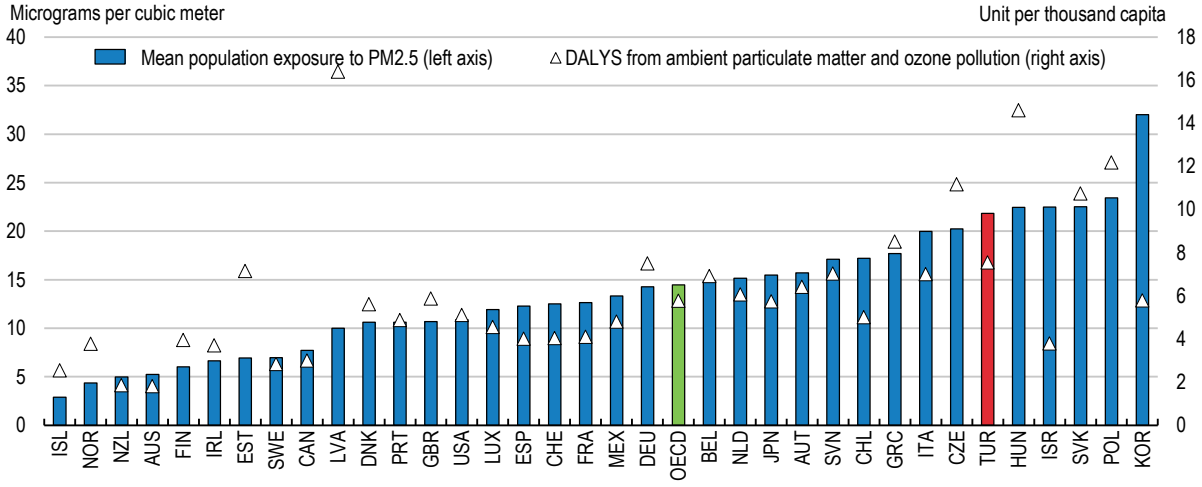
**Figure 30. Green growth indicators: Turkey**




*Source*: OECD (2018), *Green Growth Indicators*. For detailed metadata click here.
StatLink https://doi.org/10.1787/888933799150

**Figure 31. Air quality is poor**

2015




Note: Pollution exposure data based on combining data from satellite observations with ground-based data. DALYS stands for disability-adjusted life years. For example in Turkey in 2015, 7 years per thousand inhabitants were lost in the disabilities caused by local air pollution.
Source: OECD, Environment Statistics (database).
StatLink https://doi.org/10.1787/888933799169

Municipal waste generation is lower than the OECD average, in line with lower incomes. However, recent economic growth seems to have arrested the decline in waste production seen after 2000 - despite efforts to increase the share of recycling. The bulk of waste continues to go to landfill. In per capita terms, the amount going to landfill in Turkey is over 50% above the OECD average. The 2015 transposition of the EU Waste Framework Directive into Turkish legislation is expected to foster the development of recycling facilities.

Revenue collected from environment-related taxation is significantly higher than elsewhere and, contrary to most countries, has increased since 2000. Almost all such revenue is raised from either fuel or vehicle taxes. Turkey has the highest taxes on motor fuel in the OECD but the tax per liter on petrol is 30% higher than on diesel, even though diesel produces more pollution per liter. The taxation of different sources of fossil fuel pollution should be harmonised.

# Annex A. External debt sustainability analysis

*Debt dynamics*

The path of external debt as a share of GDP ($D_t$), or any other denominator that reflects the economy's capacity of servicing debt, is a result of i) net increments of external debt as a result of current account deficits net of interest payments ($CAD_t$); ii) inflows of foreign direct investment ($FDI_t$) and iii) debt-ratio dynamics depending on the stock of debt at the beginning of the period, the average nominal interest rate ($i_t$), real growth of GDP ($g_t$, or other revenues), the rate of currency appreciation ($\Delta e_t$), the change of the GDP deflator ($\pi_t$) and the share of foreign currency in the stock of external debt ($\alpha_t$):

$$D_t = \underbrace{\left(\frac{1 + i_t - \Delta e_t * \alpha_t * (1 + i_t)}{(1 + g_t) * (1 + \pi_t)}\right)}_{\varphi} * D_{t-1} + (CAD_t - FDI_t) \qquad (1)$$

The separation between stock and flow terms has important consequences for external debt sustainability analyses. Indeed, current account deficits, adjusted for net FDI inflows, only determine the limit of the external debt ratio. An increase in the current account deficit raises the convergence level of the debt ratio, with possible effects on other fundamentals, including the interest rate. This in return may affect adversely the convergence condition itself. In contrast, the factor $\varphi$ in (1) determines whether the debt ratio converges and at what speed. For convergence to take place, $\varphi$ needs to be smaller than 1 in which case the limit of the debt-ratio L and half-life to convergence to this limit $T_{1/2}$ are obtained as:

$$L = \frac{CAD_t - FDI_t}{1 - \varphi} \qquad T_{1/2} = \frac{\ln(0.5)}{\ln \varphi} \qquad (2)$$

*Assessing vulnerability*

The high share of foreign-exchange-rate-denominated debt in Turkey (around 95%), means that the sustainability of Turkey's external debt depends strongly on exchange rate developments. As a rule of thumb, nominal interest rates must not exceed nominal GDP growth in international currency ($i-g-\pi-\Delta e < 0$). Since 2010, the nominal effective exchange rate has depreciated at a rate well above the inflation and growth differential between Turkey and their trading partners. As a result, $\varphi$ became greater than 1 in recent years, putting external debt on a non-sustainable path. Equation (1) together with the convergence condition $\varphi < 1$ allows to derive a critical interest rate, that is the maximum interest rate Turkey can afford to pay given the paths for inflation, real growth and the exchange rate:

$$i_t^* = \frac{g_t + \pi_t + \pi_t * g_t + \Delta e_t * \alpha_t}{(1 - \Delta e_t * \alpha_t)} \qquad (3)$$

# References


Atuk, O., M. Özmen and C. Sarikaya (2018), "A Disaggregated Analysis of the Impact of Output Gap on Inflation and Implications for Monetary Policy", *Prague Economic Papers* forthcoming. [32]

Boarini, R., A. Kolev and A. McGregor (2014), "Measuring well-being and progress in countries at different stages of development: Towards a more universal conceptual framework", *Working papers*, No. 325, OECD DEVELOPMENT CENTRE, https://search.proquest.com/openview/401ca5240e11b74bd0358ebbd754e224/1?pq-origsite=gscholar&cbl=54431. [44]

Borio, C. and A. Filardo (2007), "Globalisation and inflation: New cross-country evidence on the global determinants of domestic inflation", *Working Papers*, No. 227, Bank for International Settlements, https://www.bis.org/publ/work227.pdf (accessed on 09 May 2018). [29]

CBRT (2018), *Financial Stability Report May 2018*, Central Bank of the Republic of Turkey. [16]

CBRT (2017), *Financial Stability Report November 2017*, http://www.tcmb.gov.tr/wps/wcm/connect/6c95b5fe-4815-4064-a9a4-80ff33b51906/fulltext25.pdf?MOD=AJPERES&CVID=&CACHE=NONE&CONTENTCACHE=NONE. [18]

Credit Suisse Research Institute (2014), *Global Wealth Report 2014*, https://publications.credit-suisse.com/tasks/render/file/?fileID=5521F296-D460-2B88-081889DB12817E02. [42]

Dag, M. (2017), "Evaluation of the Flexibility of Budget Expenditures in Turkey: a Periodic Analysis", in Murat Aydin, Nihal Sirin Pinarcioglu, O. (ed.), *Current Debate in Public Finance Administration & Environmental Studies Volume 13*, IJOPEC, https://books.google.fr/books?id=_spEDwAAQBAJ&pg=PA117&lpg=PA117&dq=evaluation+of+the+flexibility+of+budget+expenditures+in+turkey&source=bl&ots=XrO2IBdXwl&sig=DF7saHV0OS3HhTCESW9WuuqY_zc&hl=fr&sa=X&ved=0ahUKEwi037fP34zaAhWsBsAKHYzCDSwQ6AEIOzAA#v=onepage&. [20]

Digitalisation in Taxation (2018), *Digitalisation in Taxation – Taxation Turkey*, 2018, https://taxationturkey.com/e-transformation-in-tax-environment/. [25]

EDAM (2016), *TÜRKİYE İÇİN BİR REKABET ENDEKSİ*, EDAM, http://edam.org.tr/wp-content/uploads/2016/11/rekabet_web.pdf. [58]

Estrada, G., D. Park and A. Ramayandi (2016), "Taper Tantrum and Emerging Equity Market Slumps", *Emerging Markets Finance and Trade*, Vol. 52/5, pp. 1060-1071, http://dx.doi.org/10.1080/1540496X.2015.1105596. [38]

Fournier et al. (2018), "Long term interest rate determinants", *Working paper (forthcoming)*, OECD, https://www.google.fr/_/chrome/newtab?espv=2&ie=UTF-8. [13]

Gönenç, R. (2017), "The middle income plateau: Trap or springboard?", *OECD Economics Department Working Papers*, No. 1446, OECD Publishing, Paris, http://dx.doi.org/10.1787/9cba114b-en. [12]

Güney, P. (2016), "Does the central bank directly respond to output and inflation uncertainties in Turkey?", *Central Bank Review*, Vol. 16/2, pp. 53-57, http://dx.doi.org/10.1016/J.CBREV.2016.05.001. [35]

Gürsel, S., G. Uysal and A. Acar (2014), "Kadin İşgücü Piyasasinda Çarpici Gelişmeler", No. 14/160, BETAM. [54]

Hausmann et al., R. (2014), *The atlas of economic complexity: Mapping paths to prosperity*, https://atlas.media.mit.edu/static/pdf/atlas/AtlasOfEconomicComplexity_Part_I.pdf. [6]

Hausmann, R. (2017), *What should countries do to catch up? The challenge of technology diffusion*, New Approaches to Economic Challenges - OECD, http://www.oecd.org/naec/naec-seminars-2017.htm. [7]

IEA (2016), *Energy Policies of IEA Countries: Turkey 2016 Review*, International Energy Agency, https://www.iea.org/publications/freepublications/publication/EnergyPoliciesofIEACountriesTurkey.pdf. [60]

IMF (2017), *Turkey: Financial Sector Assessment Program : Financial System Stability Assessment*, IMF, Washington, D.C.. [15]

IMF (2016), *IMF Country Report Turkey: Selected Issues*, IMF, Washington, D.C., http://www.imf.org. [19]

Kara, H., F. Ogunc and C. Sarikaya (2017), "Inflation Dynamics in Turkey: A Historical Accounting", *CBT Research Notes in Economics*, No. 1703, https://econpapers.repec.org/paper/tcbeconot/1703.htm. [31]

Kaygisiz, İ. (2017), *Suriyeli Mültecilerin Türkiye Işgücü Piyasasina Etkileri*, Frederich Ebert Stiftung. [39]

Kızıler, N. (2017), "Türkiye'de yoksullukla mücadele ve sosyal transfer harcamaları", *Journal of Life Economics*, Vol. 4/11, https://www.ceeol.com/search/article-detail?id=582224, pp. 77-100. [46]

Küçük, F. and A. Ilgaz (2015), "Causes of Coal Mine Accidents in the World and Turkey.", *Turkish thoracic journal*, Vol. 16/Suppl 1, pp. S9-S14, http://dx.doi.org/10.5152/ttd.2015.003. [59]

McKinsey (2016), *Turkey's potential for the future: Women in Business*. [52]

Medina, L. and F. Schneider (2018), "Shadow Economies Around the World: What Did We Learn Over the Last 20 Years?", https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3124402. [43]

Milliyet (2018), "105 bin yabancı uyrukluya çalışma izni verildi (105 thousand foreigners were granted work permit, according to Ministry of Labour and Social Security officials)", http://www.milliyet.com.tr/105-bin-yabanci-uyrukluya-calisma-siyaset-2635520/. [40]

Ministry of Development (2018), *2018 Yili Programi*, Ministry of Development. [55]

Ministry of Development (2014), *National Strategy of Regional Development, 2014-2023*, http://www.resmigazete.gov.tr/eskiler/2015/03/20150324M1-1-1.pdf. [56]

Ministry of Economy (2018), *Büyük Ölçekli Yatırımların Teşviki*, https://www.ekonomi.gov.tr/portal/faces/oracle/webcenter/portalapp/pages/content/htmlViewer.jspx?contentId=UCM%23dDocName%3AEK-167548&parentPage=yatirim&_afrLoop=26244202349629020&_afrWindowMode=0&_afrWindowId=9ha2tzjt6&_adf.ctrl-state=vbwmo85z_473#!%40%4. [27]

Ministry of Economy (2018), *Öncelikli Yatırımların Teşviki*, https://www.ekonomi.gov.tr/portal/faces/oracle/webcenter/portalapp/pages/content/htmlViewer.jspx?contentId=UCM%23dDocName%3AEK-167551&parentPage=yatirim&_afrLoop=26244187955784482&_afrWindowMode=0&_afrWindowId=null&_adf.ctrl-state=vbwmo85z_452#!%40%40%3F_. [26]

Ministry of Economy (2018), *Stratejik Yatırımların Teşviki Uygulaması*, https://www.ekonomi.gov.tr/portal/faces/oracle/webcenter/portalapp/pages/content/htmlViewer.jspx?contentId=UCM%23dDocName%3AEK-167545&parentPage=yatirim&_afrLoop=26244212701210879&_afrWindowMode=0&_afrWindowId=azzce0z2y&_adf.ctrl-state=vbwmo85z_494#!%40%4. [28]

Nicoletti, G., D. Andrews and C. Timiliotis (2018), "Going digital: What determines technology diffusion among firms?, Working Party No. 1 on Macroeconomic and Structural Policy Analysis 22-23 March 2018, OECD Conference Centre". [10]

Obstfeld, M., O. Issing and T. Ito (2015), "Trilemmas and trade- offs: living with financial globalisation", No. 480, Bank for International Settlements, https://www.bis.org/publ/work480.pdf. [34]

Ocean Health Index (2016), *Ocean Health Index 2016 Annual Report*, https://issuu.com/lindsaymosher/docs/2016_annual_report_.compressed. [4]

OECD (2018), *Achieving inclusive growth in the face of digital transformation and the future of work*, http://www.oecd.org/g20/OECD_Achieving%20inclusive%20growth%20in%20the%20face%20of%20FoW.pdf. [9]

OECD (2018), *The long-view: scenarios for the world economy 2060*. [11]

OECD (2017), *Education at a Glance 2017: OECD Indicators*. [22]

OECD (2017), "How's life in Turkey?", in *How's Life? 2017: Measuring Well-being*, OECD Publishing, Paris, http://dx.doi.org/10.1787/how_life-2017-42-en. [41]

OECD (2017), *How's Life? 2017: Measuring Well-being*, OECD Publishing, Paris, http://dx.doi.org/10.1787/how_life-2017-en. [47]

OECD (2017), *OECD Economic Outlook No. 102*, OECD, http://www.oecd-ilibrary.org/fr/economics/data/oecd-economic-outlook-statistics-and-projections/oecd-economic-outlook-no-102-edition-2017-2_05b705e7-en?isPartOf=/content/datacollection/eo-data-en. [17]

OECD (2017), *OECD Science, Technology and Industry Scoreboard 2017: The digital transformation*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264268821-en. [3]

OECD (2017), *Revenue Statistics 2017 -Turkey*, https://www.oecd.org/tax/revenue-statistics-turkey.pdf. [24]

OECD (2016), *OECD Economic Surveys: Turkey 2016*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-tur-2016-en. [1]

OECD (2016), *OECD Economic Surveys: Turkey 2016*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-tur-2016-en. [51]

OECD (2016), *Social Expenditure Update*, OECD, http://www.oecd.org/social/expenditure.htm. [45]

OECD (2014), *OECD Economic Surveys: Turkey 2014*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-tur-2014-en. [2]

OECD (2013), *Synergies for better learning : an international perspective on evaluation and assessment.*. [23]

OECD (2012), *Does money buy strong performance in PISA?, PISA IN FOCUS 2012/02 (February)*, OECD, https://www.oecd.org/pisa/pisaproducts/pisainfocus/49685503.pdf. [21]

OECD (2012), *OECD Economic Surveys: Turkey 2012*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-tur-2012-en. [14]

Rey, H. (2015), "Dilemma not Trilemma: The Global Financial Cycle and Monetary Policy Independence", No. 21162, National Bureau of Economic Research, Cambridge, MA, http://dx.doi.org/10.3386/w21162. [33]

Sahay, R., V. Arora and T. Arvanitis (2014), "Emerging Market Volatility: Lessons from the Taper Tantrum", *Staff Discussion Note*, No. 14/09, IMF, https://www.imf.org/external/pubs/ft/sdn/2014/sdn1409.pdf. [37]

Sirkeci, I. (2017), *Migration from Turkey to the UK*, International Migration Institute, University of Oxford, http://dx.doi.org/10.1080/13691830600761487. [50]

TIM (2018), *Exporter Tendencies Survey*. [5]

Turkay, M. (2017), "Heterogeneity across emerging market central bank reaction functions", *Central Bank Review*, Vol. 17/3, pp. 111-116, http://dx.doi.org/10.1016/J.CBREV.2017.06.002. [36]

Uysal, G. (2013), "Kadin İstihdamina Verilen Teşvikler İşe Yariyor", No. 13/151, BETAM. [53]

Vodafone (2017), *Vodafone Tüm Dünyada Yeni Marka Stratejisini Duyurdu - Vodafone Medya Merkezi*, http://medyamerkezi.vodafone.com.tr/basin-bultenleri/vodafone-yeni-marka-stratejisini-duyurdu. [48]

Vodafone (2014), *Vodafone Institute Survey Talking about a Revolution: Europe's Young Generation on Their Opportunities in a Digitised World*, http://www.vodafone-institut.de/wp-content/uploads/2015/09/VFI_YouGov_EN.pdf. [49]

Yeldan, E. et al. (2013), *Orta Gelir Tuzagi'ndan Cikis: Hangi Turkiye? Cilt 2: Bolgesel Kalkinma ve Ikili Tuzaktan Cikis Stratejileri*, TURKONFED, http://www.turkonfed.org/Files/ContentFile/ogt-raporu-ii-cilt.pdf. [57]

Yildirim, M. (2018), "Kompleksite ve Urun Uzayi Metodolojisiyle Turkiye", *Working papers*, No. 1806, https://ideas.repec.org/p/koc/wpaper/1806.html. [8]

Zhang, C. (2015), "The Effect of Globalization on Inflation in New Emerging Markets", *Emerging Markets Finance and Trade*, Vol. 51/5, pp. 1021-1033, http://dx.doi.org/10.1080/1540496X.2015.1039894. [30]

# 1. Upgrading business investment

*Starting from a low level in early 2000s, Turkey's total capital stock has since expanded rapidly, but the composition and quality of investment raises questions. This chapter focuses on business investment, as the main driver of physical and knowledge-based capital formation and, hence, of potential output and the material foundations of well-being. Micro data allow to distinguish four types of firms: small businesses with a high rate of informality, medium-sized family firms, large formal corporations, and skilled start-ups. The relative importance of the challenges facing these different types of firms varies, notably with respect to skill shortcomings, regulatory burdens, labour costs, access to bank lending, over-leveraging and scarce equity capital. Improving the current business environment and overcoming the fragmentation of the business sector will be crucial to upgrade the quality of business investment and to enhance the allocative efficiency of capital formation. This calls for promoting formality, best management practices, the build-up of equity capital, access to long-term bank financing and other market-based financing that can complement traditional bank lending; and a faster and more inclusive transition to the digital economy.*

Capital formation has contributed more to growth in Turkey over the longer term than in comparable catching-up countries (Çağlar and Koyuncu, 2018[1]). The extensive revisions to the national accounts in 2016 have made this trait even more evident. Recent analysis by the IMF also concluded that, since 2012, aggregate investment has exceeded its econometrically expected level (IMF, 2018[2]). However, overall the quality of capital formation has been falling short. In particular, the contributions of total factor productivity and information technology to economic growth remain below comparable countries (Çağlar and Koyuncu, 2018[1]).

The allocation of investment across and within the infrastructure, housing, manufacturing and service sectors reflects myriad demand, expected profitability, political, administrative, tax and firm-level factors and is far from optimal. Informal and semi-formal businesses have significantly lower regulatory and labour costs than formal firms and have a large weight in the economy, undermining the allocative efficiency of capital expenditures. The limited development of long-term credits and capital markets means that some investment opportunities are foregone for lack of retained earnings. Partly as a result of skill gaps, investment in knowledge-based and digitalisation lags. While such shortcomings are visible in other OECD economies, this chapter, following up on evidence presented in earlier OECD Economic Surveys of Turkey (OECD, 2014[3]; OECD, 2016[4]), shows that they are particularly acute in Turkey.

The chapter examines the trends and drivers of business sector investment at the macroeconomic level, with a focus on investment in R&D and digitalisation, as well as on foreign direct investment – a vector of diffusion of global technical and managerial know-how. It then looks at the investment performance of four different types of firms and analyses their determinants and constraints. Drawing on OECD cross-country and country-specific research, it concludes with policy recommendations for consolidating the strong trend growth of investment while upgrading quality and allocative efficiency, with a view for Turkey to move up faster in global value chains (OECD, 2016[4]).

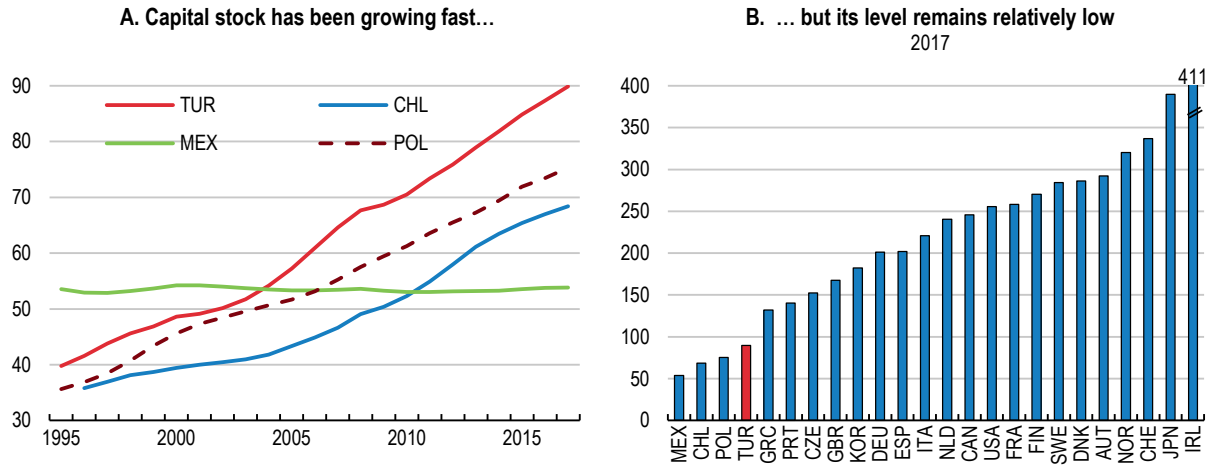
## Turkey's capital stock is low but rising

Turkey's per worker capital stock has picked up strongly over the past two decades, outpacing comparable countries (Figure 1.1, Panel A) albeit from levels well below more advanced OECD countries (Panel B). The pick-up in investment has been a major driver of real GDP growth: on average, the increase in productive capital per worker has contributed 1.5 percentage points to annual potential growth since 2005, thereby accounting for nearly a third of total growth.

The capital stock grows through public investment, mainly in infrastructure, and business investment, mainly in land, buildings, machinery and transport equipment, intangibles but also in infrastructure via public-private partnerships. As a share of GDP, public investment has remained broadly stable at around 4% of GDP since the early 2000s. Business investment, in contrast, expanded strongly from 10% of GDP at the beginning of the century to 19% in 2006. It fell to around 13% during the global financial crisis with the ensuing meltdown in global trade and industrial production before peaking again at 19% by 2011. Business investment hovered between 17% and 18% of GDP between 2012 and 2016, declined in the aftermath of the failed coup attempt in summer 2016 but rebounded in the second half of 2017.

**Figure 1.1. Productive capital stock per worker**

Constant prices, in thousand constant 2010 USD

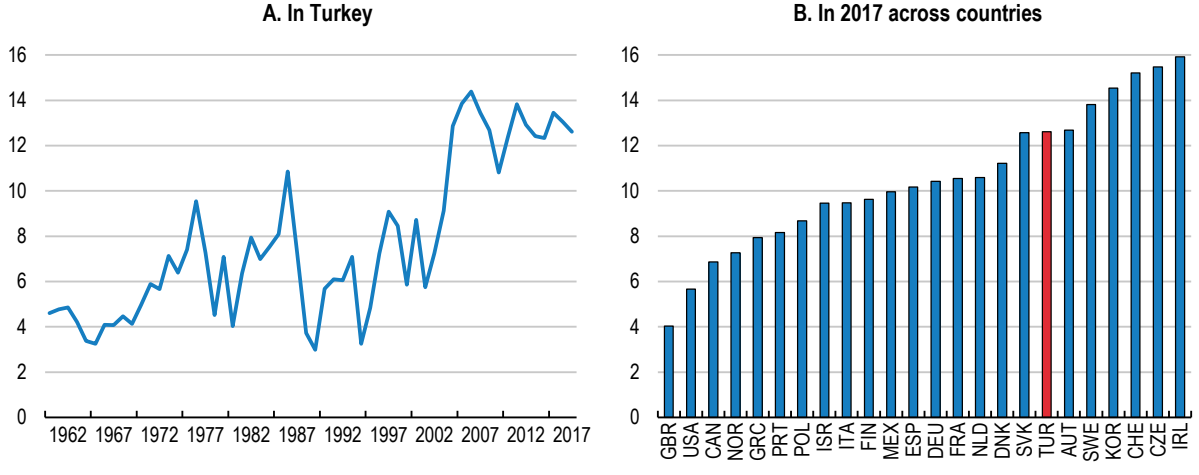



*Source*: OECD Economic Outlook database.
StatLink https://doi.org/10.1787/888933799188

According to the national accounts, machinery and transport equipment investment accounts for more than 75% of business investment in Turkey. However, this aggregate also includes investment in defence and security systems. As a result, investment in machinery and transport equipment overstates non-construction business investment. All in all, machinery and transport equipment investment expanded strongly between 2001 and 2005, reaching a relatively high share of GDP compared to other countries (Figure 1.2). Since then, it has fluctuated around that level with increased volatility in the aftermath of the global financial crisis and the coup attempt in summer 2016.

**Figure 1.2. Machinery and transport equipment investment**

% of GDP




*Source*: OECD Economic Outlook database.
StatLink https://doi.org/10.1787/888933799207

In an attempt to assess the determinants of productive investment across countries, a dynamic investment equation is estimated. The baseline regression comprises several theoretical approaches to modelling investment (Annex A). Results for both total investment and machinery and transport equipment investment show that the coefficients of potential drivers of investment exhibit the expected sign and are significant (Table 1.1). The $\beta$-coefficients reflect the accelerator principle and are in principle adding up to 1. Persistence, measured by $\beta_0$, is slightly higher for total investment while machinery and transport equipment investment reacts more strongly to cyclical information such as expected GDP growth or stock market capitalisation, a proxy for expected marginal returns on capital.

The user cost of capital is only significant, and with the expected sign, for total investment but not for aggregate machinery and transport equipment investment. This could hint at a dominant role of internal resources to finance business capital expenditures while housing, and construction spending, are more prone to bank financing and respond therefore more strongly to interest rate movements. The finding may also be driven by the fact that the simplistic definition of user cost of capital (see Annex A) does not account for capital allowances that are predominantly targeted to capital expenditures on machinery investments. The wedge between the statutory and the average effective tax rate (capital costs after deduction of the net present value of capital allowances) is particularly high in Turkey for machinery investment (Figure 1.3).

**Table 1.1. Drivers of investment at macroeconomic level**

Dependent variable: investment over lagged capital stock

| | | Total investment | | Machinery and equipment | |
|---|---|---|---|---|---|
| Explanatory variable | Parameter[1] | (1) | (2) | (3) | (4) |
| Lagged investment rate | $\beta_0$ | 0.6835*** | 0.7061*** | 0.6061*** | 0.6231*** |
| Real GDP growth (forecast, current) | $\beta_1$ | 0.2535*** | 0.2291*** | 0.3901*** | 0.3849*** |
| Real GDP growth | $\beta_2$ | 0.0325*** | 0.0117 | 0.0151 | 0.0153 |
| Stock market capitalisation | $\gamma$ | 0.0043*** | 0.0050** | 0.0102*** | 0.0091*** |
| User cost of capital | $\sigma$ | -0.0146*** | -0.0095* | 0.0086 | 0.0026 |
| Capital-output ratio | $\alpha_1$ | -0.0153*** | -0.0137*** | -0.0106** | -0.0167*** |
| Steady-state capital-output ratio | $\alpha_2$ | 0.0012** | | 0.0003 | |
| Current account balance | | | 0.0180* | | 0.0754*** |
| Credit-to-GDP | | | -0.0053*** | | 0.0070* |
| Number of observations | | 431 | 426 | 342 | 340 |
| Adjusted $R^2$ (incl. fixed effects) | | 0.963 | 0.9649 | 0.8953 | 0.9037 |
| Adjusted $R^2$ (within) | | 0.8741 | 0.8806 | 0.7458 | 0.7656 |

***, ** and * correspond to statistical significance at 1%, 5% and 10% respectively.

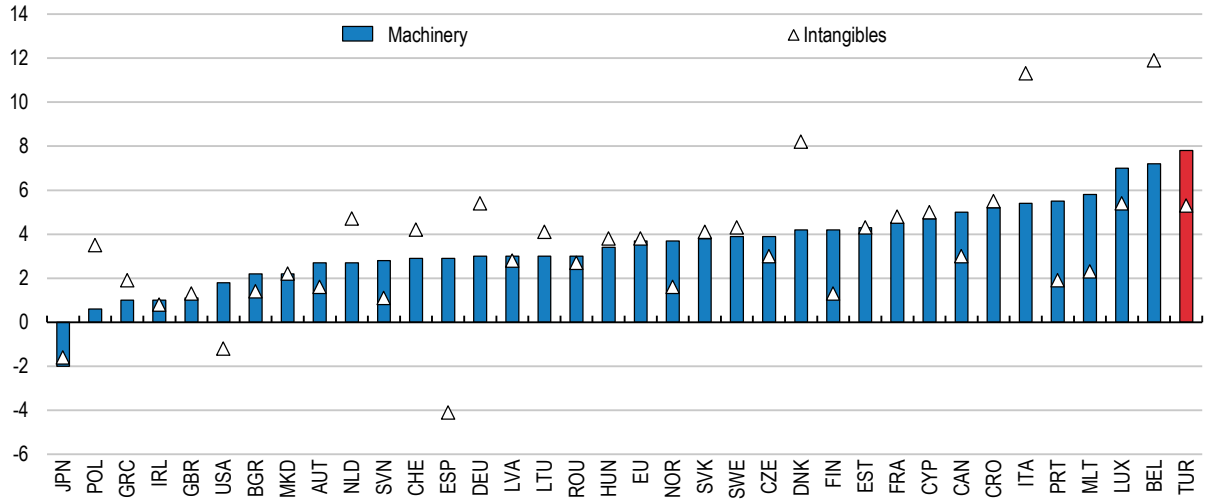
1: Parameters from equation (4) in Annex A.

*Note*: Annual panel data covering 44 countries from 2000 to 2016 (machinery and equipment data only available for a subset of 28 countries). All explanatory variables are lagged by one period unless stated otherwise. Capital stocks are obtained through the perpetual inventory method

*Source*: OECD calculations based on OECD Economic Outlook database and IMF's World Bank's World Development Indicator database.

**Figure 1.3. Gap between the statutory and the effective average tax rate on investment**

Percentage points, 2015



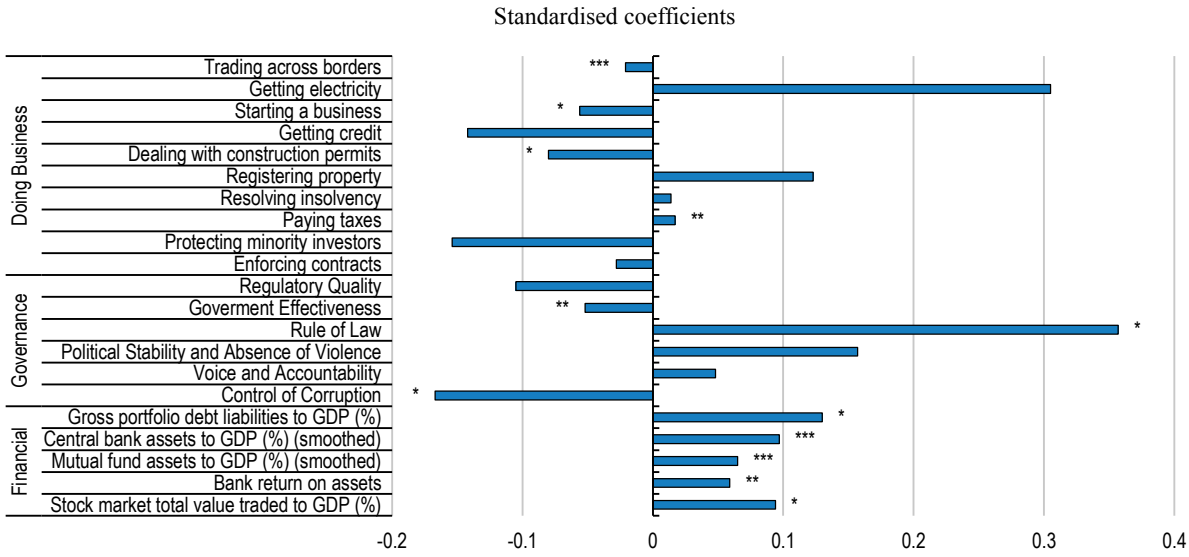

*Source*: ZEW report commissioned by the EU (Spengel et al., 2015[5]).
StatLink https://doi.org/10.1787/888933799226

This may also partly explain why the share of corporate income taxes in overall tax revenues is relatively low in Turkey (6.5% in 2016). If the low share reflects allowances for growth-enhancing investments as much as tax evasion, this would constitute a rather positive aspect of Turkey's tax code as it would favour investment. Indeed, the corporate income tax has repeatedly been identified as the form of taxation that is most detrimental to growth and in particular to investment (Johansson et al., 2008[6]; Brys et al., 2016[7]).

The estimation results confirm the underlying theory predicting a stable desired capital-output ratio as the negative coefficient $\alpha_1$ reflects mean-reversion while coefficient $\alpha_2$ captures the impact of changes to the long-run steady-state capital-output ratio induced by technological, demographic or exogenous saving shocks and is expected to be positive (see Annex A). In a variant, saving shocks are directly proxied through changes to credit-to-GDP ratios and current account balances. This model captures reasonably well the Turkish business sector's investment trends in machinery and equipment over the past decade. The high level of investment intensity has been mainly driven by buoyant demand (output growth) and Turkey displays one of the highest country fixed effects across the sample suggesting strong underlying capital formation dynamics.

Both the neoclassical theory and the q-theory of investment underlying the baseline specification used in the above regressions assume frictionless markets. In reality, however, financial, labour and product markets exhibit various degrees of market imperfection across countries and time. To shed light on the link between market imperfections and investment, structural indicators reflecting the business environment (the World Bank's Doing Business indicators), the quality of governance (the World Bank's Worldwide Governance indicators) and financial markets (from the World Bank's Global Financial developments database) are added one by one to the baseline specification. Figure 1.4 displays standardised coefficients and significance levels.

**Figure 1.4. How the business environment relates to machinery-equipment investment**




*Note*: Based on baseline specification (3) in Table 1. Structural indicators (1-year-lagged) are added one-by-one.
***, ** and * correspond to statistical significance at 1%, 5% and 10% respectively.
*Source*: Calculations based on OECD (2018), OECD Economic Outlook (database).
StatLink https://doi.org/10.1787/888933799245

The results suggest that the most relevant business environment indicators for firms' investment decisions are the ease of getting electricity and the ease of registering property. Both reflect administrative costs related to expanding properties and equipment. Despite a high number of required procedures, registering property has become easier in Turkey in recent years as the cost of transferring property has been reduced. The Coordination Council for Improvement of the Investment Environment (YOIKK) put in force an omnibus bill (Law No.7099 of March 2018) to further ease procedures and reduce costs in all major doing business areas. This legislation has notably permitted the Directorate of Land Registry to carry on various transactions electronically and improve procedures for registering property.

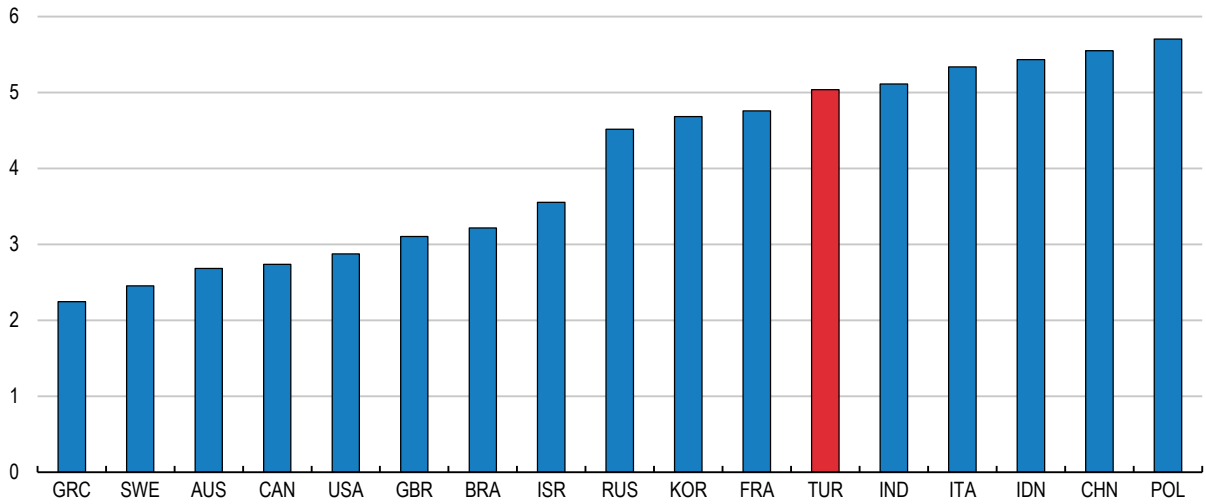
The ease of getting electricity comprises the reliability of power supply and the transparency of tariffs which may serve as a proxy for operational uncertainty underlying investments. The procedures and costs of getting a permanent electricity connection in Turkey (proxied by electricity access conditions in Istanbul) are still lagging behind best international practices. In addition, interruptions and outage times are still an issue. Against this backdrop, the Energy Market Regulation Authority has started to monitor more closely service quality and supply security, and introduced new measures in 2017 in order to improve them. These measures may improve Turkey's ranking in the next vintage of international getting electricity indicators.

Other Doing Business indicators enter the equation with the opposite and unexpected sign (starting a business, getting credit, dealing with construction permits). The use of aggregate investment data might mask the importance of administrative and legal obstacles and the latter may even strengthen the incumbents' competitive position as they undermine competition which makes new investments less risky. The negative link between shareholder protection and investment intensity would be in line with theories

suggesting that dominant shareholders overriding minority holders' interests may force managers into excessive risk taking (Burkart, Panunzi and Shleifer, 2003[8]).

**Figure 1.5. Investment rates of listed firms**

Median investment rates, 2016




*Note*: Investment rate is defined as capital expenditures as a share of total capital at the beginning of the year. The cleaning of the database notably prevents double-counting due to cross-listings and excludes mutual funds.
*Source*: Thomson/Reuters' Worldscope database. For coverage refer to Table 1.B.1 in Annex 1.B.
StatLink https://doi.org/10.1787/888933799264

The importance of a strong rule of law and a stable political environment for investment decisions corroborates firms' aversion to uncertainty and lack of transparency. Following the major economic crisis in 2001/02, Turkey implemented a wide range of reforms improving confidence in the country's institutions. However, several indicators point to a weakening in the credibility of institutions in more recent years, as discussed in the Key Policy Insights chapter above. Resuming the reform progress and re-establishing confidence in the quality of governance matters for maintaining a business climate supportive of investment. Furthermore, the empirical evidence presented in the lower panel of Figure 1.5 suggests that financial development and a healthy banking sector are conducive to higher investment intensity.

The evidence based on countries' national account data shown above has shed light on potential macroeconomic drivers of aggregate investment including aggregate demand conditions, expected return on investment, capital costs, institutional characteristics and financial development. The use of firm-level data allows for a more accurate and granular exploration of these links as it accounts for the heterogeneity of firms with respect to size, access to finance, balance sheets and income statements. Median investment rates of listed Turkish companies are sourced from Worldscope, a standard data set frequently used for firm-level analysis of investment, and confirm the high trend investment intensity of Turkish business (Figure 1.5).

A vast theoretical and empirical literature has studied the drivers of investment at firm level, focusing in particular on the impact of current and lagged output growth (the accelerator mechanism), the expected profits against the cost of investment (represented

by Tobin's Q here defined as the ratio of the enterprise value over its total capital), and of the user cost of capital (see Annex B). Table 1.2 presents the results of a cross-country estimation of these hypotheses, using data of stock market-listed firms operating in the manufacturing sector from 18 countries (Worldscope database, see Annex Table 1.B.1)

**Table 1.2. Drivers of investment at firm level**

Dependent variable: Investment rate defined as capital expenditures over total capital

| | All firms | All firms | Small | High-tech | Zombies | Exporters | TUR |
|---|---|---|---|---|---|---|---|
| Investment/capital (lagged) | 0.177*** | 0.122*** | 0.016 | 0.110*** | -0.037** | 0.112*** | 0.096*** |
| Sales growth | 0.041*** | 0.023*** | 0.024*** | 0.024** | 0.014*** | 0.026*** | 0.084*** |
| Sales growth (lagged) | 0.011*** | 0.006** | 0.006 | 0.005*** | 0.003 | 0.008*** | -0.008 |
| Sales/capital (lagged) | 0.007*** | 0.005*** | 0.006*** | 0.005** | 0.002 | 0.005*** | 0.006* |
| Interest rate | -0.023* | -0.022** | -0.021** | -0.013 | -0.004 | -0.017* | -0.037** |
| Tobins' Q | 0.023*** | 0.021*** | 0.019*** | 0.019*** | 0.018*** | 0.021*** | 0.036*** |
| New equity/capital | | 0.030*** | 0.029*** | 0.025*** | 0.021*** | 0.032*** | 0.027*** |
| Cashflow/capital | | 0.023*** | 0.011* | 0.013** | -0.010 | 0.021*** | -0.022 |
| Leverage | | -0.086*** | -0.067*** | -0.051** | -0.033*** | -0.092*** | -0.158*** |
| Leverage x cashflow | | -0.013*** | -0.016*** | -0.011 | -0.006 | -0.015** | 0.060 |
| Number of observations | 92596 | 55488 | 15149 | 20012 | 3096 | 33130 | 1116 |
| Adjusted $R^2$ (incl. fixed effects) | 0.42 | 0.47 | 0.36 | 0.47 | 0.32 | 0.49 | 0.40 |
| Adjusted $R^2$ (within) | 0.10 | 0.11 | 0.07 | 0.11 | 0.10 | 0.12 | 0.14 |

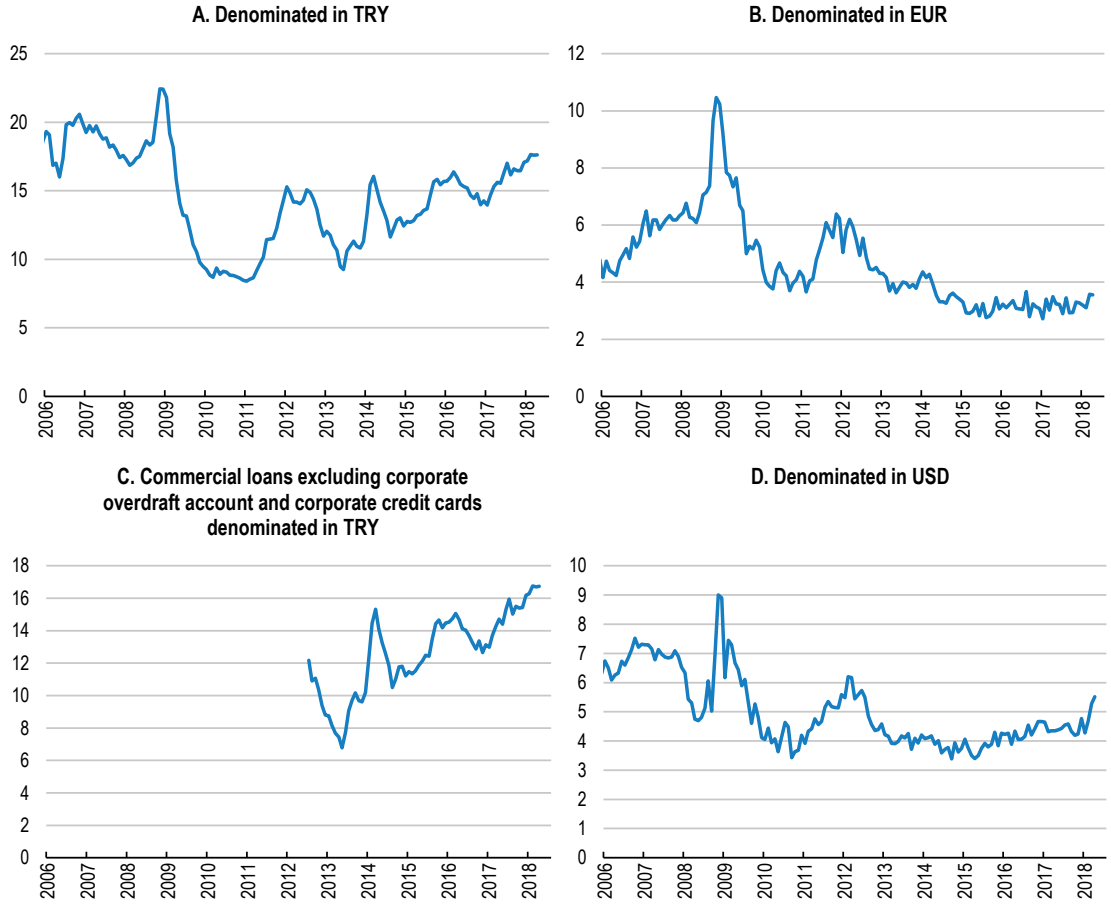
*Note*: All capital ratios based on total capital at the beginning of the period. Tobin's Q is the log of the ratio of the firm's value and total capital. The presented coefficients are based on linear regressions that include firm-, country-year as well as industry-year fixed effects. Small firms have less than USD 100 million of total assets. Zombie firms are characterised by three consecutive interest-coverage ratios below 1. Exporters are firms with a share of international sales of above 25%. Standard errors are clustered at the country and industry-year levels.
***, ** and * correspond to statistical significance at 1%, 5% and 10% respectively.
*Source*: OECD calculations based on Thomson/Reuters' Worldscope firm-level data.

The results confirm the intuition that firm investment rates are far less persistent than aggregate investment rates. The accelerator mechanism, the q-theory and the impact of user costs of capital (here proxied by the firm's interest rate) are confirmed for the firm level, irrespective of the type of firm. The issuance of new stocks is positively associated with investment rates underlying the importance of equity capital for investment. In addition to the aforementioned drivers of investment, internal financing (cash-flow) remains a significant determinant of investment rates. Leverage, defined as debt over assets, is negatively associated with investment.

The results in Table 1.2 suggest that among listed firms leverage is particularly penalising in Turkey and, in addition, higher leverage is not associated with lower cash-flow sensitivity of investment. This suggests increasing difficulties in accessing external financing for investment project among over-leveraged firms in Turkey. Investment also tends to depend more strongly on current demand and expected marginal return on capital, proxied by Tobin's Q (firm valuation over capital). The results further underscore the importance of interest rate dynamics for Turkish firms' investment rates, as bank financing is more important than other market-based financing, including equity.

**Figure 1.6. Interest rates are high and rising**

Weighted average interest rates for banks' commercial loans denominated in different currencies, in %




*Source*: Central Bank of the Republic of Turkey.
StatLink https://doi.org/10.1787/888933799283

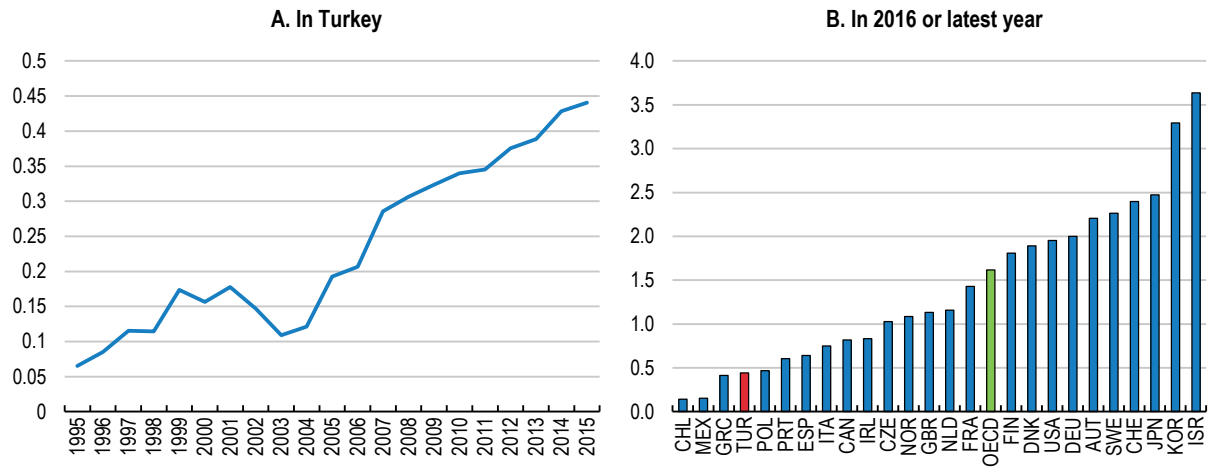
The high, and recently rising, level of nominal interest rates also acts as a drag on investment among listed Turkish companies. Nominal interest rates on TL-denominated loans are on the rise, reflecting both increasing country risk and rising inflation expectations (Figure 1.6). Interest rates on euro- and dollar-denominated loans remain stable but substantial exchange rate volatility and rapid depreciation of the Turkish Lira weigh on both hedging costs and effectively paid interests.

## R&D expenditures have increased but call for more supportive conditions

In contrast to overall business investment, Turkey's share of R&D expenditures in GDP is below the OECD average. However, the share has risen fourfold since 2005 (Figure 1.7, Panel A), to above the levels observed in other R&D lagging countries such as Chile, Mexico, Greece and Slovakia and now exhibits a level comparable to the ones observed in Poland (Panel B).

**Figure 1.7. Business spending on R&D is low but rising**

In percentage of GDP

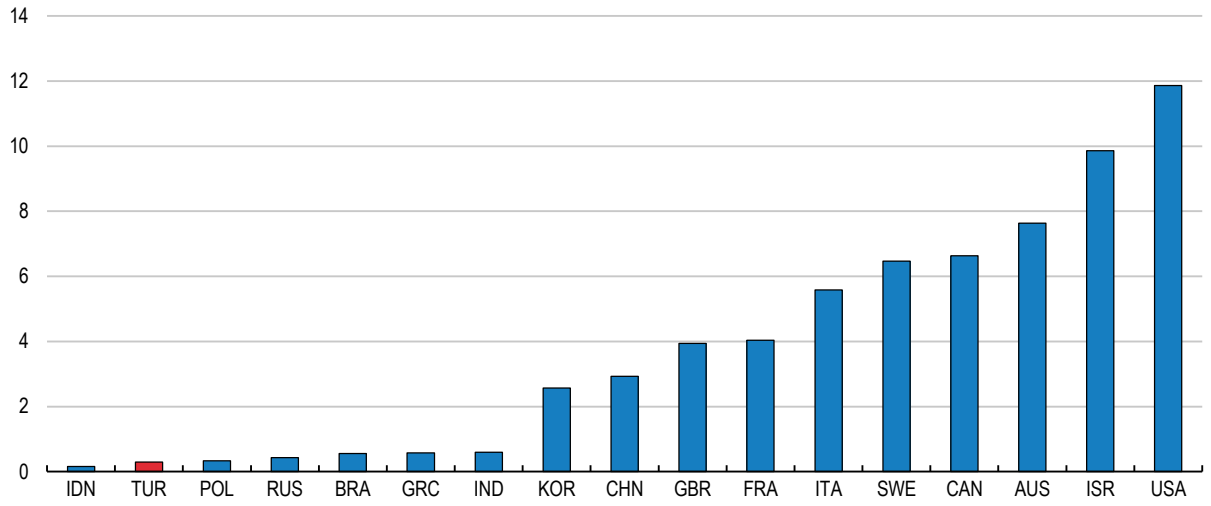



*Source*: OECD (2018), Main Science and Technology Indicators (database).
StatLink https://doi.org/10.1787/888933799302

Empirical evidence from listed companies (Worldscope) confirms the very low R&D intensity of Turkish firms (Figure 1.8). The gap between advanced and emerging countries seems to be higher among listed companies than on aggregate (Figure 1.7, Panel B) although this could also reflect composition effects related to R&D reporting practices that differ across industries. The following empirical analysis corrects for this potential bias by controlling for industry-fixed effects.

**Figure 1.8. R&D investment rates of listed firms**

Median R&D investment rates in %, 2016




*Note*: R&D investment rate is defined as annual R&D expenses over total capital at the beginning of the year.
*Source*: Thomson Reuters' Worldscope database.
StatLink https://doi.org/10.1787/888933799321

R&D expenditures may be difficult to finance with external sources for a number of reasons. First, returns on R&D are difficult to measure and highly uncertain in nature which makes it difficult for investors to estimate the net present value of R&D investments. Second, external financing, in particular in the form of external equity, could make the protection of intellectual property more difficult, reducing investment incentives. Third, there is typically a lack of collateral which restricts access to bank finance. As a result, in the presence of financial constraints, R&D expenditures are found to be more sensitive to cash-flow developments (Brown, Fazzari and Petersen, 2009[9]).

Empirical investigations based on listed companies in the Worldscope dataset confirm this hypothesis (Table 1.3), especially for small and financially strained firms. More generally, R&D spending is more stable over time and less dependent on current demand or interest rate dynamics. Similar to investment in fixed assets, equity issuance seems to be a very consistent determinant of R&D expenditures, and over-leveraged firms invest less in R&D. R&D expenses in Turkey do not seem to be affected by standard drivers of R&D investment such as profitability (cash flow) or expected returns on capital (Tobin's Q). Persistence of R&D investment rates is also much lower, indicating that R&D expenses are less stable and predictable than in most other countries. The result could, however, also be driven by a structural break as R&D in Turkey has expanded very rapidly in the most recent period. Based on a longer dataset comprising Turkish manufacturing firms from 1996 to 2013, there seems to be evidence for more persistence and a negative relationship between financing constraints and R&D investment (Gezici, Orhangazi and Yalçın, 2018[10]).

**Table 1.3. R&D expenses**

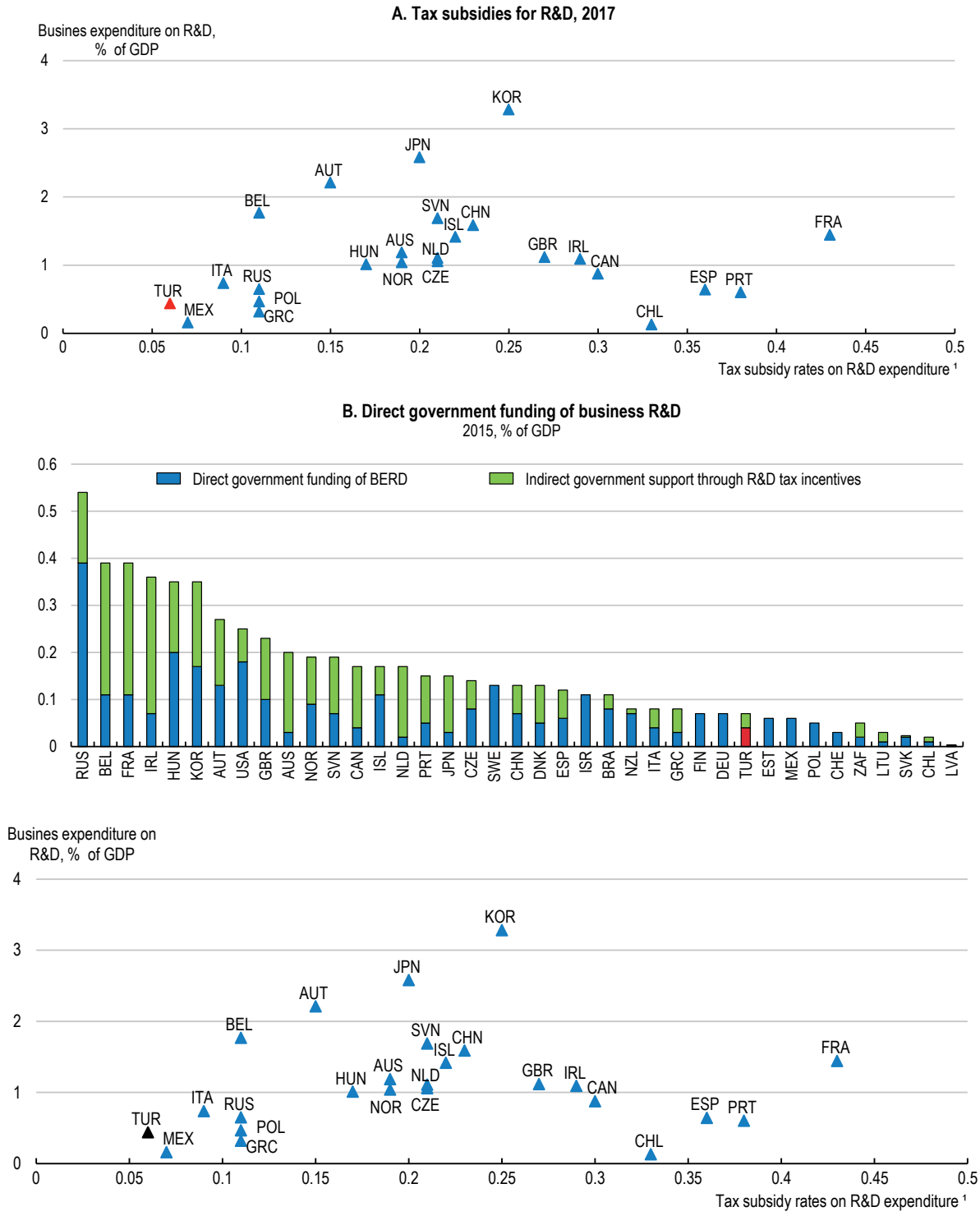
Dependent variable: R&D investment rate defined as R&D expenses over total assets

| | All firms | All firms | Small | High-Tech | Zombies | Exporters | TUR |
|---|---|---|---|---|---|---|---|
| R&D expenses/assets (lagged) | 0.2950*** | 0.3074*** | 0.2585*** | 0.2910*** | 0.1939*** | 0.2939*** | 0.1971*** |
| Sales growth | 0.0021 | -0.0015 | -0.0034 | -0.0039 | -0.0061 | -0.0011 | 0.0011 |
| Sales growth (lagged) | -0.0031 | -0.0034 | -0.0013 | -0.0049 | 0.000 | -0.0035 | -0.0007 |
| Sales/assets (lagged) | -0.0047 | -0.0078* | -0.0157** | -0.0157 | -0.0249** | -0.0056* | 0.0006** |
| Interest rate | 0.0009 | -0.0018 | -0.0050 | -0.0026 | -0.0085 | -0.0045 | -0.0001 |
| Tobins' Q | 0.0089* | 0.0072* | 0.0137** | 0.0129* | 0.0347*** | 0.0057* | 0.0003 |
| New equity/assets | | 0.0203*** | 0.0197** | 0.0284*** | 0.0392*** | 0.0214*** | 0.0008 |
| Cash flow/assets | | 0.0069** | 0.0123** | 0.01 | 0.0261*** | 0.0102 | 0.0007 |
| Leverage | | -0.0197*** | -0.0248*** | -0.0277*** | -0.0522*** | -0.0175*** | -0.0005 |
| Leverage x cash flow | | 0.0069 | 0.0030 | 0.0125 | -0.0002 | -0.0060 | -0.0043 |
| Number of observations | 53259 | 52388 | 14508 | 19198 | 3138 | 31598 | 1066 |
| Adjusted $R^2$ (incl. fixed effects) | 0.83 | 0.84 | 0.81 | 0.81 | 0.75 | 0.84 | 0.77 |
| Adjusted $R^2$ (within) | 0.12 | 0.14 | 0.11 | 0.15 | 0.16 | 0.13 | 0.07 |

*Note*: All capital ratios based on total capital at the beginning of the period. Tobin's Q is the log of the ratio of the firm's value to total capital. The presented coefficients are based on linear regressions that include firm- as well as industry-year fixed effects. Zombie firms are characterised by three consecutive interest-coverage ratios below 1. Exporters are firms with a share of international sales of above 25%. Standard errors are clustered at the country and industry-year levels.
***, ** and * correspond to statistical significance at 1%, 5% and 10% respectively.
*Source*: OECD calculations based on Worldscope firm-level data.

**Figure 1.9. Tax subsidies for R&D are low in Turkey**

2017




*1.* Small, profitable firms (see http://www.oecd.org/sti/rd-tax-incentive-indicators.htm)
*Source*: OECD Science, Technology and Industry Scoreboard 2017.
StatLink https://doi.org/10.1787/888933799340

R&D tax subsidies have become the main tool for governments to boost R&D. Among OECD countries, their share in total government support for business R&D expenditures has risen from one third in 2006 to nearly half in 2015 (OECD, 2017[11]). Tax subsidies seem to be positively associated with business expenditures on R&D, at least up to a certain threshold of about 25% of R&D expenditures (Figure 1.9). In Turkey, tax credits and tax allowances are among the lowest in the OECD, as currently documented in OECD databases. One reason for that is that the allowance scheme is incremental, which reduces the average allowance over the investment horizon. Second, the relief on labour costs, the main component of R&D expenditures, is smaller than in many other countries due to a relatively low employer social security contribution rate at 17.5%, half of which is subsidised for R&D personnel. Furthermore, the tax code seems to discriminate against intangible investment (Figure 1.3 above). Additional progress with the quantification of tax incentives in accordance with OECD methodologies would improve their internationally comparable monitorability.

The government can also support business R&D expenditures by direct grants. The share of direct funding in overall government support for R&D is relatively high in Turkey. However, all in all and in international comparison, Turkey ranks relatively low in terms of total R&D support when measured as a share of GDP (Figure 1.9, Panel B).

## Consolidating the digitalisation momentum

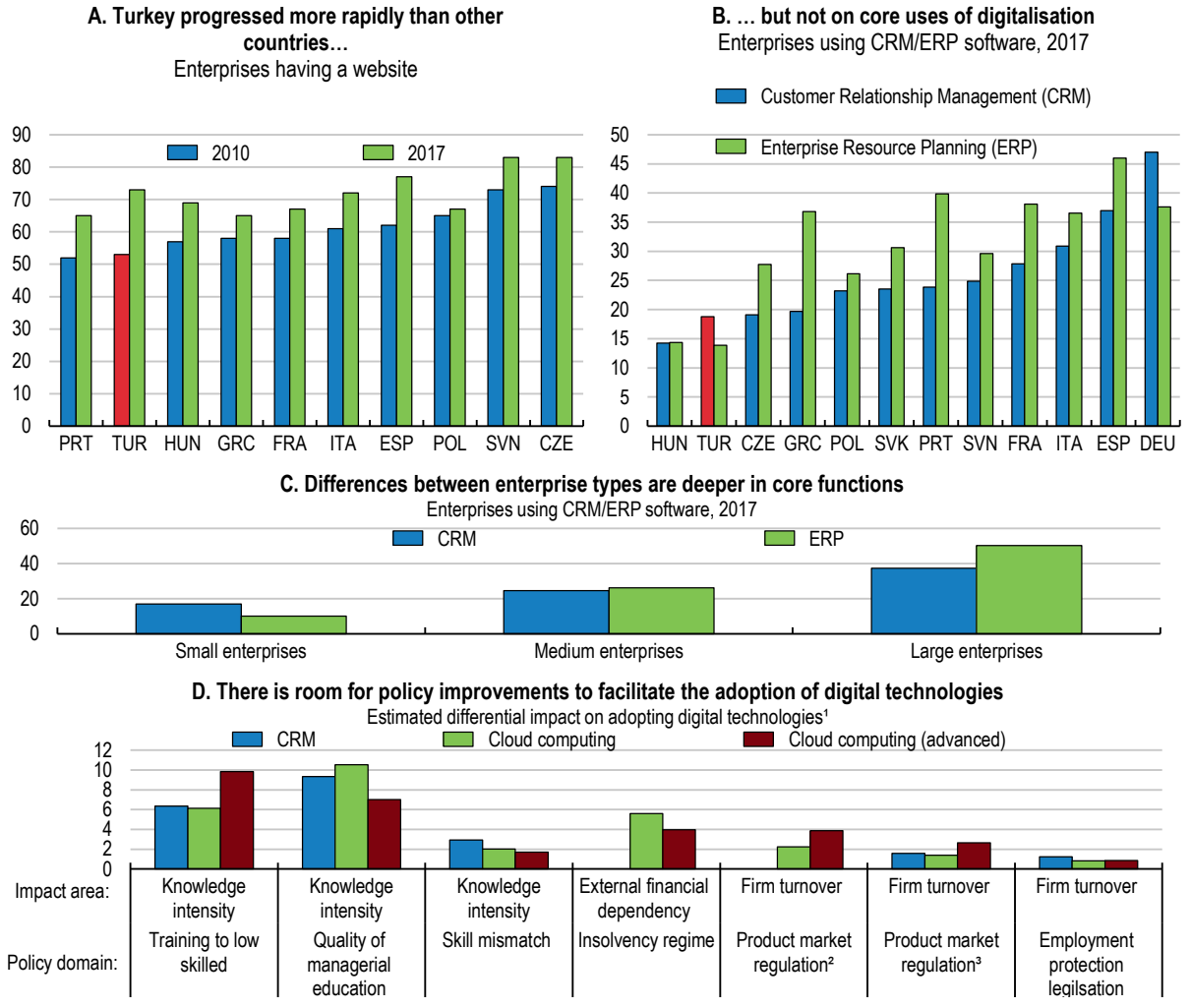
Turkish firms increasingly invest in digitalisation (i.e. in information and communication technologies), though this type of investment is difficult to properly capture statistically. Digital investment intensity rises faster than in a number of other middle-income OECD countries, albeit mostly from lower levels. In some areas, the Turkish business sector has done particularly well. For instance, only half of the enterprises had a website in 2010, meaning Turkey compared unfavourably with other OECD countries; but by 2017, this practice, backed by a new provision included in the commercial law, has increased to 73%, putting Turkey ahead of some advanced OECD members (Figure 1.10, Panel A).

However, the adoption of digital applications related to core business management functions is not as widespread as having a website. The share of firms using (functionally important) enterprise resource planning (ERP) and customer relationship management (CRM) software is lower than in several comparable countries (Panel B). Also, differences in the adoption rates of technologies between enterprise types are deeper in more advanced functions (Panel C). Both the international comparison and the firm-size divergence in adoption rates may be related to skills gaps.

Turkey has been taking measures to promote digitalisation, for instance by facilitating the connection of businesses to public authorities (i.e. online taxation systems). Yet, there is ample room for additional policy action to incite firms to adopt digital technologies. In recent OECD research, policies aiming at eliminating the skills gap as well as those improving product market competition and labour market flexibility were shown to be effective (Nicoletti, Andrews and Timiliotis, 2018[12]). According to econometric estimations, Turkey's adopting better policy practices in these domains would accelerate the diffusion of digital technologies (Panel D). OECD also calls for adequate social and regulatory protections for workers engaged in non-standard work practices based on digital technologies (OECD, 2017[13]).

**Figure 1.10. Turkey should catch-up more rapidly in core digital applications**

% of all enterprises, excluding financial sector (10 employees or more)




1. The estimated impact shows the additional adoption probability of a given digital technology by firms operating in sectors strongly exposed to an impact area, in comparison to firms operating in sectors less exposed to the same impact area, induced by a policy change that would bring Turkey to the level of the best practice in OECD countries in the respective policy domain, based on Nicoletti et al. (2018) and own calculations. As an example, increasing the amount of ICT training provided for low-skilled employees to the level of best practice in OECD is estimated to lead to around 10% more adoption of advanced cloud computing technologies by firms in highly knowledge intensive sectors than those in less knowledge intensive sectors in Turkey.
2. Administrative burdens to start-ups.
3. Barriers to service sectors.
*Source*: Eurostat (2017), The Digital Economy and Society Index; and Nicoletti et al. (2018).
StatLink https://doi.org/10.1787/888933799359

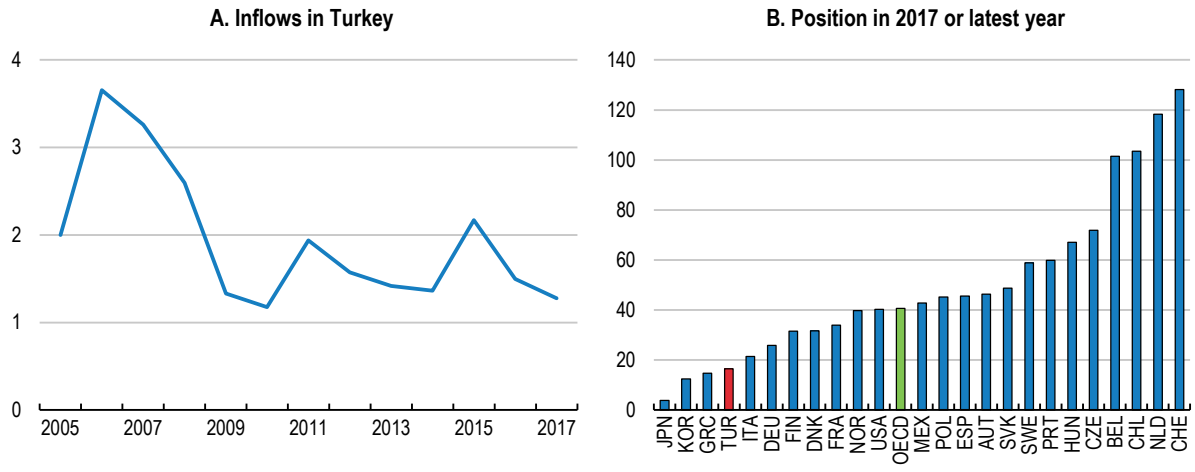
## Reviving foreign direct investment

The generally high level of investment is not met with an equally high level of domestic saving. The resulting large current account deficit is one of Turkey's major

macroeconomic challenges. Its financing requires sustainable net inflows of foreign capital, preferably in the form of foreign direct investments (FDI). FDI inflows and stocks remain currently low in international comparison (Figure 1.11). Notably, the inflow of FDI originating from Europe has declined from around USD 13 billion per year prior to the crisis to below USD 5 billion per year in 2016/17. While Europe's share in Turkey's inward FDI declined from above 80% to around 65% over this period, Europe remains the main driver of FDI inflows to Turkey.

**Figure 1.11. FDI inflows and stocks remain low in international comparison**

Inward FDI, % of GDP



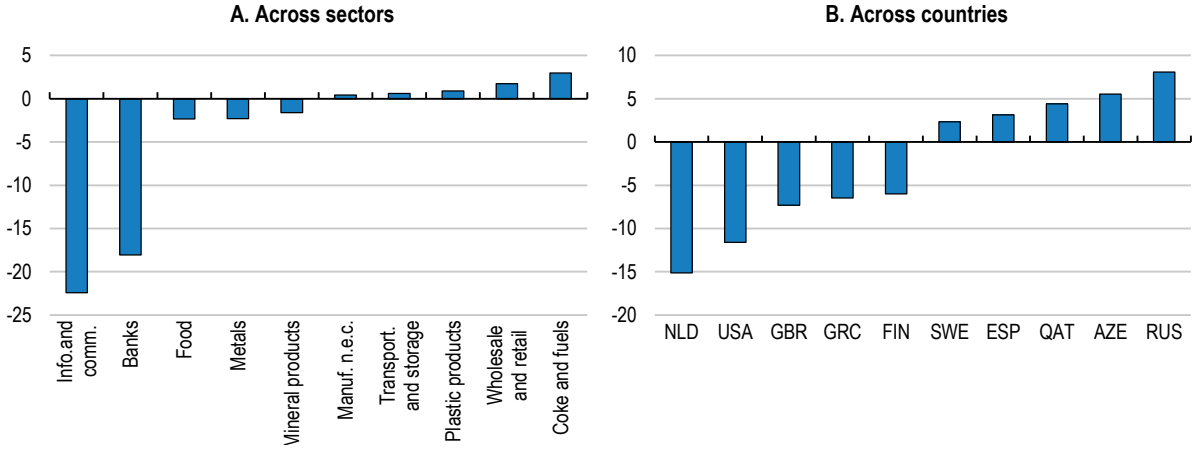

*Source*: OECD (2018), OECD FDI Statistics (database).
StatLink https://doi.org/10.1787/888933799378

The stock of FDI has peaked in 2010 at close to 25% of GDP and fell to just above 16.7% of GDP in 2016 mainly on account of declining foreign equity participation in services, in particular in banks and companies operating in information and communication (IC) activities. The FDI stock in manufacturing was slightly more resilient over this period but also declined by around 10%. Overall, the drop in FDI stocks in banks (-46%) and IC companies (-66%) accounts for about 80% of the total decrease (Figure 1.12)

Equity participation originating from Europe and the US has substantially decreased from 2010 to 2016. Despite heavy drops, the Netherlands (mainly as a pass- through country before reaching its final destination) remain the country with the highest FDI stock in Turkey (USD 2.4 billion in 2016) followed by Germany (USD 1.3 billion) and Russia (USD 1 billion). Azerbaijan emerged as the 9th largest direct investor country Turkey by 2016 (USD 0.6 billion) merely driven by a major petro-industry project. Finally, the increase in FDI from Qatar has offset a quasi-equally large decline in FDI from Saudi Arabia over the same period.

**Figure 1.12. Change in FDI stocks by sector and country**

From 2010 to 2016, in billion USD




*Note: Sectors and countries with the 5 largest gains and 5 largest losses are shown.*
*Source*: Central bank of the Republic of Turkey.
StatLink https://doi.org/10.1787/888933799397

To assess the impact of institutional factors on bilateral FDI flows, a gravity model is estimated. Bilateral flows of FDI in 2016 are regressed on a standard set of explanatory variables including distance, dummies for common language and common legal origin, the levels of GDP and GDP per capita for the origin and the host country, human capital endowments of the origin and host country as well as a dummy taking the value of 1 if a free trade agreement between the two countries is in place and 0 otherwise (Table 1.4). Similar to the empirical model used for investment rates, institutional variables as observed in the host country are added one by one to the gravity model and Figure 1.13 reports the obtained coefficients and significance levels.

**Table 1.4. Gravity model for bilateral FDI flows**

Dependent variable: log of inward FDI flow in USD million.

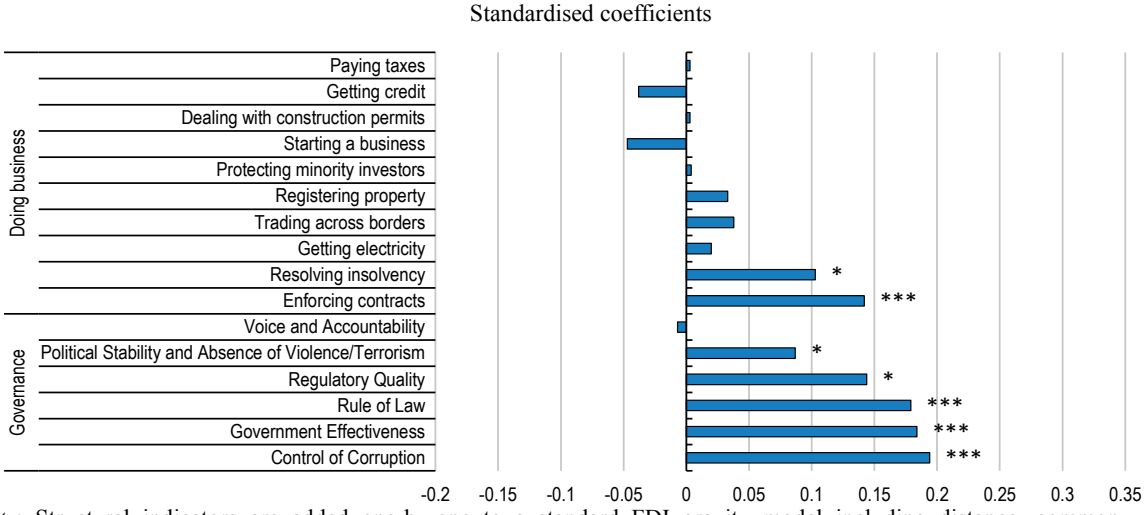
| | |
|---|---|
| Distance | -0.84*** |
| Common language | 1.57*** |
| Common legal origin | 0.35*** |
| Log GDP (reporting country) | 0.56*** |
| Log GDP (counterpart country) | 0.88*** |
| Log per capita GDP (reporting country) | 0.73*** |
| Log per capita GDP (counterpart country) | 0.77*** |
| Area in sq. kms (reporting country) | 0.06** |
| Area in sq. kms (counterpart country) | -0.22*** |
| Human capital index (Penn World Tables, reporting country) | -0.57*** |
| Human capital index (Penn World Tables, counterpart country) | 0.51*** |
| Dummy for existing free trade agreement (Source: WTO, 2015) | 0.37*** |
| Number of observations | 11137 |
| Adjusted R2 | 0.64 |

*Note:* Linear regression coefficients are shown. Standard errors are clustered at the year level.
***, ** and * correspond to statistical significance at 1%, 5% and 10% respectively.
*Source*: UNCTAD, CEPII, Penn World Tables.

The results suggest that trust in the host country's institutions affects very strongly its ability to attract FDI inflows. Control of corruption, the effectiveness of government and the rule of law exhibit the highest FDI inflow elasticities and the related coefficients are highly significant. This is consistent with the recent OECD research finding that a percentage point increase in the World Bank corruption perception index in the host country reduces FDI from the countries having ratified the OECD Anti-Bribery Convention by between 4 and 9% (OECD, 2017[14]). Turkey's international position has deteriorated in this area: its ranking in Transparency International's Corruption Perception Index fell from 53rd in 2013 to 81st in 2017. Turkey should build on OECD's "Strategic Approach to Combating Corruption and Promoting Integrity" to regain ground in this area (OECD, 2018[15]).

Regulatory quality and the ability to enforce contracts, as well as the capacity to resolve potential insolvencies are also identified as important drivers of FDI inflows. The weakening in the quality of institutions as measured by the World Bank governance indicators since 2013 may help explain why Turkey did not recover the relatively higher inflows observed prior to the crisis, in particular from European countries. Recent progress in terms of enforcing contracts and insolvency procedures has been encouraging but should be complemented with improvements in the quality of institutions.

**Figure 1.13. How the business environment correlates with foreign direct investment**



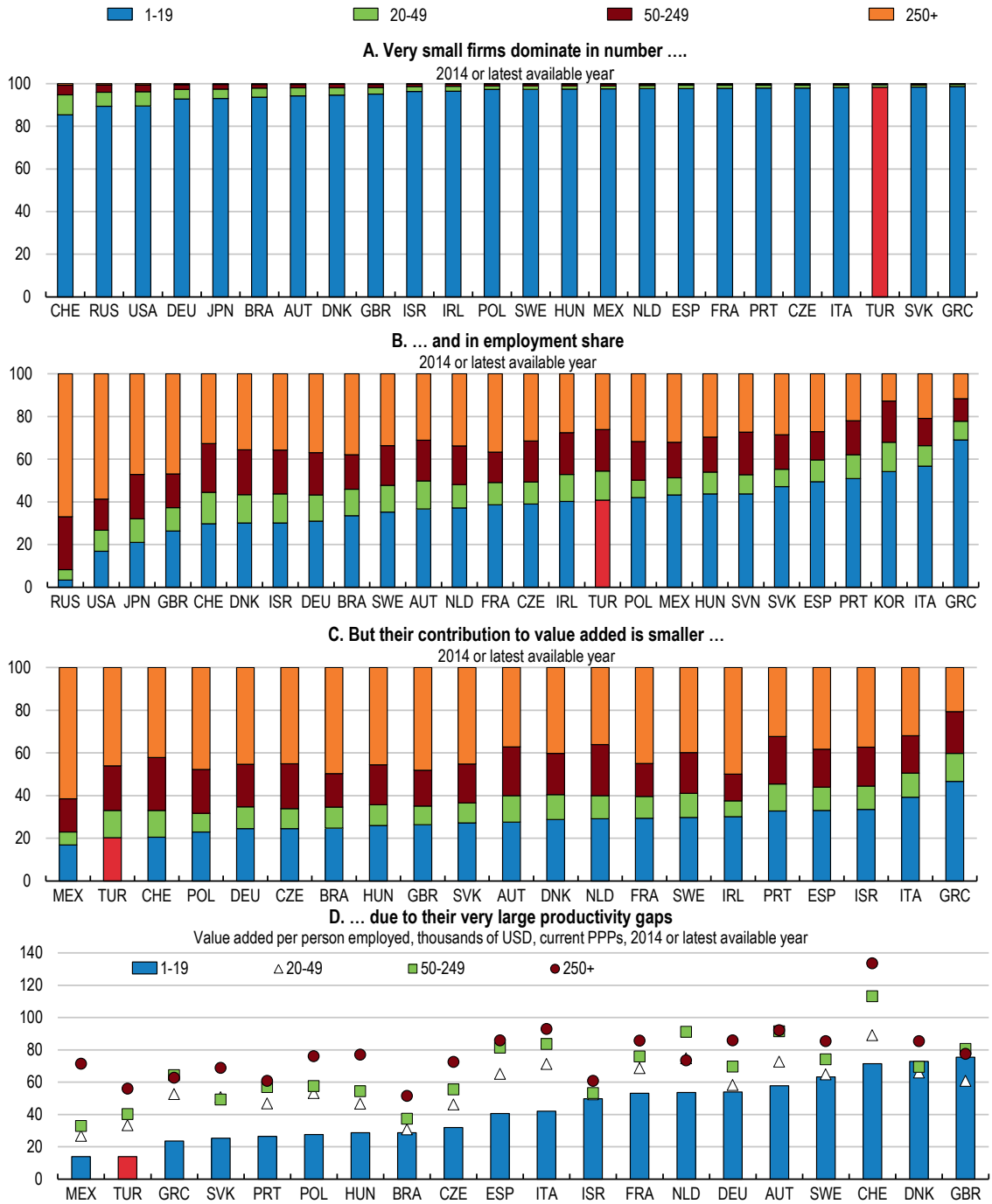

*Note*: Structural indicators are added one-by-one to a standard FDI gravity model including distance, common language, common legal origin, GDP, GDP per capita and human capital. Standardised coefficients for each indicator are shown and
***, ** and * correspond to statistical significance at 1%, 5% and 10% respectively.
*Source*: Calculations based on OECD (2018), OECD Economic Outlook (database).
StatLink https://doi.org/10.1787/888933799416

## Investment dynamics differs across business types

The business sector is highly heterogeneous in Turkey, as highlighted in earlier OECD Surveys (OECD, 2014[3]; OECD, 2016[4]). It includes a combination of small, low productivity, largely informal businesses; medium-sized, family-managed and generally only partly formal firms; and large, professionally managed formal corporations. A new cohort of skill-intensive start-ups has also emerged. Figure 1.14 illustrates the segmentation of the business sector according to standard size criteria. It shows the large

weight of very small businesses in employment, which contrasts with their significantly smaller weight in total value-added, highlighting the outstandingly large labour productivity differences between different types of firms.

**Figure 1.14. Turkey's business sector is particularly fragmented**




*Note*: For Russia and the United-States data do not include non-employers. Data for Switzerland exclude enterprises with less than 3 employees. In panel B, data for the United States, Japan, Israel, Korea, and Russia are based on number of employees. For further methodological information, refer to the publication Entrepreneurship at a Glance 2017, Figures 2.2, 2.9, 2.15 and 3.1.

*Source*: OECD (2017), Entrepreneurship at a Glance 2017.

StatLink https://doi.org/10.1787/888933799435

To preserve the strong growth of investments in the business sector while improving their quality and efficiency, the ability of these different types of firms to upgrade their physical and knowledge-based investments should be improved. Faster re-allocation of resources from less productive and low-potential to more productive and high-potential firms would also help improve the quality of capital formation.

**Box 1.1. A dataset to shed light on firm-level investment dynamics**

A firm-level dataset was constructed for this Survey in co-operation with the Structural Economic Research Department of the Central Bank of the Republic of Turkey. The dataset drew on information from the "Enterprise Information System" (EIS) database which consists of firm-level integrated data from eight administrative sources, put together by the General Directorate for Productivity of the Ministry of Science, Industry and Technology.

In principle, EIS includes all enterprises in Turkey, from micro to large firms and from partnerships to corporations. The dataset constructed for the survey is a subset of the EIS database, encompassing all manufacturing firms providing detailed balance sheets and income statements to the Revenue Administration of the Ministry of Finance. Micro-size sole proprietorships submitting only simplified income statements for tax purposes were excluded, since they do not provide all the information required for the analysis, such as investment in machinery and equipment.

After 340 000 observations were dropped due to insufficient data quality, the final dataset for the purposes of this Survey contained 1.25 million observations on around 260 000 manufacturing firms for the period 2006-16. In addition to detailed balance sheets and income statements, data is available on the age, employment, geographical location and sectoral-technological characteristics of firms. The growth rate of their machinery-equipment and R&D investments can be derived from their balance sheets for the period 2007-16. The remaining imperfections in the data arising from widespread informality in employment and financial reporting remained a challenge, but were not estimated to fundamentally alter the observations on investment and financing trends throughout the business sector.

The dataset includes around 96 000 firms employing 0-9 workers; 34 000 firms employing 10-49 workers; 5000 firms employing 50-99 workers; 3500 firms employing 100-249 workers; 1100 firms employing 250-499 workers and 800 firms employing more than 500 workers for the latest year of data availability, 2016. 165 of these firms were listed in Borsa Istanbul.

Building on the statistical regularities emerging from a large Turkish firm-level database (Box 1.1), on the analyses of earlier OECD Surveys, and on insights from the expanding firm-level research literature in Turkey (Atabek, 2018[16]; Atiyas and Bakis, 2018[17]; Çağlar and Koyuncu, 2018[1]; Taymaz, 2016[18]; Taymaz, 2016[19]), four types of firms displaying different investment dynamics were identified. Econometric tests were then used to explore some of the links between firm-level characteristics and the growth and composition of their investments. These estimations were run for machinery and

equipment investments (Table 1.5) and for the probability for a firm to undertake R&D investments (Table 1.6). (The latter indicator is based on R&D expenditures reported to the tax administration and understates the actual volume of R&D activities for firms which do not benefit from tax allowances).

**Table 1.5. Determinants of machinery and equipment investment**

Dependant variable: Investment rate

| | By Region | | | By Size | | | | | | By Technology Level | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (1) | (2) | (3) | (4) | (5) | (6) | (1) | (2) | (3) | (4) |
| Sales growth | 0.008*** | 0.008*** | 0.002 | 0.005*** | 0.009*** | 0.005 | 0.003 | 0.0000 | 0.039*** | 0.007*** | 0.01*** | 0.005*** | 0.013 |
| | (0.001) | (0.002) | (0.003) | (0.001) | (0.001) | (0.004) | (0.004) | (0.008) | (0.011) | (0.001) | (0.002) | (0.001) | (0.008) |
| Cash flow | 0.009*** | 0.034*** | 0.058*** | 0.003 | 0.019*** | 0.002 | 0.028** | 0.017 | 0.031 | 0.02*** | 0.013*** | -0.005 | -0.021 |
| | (0.003) | (0.008) | (0.022) | (0.004) | (0.005) | (0.012) | (0.013) | (0.02) | (0.04) | (0.004) | (0.005) | (0.005) | (0.02) |
| ROA | 0.054*** | 0.004 | -0.018 | 0.03 | 0.037* | 0.073 | 0.096* | 0.048 | -0.004 | 0.03* | 0.057** | 0.054** | 0.155 |
| | (0.014) | (0.032) | (0.06) | (0.019) | (0.022) | (0.052) | (0.054) | (0.082) | (0.137) | (0.017) | (0.025) | (0.024) | (0.124) |
| ROA_sq | -0.136*** | -0.023 | -0.2 | -0.098* | -0.08 | 0.049 | -0.329* | 0.022 | -0.249 | -0.076 | -0.17** | -0.1 | -0.278 |
| | (0.043) | (0.11) | (0.214) | (0.054) | (0.073) | (0.172) | (0.179) | (0.242) | (0.373) | (0.053) | (0.079) | (0.071) | (0.32) |
| Leverage | 0.024* | 0.019 | 0.036 | 0.017 | 0.111*** | 0.287** | 0.353** | 0.559 | 0.063 | 0.02 | 0.024 | 0.013 | 0.17 |
| | (0.014) | (0.026) | (0.052) | (0.017) | (0.031) | (0.139) | (0.146) | (0.424) | (0.313) | (0.017) | (0.021) | (0.022) | (0.141) |
| Leverage_sq | -0.013 | -0.008 | -0.039 | 0.0004 | -0.005 | -0.048 | -0.011 | -0.014 | 0.026 | -0.011 | -0.004 | -0.015 | -0.092 |
| | (0.011) | (0.022) | (0.041) | (0.014) | (0.017) | (0.047) | (0.046) | (0.09) | (0.112) | (0.014) | (0.017) | (0.019) | (0.109) |
| Employment | 0.009** | 0.023*** | 0.025* | 0.028*** | 0.025 | 0.128 | -0.065 | -0.102 | -0.268 | 0.015** | 0.01 | 0.008 | 0.072 |
| | (0.004) | (0.008) | (0.014) | (0.009) | (0.017) | (0.092) | (0.089) | (0.13) | (0.197) | (0.006) | (0.007) | (0.006) | (0.049) |
| Employment_sq | -0.003*** | -0.006*** | -0.006** | -0.008*** | -0.006** | -0.022* | 0.002 | 0.006 | 0.018 | -0.004*** | -0.003** | -0.001 | -0.006 |
| | (0.001) | (0.001) | (0.003) | (0.002) | (0.003) | (0.012) | (0.009) | (0.012) | (0.015) | (0.001) | (0.001) | (0.001) | (0.006) |
| Age (3-5) | -0.038*** | -0.024*** | -0.017 | -0.032*** | -0.034*** | -0.048*** | -0.055*** | 0.007 | -0.073 | -0.037*** | -0.036*** | -0.028*** | -0.026 |
| | (0.003) | (0.006) | (0.012) | (0.004) | (0.004) | (0.017) | (0.016) | (0.03) | (0.051) | (0.004) | (0.004) | (0.005) | (0.03) |
| Age (6-10) | -0.06*** | -0.038*** | -0.034** | -0.049*** | -0.057*** | -0.077*** | -0.066*** | -0.035 | -0.05 | -0.056*** | -0.057*** | -0.051*** | -0.015 |
| | (0.003) | (0.007) | (0.014) | (0.004) | (0.005) | (0.019) | (0.019) | (0.036) | (0.056) | (0.005) | (0.005) | (0.006) | (0.039) |
| Age (11-100) | -0.061*** | -0.043*** | -0.05*** | -0.048*** | -0.06*** | -0.08*** | -0.071*** | -0.074* | -0.072 | -0.058*** | -0.062*** | -0.051*** | -0.001 |
| | (0.004) | (0.009) | (0.017) | (0.006) | (0.006) | (0.022) | (0.021) | (0.041) | (0.059) | (0.006) | (0.007) | (0.007) | (0.047) |
| Real wage | -0.0003** | -0.0005 | -0.0014* | -0.0005** | 0.0000 | -0.0004 | -0.0001 | -0.0008 | -0.0009 | -0.0001 | -0.0008*** | 0.0001 | -0.0004 |
| | (0.0001) | (0.0004) | (0.0008) | (0.0002) | (0.0002) | (0.0004) | (0.0004) | (0.0006) | (0.0019) | (0.0002) | (0.0002) | (0.0002) | (0.0004) |
| Observations | 289,208 | 69,554 | 18,336 | 155,759 | 150,451 | 23,949 | 19,776 | 6,455 | 4,777 | 181,464 | 123,740 | 69,387 | 3,160 |
| R-squared | 0.3 | 0.31 | 0.3 | 0.32 | 0.32 | 0.4 | 0.41 | 0.45 | 0.35 | 0.29 | 0.3 | 0.33 | 0.33 |

*Note*: Firm-level fixed effect estimations. All variables enter the equation with a one period lag. ROA is operating profitability and employment is log transformed. For age groups the baseline category contains firms younger than 3 years old. Regions are classified as: (1) West, (2) Tiger region and (3) Others. Size is classified by the number of employees: (1) 0-9, (2) 10-49, (3) 50-99, (4) 100-249, (5) 250-499 and (6) >500. Technology level is classified as: (1) low, (2) low to medium, (3) medium to high and (4) high, according to OECD classification. "_sq" denotes squared terms. The equations also control for productivity distance to the frontier firm, being a listed firm, employment and leverage interaction, technology type and productivity distance to the frontier firm interaction, along with year, year*sector, year*sub region fixed effects. Robust standard errors are in parentheses. ***, ** and * correspond to statistical significance at 1%, 5% and 10% respectively.
*Source*: Own calculations (CBRT/OECD).

Available data does not permit to document some important firm-level characteristics concerning corporate governance, management information systems and financial reporting practices of firms. Still, combining the information available on their age, size, ownership, geographical location, technological sophistication, profitability and financing patterns, possible links between related firm characteristics and physical and knowledge-based investment outcomes can be outlined for empirical investigation.

### *Very small, largely informal businesses*

Very small, largely informal businesses form a very large population in the manufacturing sector. Available information on the weight of informality according to firm size and on the strong reverse correlation between informal jobs and educational background of employees (OECD, 2014[3]) suggest that their workers have generally limited formal education. Firms employing less than 10 workers and older than five years (excluding therefore young, high-skilled and potentially high-growth start-ups) form the bulk of this group. Around 50 000 such businesses were in the dataset as of 2016. Two main features distinguish these firms: i) they are in practice less bound by official regulations and tax and financial reporting obligations than other firms; and ii) in turn, their interactions with government authorities, with the banking and financial sector, and with other business partners are impaired because of this large dose of informality.

**Table 1.6. Determinants of the probability of reporting R&D expenditures**

| | By Region | | | By Size | | | | | | By Technology level | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (1) | (2) | (3) | (4) | (5) | (6) | (1) | (2) | (3) | (4) |
| Sales growth | 0.0005** | 0.0012** | 0.0001 | 0.0004** | 0.0008 | -0.0041 | 0.0034 | 0.0139 | 0.0129 | 0.0008*** | 0.0008** | -0.0003 | 0.0031 |
| | (0.0003) | (0.0006) | (0.0007) | (0.0002) | (0.0006) | (0.0029) | (0.0042) | (0.009) | (0.0116) | (0.0003) | (0.0004) | (0.0008) | (0.0057) |
| Cash flow | -0.0000* | 0.0000*** | -0.0000 | -0.0000 | -0.0000** | 0.0000 | -0.0000 | 0.0001 | -0.0003* | 0.0000 | -0.0000 | -0.0000 | -0.0000 |
| | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0000) | (0.0001) | (0.0008) | (0.0002) | (0.0000) | (0.0000) | (0.0000) | (0.0000) |
| Employment | -0.0086*** | -0.0102*** | -0.0113** | -0.0004 | -0.0239* | -0.192 | 0.345 | 2.176* | -0.293 | -0.0082*** | -0.0012 | -0.023*** | -0.0423* |
| | (0.0017) | (0.0034) | (0.005) | (0.0026) | (0.0129) | (0.289) | (0.289) | (1.18) | (0.241) | (0.0018) | (0.0022) | (0.0048) | (0.0219) |
| Employment_sq | 0.0035*** | 0.0032*** | 0.0028** | 0.0014 | 0.0055*** | 0.0237 | -0.0321 | -0.182* | 0.0267 | 0.0024*** | 0.0014*** | 0.0089*** | 0.0163*** |
| | (0.0004) | (0.0008) | (0.0011) | (0.0009) | (0.0021) | (0.0339) | (0.0287) | (0.101) | (0.0171) | (0.0004) | (0.0005) | (0.0011) | (0.004) |
| Age (3-5) | 0.0006 | -0.002 | -0.0011 | 0.0002 | 0.0005 | 0.0152* | -0.0157 | -0.0028 | -0.0354 | -0.0008 | -0.0003 | 0.002 | 0.0357** |
| | (0.0008) | (0.0017) | (0.0026) | (0.0008) | (0.0014) | (0.0082) | (0.0112) | (0.0379) | (0.0633) | (0.0008) | (0.0012) | (0.0025) | (0.017) |
| Age (6-10) | 0.0028** | -0.0026 | -0.0037 | 0.0008 | 0.004** | 0.0348*** | -0.0296** | 0.011 | 0.0402 | 0.0004 | -0.0002 | 0.0059* | 0.0647*** |
| | (0.0011) | (0.0022) | (0.0033) | (0.001) | (0.0018) | (0.0101) | (0.0144) | (0.0438) | (0.0651) | (0.0011) | (0.0015) | (0.0032) | (0.0213) |
| Age (11-100) | 0.0019 | -0.0049* | -0.0033 | 0.0002 | 0.0046* | 0.0378*** | -0.0411** | -0.0181 | 0.0367 | 0.0012 | -0.0009 | -0.0009 | 0.0527* |
| | (0.0015) | (0.0029) | (0.0045) | (0.0012) | (0.0024) | (0.0118) | (0.017) | (0.0467) | (0.0718) | (0.0015) | (0.0021) | (0.0043) | (0.027) |
| Real wage | 0.0006*** | 0.0004** | 0.0006 | 0.0005*** | 0.0006*** | 0.0002 | 0.0011** | 0.0025*** | 0.0002 | 0.0002* | 0.0003*** | 0.001*** | 0.0017*** |
| | (0.0001) | (0.0002) | (0.0004) | (0.0001) | (0.0001) | (0.0004) | (0.0004) | (0.0008) | (0.0006) | (0.0001) | (0.0001) | (0.0002) | (0.0004) |
| Export ratio | 0.0014 | 0.0046 | 0.0191** | 0.0017 | 0.0043 | 0.0009 | 0.0144 | 0.0113 | 0.0318 | 0.0014 | -0.0018 | 0.0083 | 0.123*** |
| | (0.0019) | (0.0043) | (0.0089) | (0.0015) | (0.0031) | (0.0116) | (0.0139) | (0.03) | (0.0449) | (0.0019) | (0.003) | (0.0053) | (0.0349) |
| ROA | 0.005 | -0.0052 | 0.0026 | 0.0017 | 0.0031 | 0.0051 | 0.0356 | -0.0358 | 0.121 | 0.0007 | 0.0044 | 0.0063 | 0.026 |
| | (0.0032) | (0.007) | (0.0123) | (0.0026) | (0.0057) | (0.0195) | (0.0285) | (0.0536) | (0.0745) | (0.0032) | (0.0042) | (0.0094) | (0.0484) |
| Leverage | 0.0026 | -0.0062 | -0.0012 | -0.0018 | 0.0045 | 0.0742** | -0.0106 | 0.0787 | -0.189* | -0.0019 | 0.0064 | 0.0017 | -0.118 |
| | (0.004) | (0.0069) | (0.0083) | (0.0031) | (0.0069) | (0.034) | (0.0453) | (0.0971) | (0.114) | (0.0038) | (0.0055) | (0.0115) | (0.0768) |
| Leverage_sq | -0.0029 | 0.001 | 0.0002 | 0.0008 | -0.0026 | -0.0624** | -0.0139 | -0.0702 | 0.168* | -0.0005 | -0.0066 | -0.0000 | 0.0792 |
| | (0.0037) | (0.0068) | (0.0091) | (0.003) | (0.0062) | (0.0291) | (0.0389) | (0.0847) | (0.0984) | (0.0036) | (0.0051) | (0.0109) | (0.0717) |
| Observations | 468,802 | 111,908 | 34,330 | 307,917 | 219,535 | 30,209 | 23,650 | 7,437 | 5,383 | 292,671 | 207,185 | 110,505 | 5,615 |
| R-squared | 0.69 | 0.6 | 0.6 | 0.45 | 0.6 | 0.75 | 0.79 | 0.84 | 0.84 | 0.62 | 0.64 | 0.69 | 0.78 |

*Note*: Firm-level fixed effect estimations. ROA is the operating profitability and employment is log transformed. ROA and leverage enter the equations with a one period lag. For age groups the baseline category contains firms younger than 3 years old. Regions are classified as: (1) West, (2) Tiger regions and (3) Others. Size is classified by the number of employees: (1) 0-9, (2) 10-49, (3) 50-99, (4) 100-249, (5) 250-499 and (6) >500. Technology levels are classified as: (1) low, (2) low to medium, (3) medium to high and (4) high, according to OECD classification. "_sq" denotes squared terms. The probit regressions also control for productivity distance to the frontier firm, being a listed firm, employment and leverage interaction, technology type and productivity distance to the frontier firm interaction, as well as year, year*sector, year*sub region fixed effects. Robust standard errors are in parenthesis. ***, ** and * correspond to statistical significance at 1%, 5% and 10% respectively.
*Source*: Own calculations (CBRT/OECD).

According to Turkstat's 2016 Labour Force Survey, 41% of the workers of non-agricultural firms employing less than 10 workers are employed outside the scope of labour regulations (without social security and tax registration), against 13% in firms employing between 10-19 workers and less than 10% in the others. According to this Survey's dataset, only 22% of firms employing less than 10 workers had any outstanding bank relations and bank credits in 2016. Many draw on trade credits (from suppliers and customers, which is their main source of external financing) and this practice has expanded over the past decade. Their total degree of leverage remains nonetheless well below other types of firms.

These firms have also very low labour productivity levels and their productivity gap vis-à-vis manufacturing sector averages has widened over the past decade, although gaps may be smaller in terms of total factor productivity (Taymaz, 2016[18]; Çağlar and Koyuncu, 2018[1]) (Figure 1.15). They have also expanded their machinery-equipment stock at a slower pace than other types of firms (Figure 1.16). A small proportion of them have any R&D activities and this share has not improved over time (Figure 1.17)

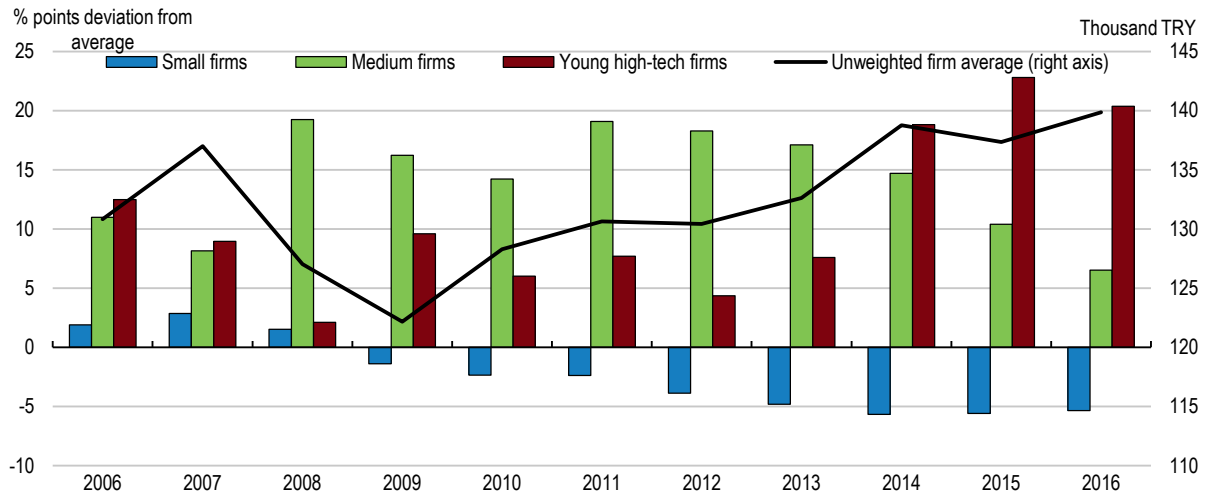
The empirical findings on the determinants of machinery and equipment investments of very small firms point to the following main factors:

- Sales growth (the accelerator mechanism) is the key driver of their physical investments.
- The two standard drivers of physical investment identified in the international and Turkish research literature (internal cash-flows and credit) do not seem to play any significant role in this type of firms (while their relevance is confirmed for firms in other categories).
- Among these very small firms the relatively larger ones invest more. This positive relation between firm size and investment is stronger in this group than in other firm categories.
- Firm-level average wages seem to affect negatively their investments, possibly reflecting their engagement in price competition. This is a clear difference from other firm types (where the impact of the average wage level on investment is insignificant – hinting at their transition to non-price competition).

Concerning the policy avenues available to improve the performance of this type of firms, international research suggests that well-designed basic management training programmes can help improve their management practices and their productivity (Hampel-Milagrosa and Reeg, 2016[20]; Cravo and Piza, 2016[21]), as also stressed by Turkey's Productivity Strategy and Action Plan 2015-18 (Ministry of Science Industry and Technology, 2015[22]). Simple and user friendly digital management tools are becoming available for them. Their concentration in Small Industrial Sites (around 500 such SISs throughout Turkey host more than 100 000 very small manufacturing businesses) may facilitate the implementation of technical support programmes. Turkey's SME Agency KOSGEB has traditionally directed its programmes to relatively larger manufacturing SMEs installed in Organised Industrial Zones (OIZs) but has recently started to develop programmes for very small firms, including in service businesses. One of these programmes targets their engineering and design capabilities.

**Figure 1.15. Labour productivity diverges across firm types**

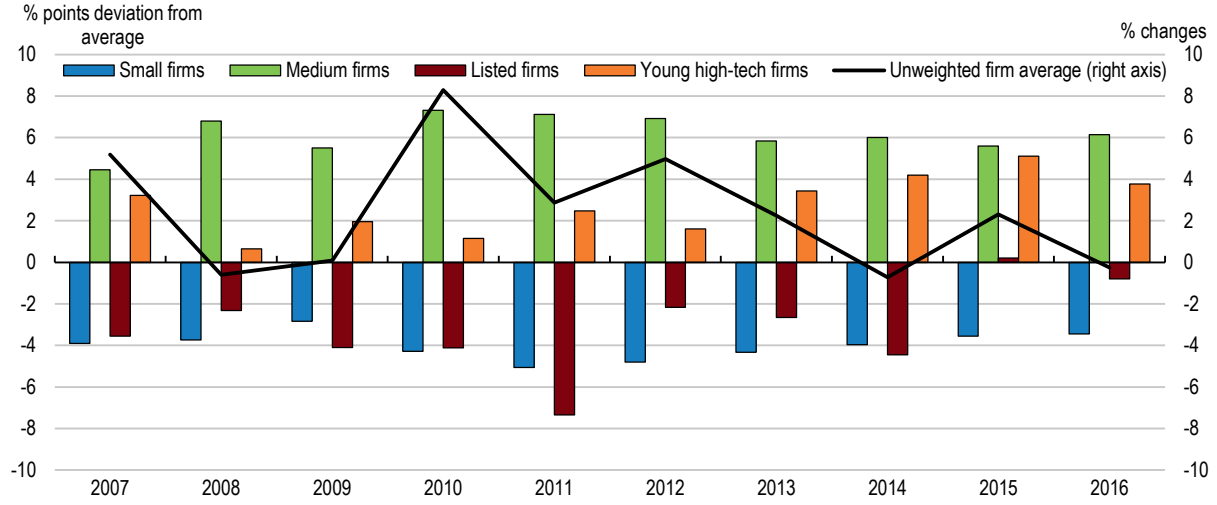
Manufacturing, real net sales per worker in 2006 prices




*Note*: Small firms (employing less than ten workers and which are more than five years old), medium-sized firms (employing from 50 to 249 workers), and young technology-intensive firms (less than four year-old firms in upper-middle and high technology sectors) real labour productivity are shown in percentage point deviation from the manufacturing sector average, after controlling for sectoral composition differences.
*Source*: OECD/CBRT dataset on the basis of Enterprise Information System (EIS).
StatLink https://doi.org/10.1787/888933799454

**Figure 1.16. Machinery and equipment investments grow at uneven paces**

Manufacturing, growth rate of machinery and equipment stock (real prices)




*Note*: Investment growth rates of small firms (employing less than ten workers and which are more than five years old); of medium-sized firms (employing from 50 to 249 workers); of firms listed on the stock exchange; and of young technology-intensive firms (less than four year old firms in upper-middle and high technology sectors) are shown in percentage point deviation from the manufacturing sector average, after controlling for sectoral composition differences.
*Source*: OECD/CBRT dataset on the basis of Enterprise Information System (EIS).
StatLink https://doi.org/10.1787/888933799473

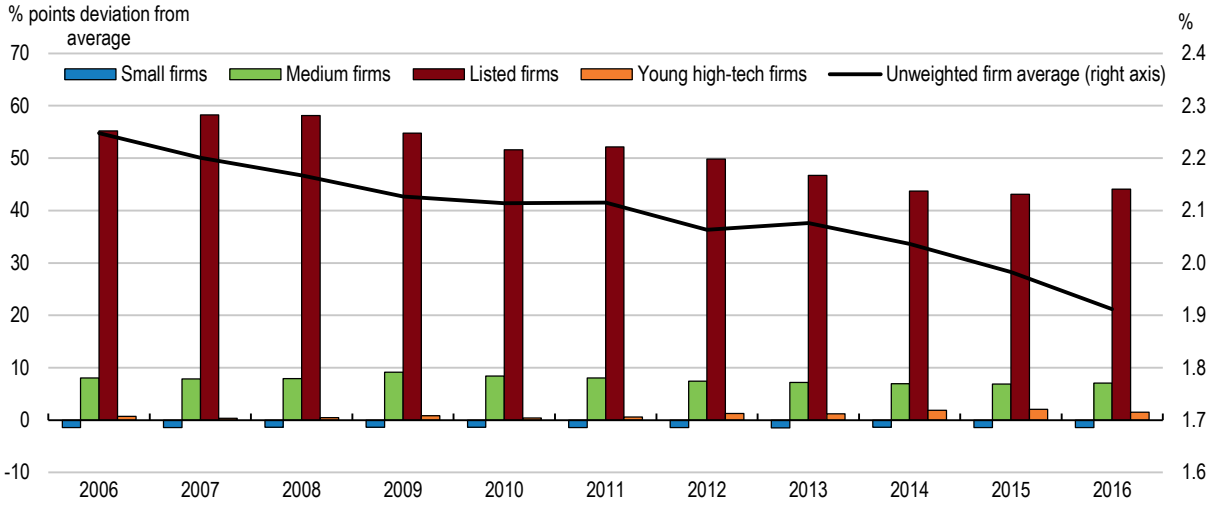
### *Medium-sized family firms*

Medium-sized family firms constitute a very different type of business. They have played an important role in Turkey's industrial development over the past decade. They grew in all regions, including in the so-called "Anatolian Tiger" catching-up regions. They are led by the successful first or second generation owners of the previously smaller businesses which have succeeded to build-up stronger technical, managerial and financial capacities. They employ higher-skilled personnel than small firms, pay them higher wages, and register a higher proportion of them with the social security system (health and pension benefits). Their production capacities are flexible and the delivery times of their products may be very short. Many started to integrate into regional and global value chains. The proportion of such firms operating in lower-middle and even higher-middle technology sectors has increased and part of them started R&D activities (Figure 1.17)

Their employment varies considerably, from tens to hundreds of workers per firm. Firms employing 50-250 workers are the most representative size category. They generally operate under close family governance, with family members in key managerial positions. They tend to offer limited external financial transparency, which may restrict their access to external equity capital and to professional labour markets and, as a result, could constrain their investment and organisational innovation capacity (Box 1.2).

**Figure 1.17. Probability of reporting R&D expenditures**

Manufacturing, share of firms reporting R&D expenditures in their income statement




*Note*: Share of small firms (employing less than ten workers and which are more than five years old); of medium-sized firms (employing from 50 to 249 workers); of firms listed on the stock exchange; and of young technology-intensive firms (less than four year old firms in upper-middle and high technology sectors) are shown in percentage point deviation from the manufacturing sector average, after controlling for sectoral composition differences.
*Source*: OECD/CBRT dataset on the basis of Enterprise Information System (EIS).
StatLink https://doi.org/10.1787/888933799492

**Box 1.2. A semi-formality trap in medium-sized family firms?**

Medium-sized family firms have traditionally relied on hands-on management by their owners. Their management information systems appear to be basic, and there is evidence that many underreport their effective employment, activity, wage and profitability levels. Very few publish audited financial accounts. The vast majority refrain from stock market listing but resort massively to bank loans to finance their development. Their communication with banks has traditionally been based on private bilateral rather than on published financial information. This established practice is now challenged by the new prudential rules in the banking sector which require reliance on formal audited accounts

A recent survey conducted by the Corporate Governance Association of Turkey among family firms (TKYD, 2017[23]), point to important challenges. Around 43% of the firms state that they need to strengthen their capital structures and 37% plan to accelerate the digital transformation of their businesses. The survey finds that only 27% of firms have put in place formal corporate governance arrangements so far, but 49% are in the process of doing so. A fundamental issue reported by Turkish family firms is the challenge of transmission to the next generations. The transition to the third generation is reported as a particularly testing stage. TKYD recognizes that reinforcing capital structures by upgrading family firms' corporate governance arrangements and transparency may increase costs in short-term, but emphasises that Turkish family firms should assume these costs as the expected gains are considerable.

The prevalence of insider management in these firms – that international research identifies as a deterrent to productivity growth (Bloom and Van Reenen, 2010[24]), when associated with limited financial information and transparency, may delay their transition to integrated management systems based on digital technologies.

The empirical findings on the determinants of machinery-and-equipment and R&D investment of medium-sized firms hint at a number of specificities (Table 1.5 and Table 1.6):

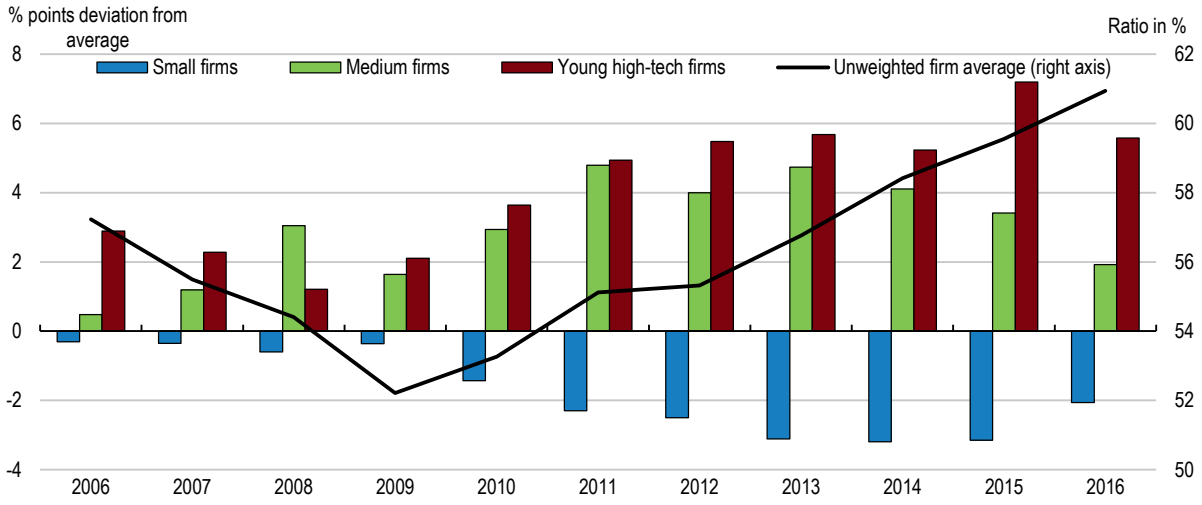
- Medium-sized manufacturing firms employing between 50-249 workers have steadily expanded their machinery-equipment investments over the past decade, faster than all other sizes of firms.
- Such firms in Anatolian Tiger towns have increased their machinery-and-equipment investments even faster.
- The strong growth of investments required first of all strong internal cash-flows. The relationship between internal cash-flows and investments has been particularly strong in the core category in this group – i.e. firms employing 100 to 250 workers.
- Internal cash-flow effects have been particularly strong in Anatolian Tiger towns. This invites two possible explanations: i) the external funding necessary to complete internal cash-flows may have been less abundant or more costly in these catching-up regions, and/or ii) Anatolian Tiger towns' family firms may

have kept and re-invested a higher proportion of their profits in the development of their businesses.

- A strong impact of internal cash-flows on R&D investments is also visible in Anatolian Tiger towns, but not in the Western regions. Firms in Western regions may have had better access to external resources for funding their R&D investments.
- The profit margins and the resulting cash flows declined in many medium-sized firms over the past decade, in particular among the lower-scale ones and in Anatolian Tiger towns. This has restricted their internal funding capacities for both physical and knowledge-based investments.
- Growing recourse to debt has been the medium-sized firms' response to the gap between internal resources and their growing physical and knowledge-based investment needs. A rapid build-up of debt resulted in the medium-sized firms of all regions (Figure 1.18).
- There is some early evidence that a non-linear relationship exists between debt and machinery-equipment and R&D investments. While access to debt is associated with higher rates of investment, this positive impact seems to diminish at higher levels of leverage. Beyond a threshold, excess leverage may constrain both physical and knowledge-based investment. There is some evidence that this constraint may be particularly strong for medium-sized firms.
- The investment and productivity gains that could be expected from medium-sized firms' access to external equity markets cannot be quantitatively estimated at this point, but is considerable.

**Figure 1.18. Medium-sized firms and high-tech start-ups are particularly leveraged**

Manufacturing, ratio of total liabilities to total assets




*Note*: Small firms (employing less than ten workers and which are more than five years old), medium-sized firms (employing from 50 to 249 workers), and young technology-intensive firms (less than four year-old firms in upper-middle and high technology sectors) ratios are shown in percentage point deviation from the manufacturing sector average, after controlling for sectoral composition differences.
*Source*: OECD/CBRT dataset on the basis of Enterprise Information System (EIS).
StatLink https://doi.org/10.1787/888933799511

Public policies can help medium-sized family firms surmount their excess debt constraints. Helping them become fully formal and financially transparent would be an important first step. Technical support to the adoption of modern management and financial information systems, and a favourable tax treatment of transition to fuller financial transparency (for instance through tax allowances for external audit costs) could play a positive role. A strategy for developing the most important elements of an "equity ecosystem" (see below), including via the active participation of domestic institutional investors in the equity capital market, may help many so-far closed medium-sized firms to open to capital markets and secure new long-term resources for their investments – as was also recommended in the previous OECD Economic Surveys (OECD, 2014[3]; OECD, 2016[4]).

### *Large, stock-market listed firms*

Large, professionally managed and usually stock-market listed firms constitute the formal pillar of the Turkish business sector. Around half of the machinery-and-equipment stock of the Turkish economy is in large firms employing more than 500 workers, and around a quarter in directly listed firms (a large part of the large-size non-listed firms belong nonetheless to listed conglomerates). They include big family holdings, some former state-owned firms which have been privatised through public offerings, and international firms operating in Turkey – listed in their country of origin. They achieve Turkish manufacturing's highest labour productivity and returns of investment, and, according to an earlier study (McKinsey Global Institute, 2003[25]), top layer corporations match the productivity and efficiency levels of their advanced OECD country counterparts. They have developed R&D and technological innovation capacities (Figure 1.17 above) and invest extensively in employee training. Subject to the financial reporting rules of the Turkish Capital Markets Board and of the Istanbul Stock Exchange (Borsa Istanbul) they are financially transparent according to global standards. About ten of them have issued securities in the international market and are rated by international rating agencies.

Multi-generation family holdings form the core of the formal business sector. They have developed special corporate governance arrangements which, despite family prevalence on boards, offer a large space to professional management. A recent review suggests that Turkey's multi-generation family holdings have nonetheless room for further tightening their management information and control systems, including through integrated digital applications (Bigan, Decan and Korkmaz, 2017[26]). Their access to domestic and international capital markets augments their investment resources and capacities. They increased their external debts under the highly benign international funding conditions of the post-global crisis period (Box 1.3).

**Box 1.3. Firms listed in domestic and international capital markets**

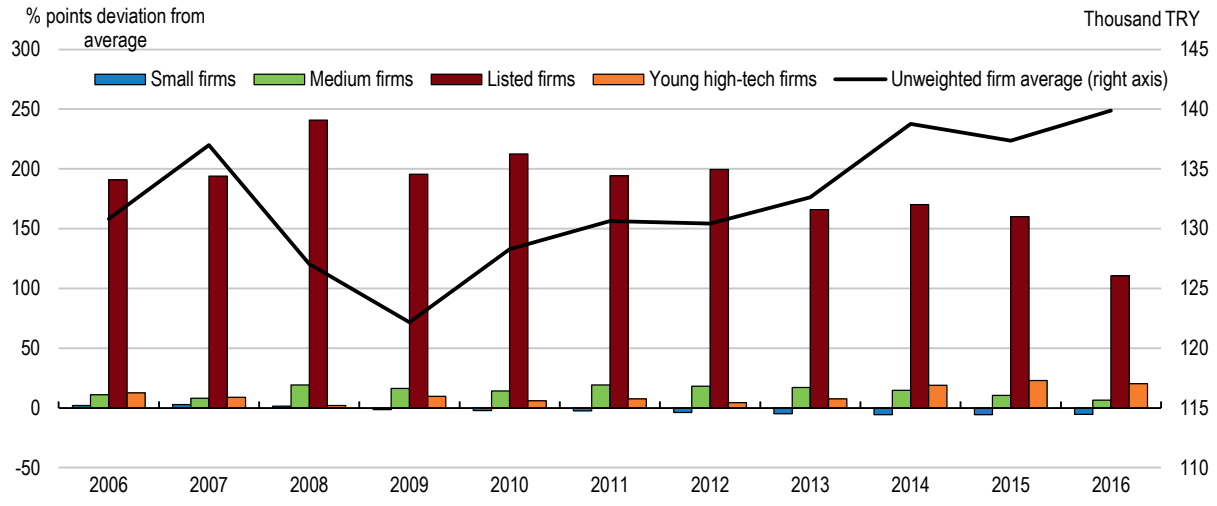
The transparency, credibility and "blue-chip" status of stock market-listed firms in the domestic and international banking and capital markets reduce their capital costs and allow them to tap more investment resources. This has permitted them to build up pools of funding resources which benefit all their affiliates, and, when needed, their suppliers and customers via trade credits. This capacity has contributed to the remarkable expansion of the holding company form in the Turkish economy.

As they tend to fully comply with formal laws and rules, these firms face higher regulatory, social contribution and tax costs than the rest of Turkish manufacturing, which may more than offset their lower capital costs. This may negatively affect their cost competitiveness, in particular in labour intensive sectors (OECD, 2016[4]).

The financing edge of these firms in the domestic market does not necessarily extend to international markets. The proportion of their floated shares and the volume of their public offerings (IPOs and SPOs) remain generally small by international standards. It was recently suggested that not more than ten Turkish holding groups have sufficiently large security emission projects to engage mainstream long-term institutional investors - rather than more risk-prone and volatile international hedge funds (Ünlü, 2017[27]). These firms are also constrained by Turkey's sovereign rating ceilings and bear the corresponding risk premia in their corporate bond yields and stock price/earnings ratios. In March 2018, the corporate bonds of Turkish firms such as Koç Holding, Anadolu Efes, Coca Cola Içecek and Oyak were downgraded to below investment grade by the main international firm-level rating agency as a result of an additional one-notch downgrade of Turkey's sovereign rating.

**Figure 1.19. Listed firms achieve higher labour productivity**

Manufacturing, real net sales per worker in 2006 prices




*Note*: Small firms (employing less than ten workers and which are more than five years old), medium-sized firms (employing from 50 to 249 workers), firms listed on the stock exchange, and young technology-intensive firms (less than four year-old firms in upper-middle and high technology sectors) real labour productivity are shown in percentage point deviation from the manufacturing sector average, after controlling for sectoral composition differences.
*Source*: OECD/CBRT dataset on the basis of Enterprise Information System (EIS).
StatLink https://doi.org/10.1787/888933799530

Foreign firms having invested in Turkey constitute the internationalised fringe of the formal sector, with additional financing capacities from their mother companies. This shields their funding capacities from domestic banking and capital market conditions.

However, as their key capital formation decisions are taken at the level of their global headquarters, the return/risk assessment of their projects remain exposed to global perceptions on the risk factors in local business conditions.

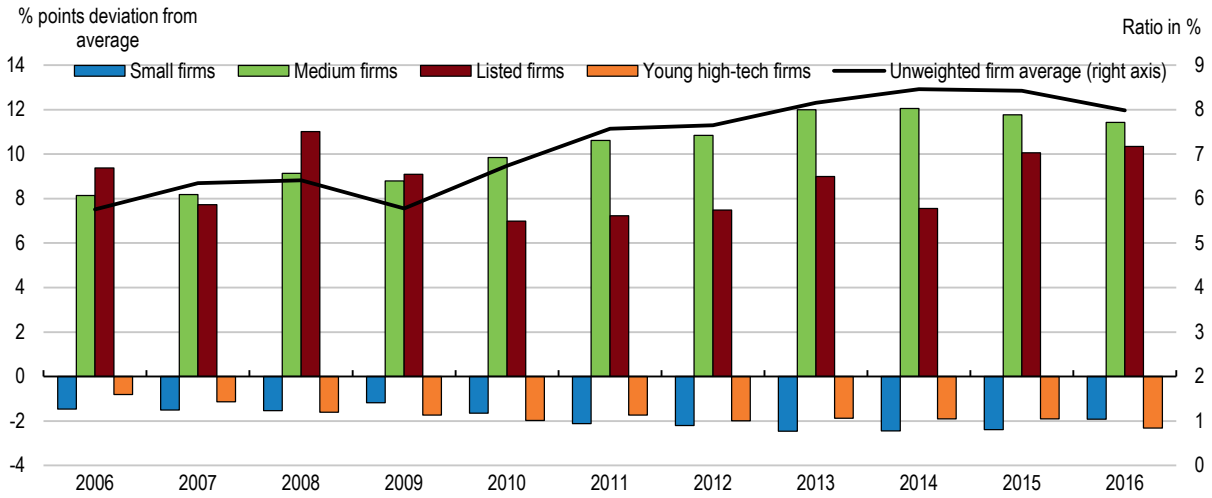
Figure 1.16, Figure 1.17 and Figure 1.19 highlighted the trends in the physical and knowledge-based investments of listed firms and their edge in labour productivity. Tables 4 and 5 present some econometric results on possible influences on very large firms' machinery-equipment and knowledge-based (R&D) investments:

- Listed firms invest more in machinery and equipment than non-listed firms – all other firm characteristics equal.
- They also invest more in R&D, although this is confined to lower-middle technology sectors.
- Large firms and in particular listed firms have significantly higher labour productivity and return on asset levels than other types of firms, even if this gap was reduced over the past decade (Figure 1.19).
- Still, there are signs that these firms may not be realising their full investment potential in machinery-equipment and in knowledge-based assets, due to the weight of the bank debt that they have accumulated (Figure 1.20). Although the sample size for these firms is smaller than for other firms, there is some early evidence that very high bank leverage is harmful for the growth of both their physical and R&D investment.
- Firms in high-technology sectors may be escaping this debt constrain. Their physical investments continue to grow even under high-debt. These firms may have achieved higher credibility and creditworthiness with financial investors and creditors than counterparts in less sophisticated activities - or may possess more valuable collateral.

As listed firms are more compliant with local laws and pay significantly higher corporate taxes than other firms, their physical and knowledge-based investments are in principle more sensitive to tax incentives. Well-designed incentives may stimulate additional knowledge-based capital building in these high-performance firms, with positive spill-over effects for the rest of the economy (Andrews, Criscuolo and Gal, 2015[28]). R&D incentives in Turkey are very generous, including a 250% corporate income tax deduction, wage subsidies, personal income tax, social security premium and VAT exemptions, and higher amortization rates for newly acquired assets. However, Turkey grants comparatively less R&D tax incentives than other OECD countries.

**Figure 1.20. Bank leverage of medium-sized and listed firms is high**

Manufacturing, ratio of bank liabilities to total assets




*Note*: Small firms (employing less than ten workers and which are more than five years old), medium-sized firms (employing from 50 to 249 workers), firms listed on the stock exchange, and young technology-intensive firms (less than four year-old firms in upper-middle and high technology sectors) ratios are shown in percentage point deviation from the manufacturing sector average, after controlling for sectoral composition differences.
*Source*: OECD/CBRT dataset on the basis of Enterprise Information System (EIS).
StatLink https://doi.org/10.1787/888933799549

### *Skilled start-ups*

Skilled-start-ups form a still small but promising layer of the business sector. They are led by skilled managers and workers and engage in sophisticated manufacturing and service activities. Part of them have large firms as shareholders, and many draw on the wide set of supports available for start-ups (Box 1.4). They tend to develop their machinery-and-equipment investments very vigorously - while their reporting limited R&D expenditures to the tax administration may be due to the tax exemptions they anyway obtain in the techno parks and technology development zones (Figure 1.16, Figure 1.17).

**Box 1.4. Turkey's start-up eco-system**

The Turkish government, together with large firms and universities, has developed several schemes to support high-technology start-ups over the past decade. These schemes have helped foster a relatively large cohort of high-technology start-ups:

- The Scientific and Technological Research Council of Turkey (TUBITAK)'s Techno-Entrepreneurship Grant Programme offers $33 000 per firm in seed capital to eligible high-tech start-ups.
- TUBITAK offered grants subsidising up to 75% of the R&D costs of technology start-ups.

- A Treasury programme provides direct subsidies to entrepreneurs with innovative technological ideas. In 2015, around 70% of the applicants received support.
- The SME Agency KOSGEB offers conditional start-up grants, subject to participation in start-up training courses (or to attending KOSGEB-approved university lectures on entrepreneurship). Between 2010 and 2017, more than 900 000 people participated in these programmes and 42 000 entrepreneurs launched start-ups under this programme.
- Techno parks attached to major universities offer substantial tax advantages under a special law. Member firms are granted corporate income tax exemptions and their staff personal income tax exemptions. The number of firms installed in techno parks had approached 5000 in 2018 and they were employing around 45 000 eligible workers.
- "Endeavor" is an international non-profit contributor to the start-up ecosystem in Turkey. Young firms selected in the entire country gain access to a network of international and national business leaders volunteering to help and coach them in their take-off years.
- "Garaj" is a domestic non-profit organisation arranging networking events and training courses for start-ups. Despite being a young organisation it has gained considerable visibility among start-ups. It also sponsors crowd-funding initiatives.
- Investors in start-ups obtain substantial tax advantages. Domestic and international venture- and angel-capital investors registered and licenced by the Treasury can deduct 75-100% of their investments in start-up funds from their personal income taxes. More than 450 investors have registered so far and invested approximately TRY 12 million. A Turkey "Fund of Funds" scheme was also created by the Treasury in 2013, to take minority participations (of less than 30%) in venture funds. These included a 25% stake in the EUR 260 million Turkey Growth and Innovation Fund (TGIF) which, by May 2018, invested EUR 52 million in six start-ups. An additional Treasury facility of TRY 2 billion was announced in December 2017, to directly invest in start-ups. The Treasury projects that the amount of Treasury funds invested in start-ups will not exceed the total amount of private venture and angel capital committed to the same start-ups and will in all instances not exceed TRY 2 billion by 2023 (around 1% of projected 2018 GDP in real terms).

The results of these substantial support schemes in terms of technological and commercial success rates have not been systematically assessed to date. The firm-level Enterprise Information System (EIS) of the Ministry of Science, Industry and Technology can be further developed and used to this effect, and could help concentrate public supports on the most effective schemes.

The population of young firms (less than four years old) in upper-middle and high technology sectors has regularly augmented in the past five years. Compared to their international counterparts, these firms may be handicapped by their less sophisticated local (upward and downward) linkages, but the highest potential ones seek to compensate this handicap by fostering links with global academic and technological partners (OECD, 2013[29]). The need to liaise with official and international partners requires them to be much more transparent operationally and financially than other small businesses.

The sophisticated background of their owners and personnel also entice them to operate formally and legally. Many of them adopt modern organisation forms and management information systems. The previous OECD Survey documented that institutional and governance weaknesses at national level might have more discouraging impacts on this type of firms than on the others (OECD, 2016[4]). Recent information points to a similar effect on the international venture capital investors that envisage to invest in them (Clark, 2017[30]).

Some available evidence on the investment drivers and constraints of these firms includes:

- The youngest firms achieve the strongest investment growth rates.
- As they mature, these firms build up considerable amounts of debt (Figure 1.18), and, beyond age 3-4, they become more dependent on internal cash-flows to continue to finance investments.
- For small firms and firms in high-technology activities, size does not seem to be a constraint on the capacity to undertake R&D expenditures. The relation between size and engagement in R&D activities is even negative in most parts of the business sector.
- The cash-poor sophisticated start-ups may be facing stronger financial constraints in Anatolian Tiger towns. There is a positive association between internal cash flows and the probability of initiating R&D projects in Anatolian Tiger towns, which is inverted in Western regions. Western high-technology firms may be able to engage in longer-term innovation projects, and may be able to fund them with external resources on a longer period.

OECD countries' general experience with government support schemes for start-ups suggest that a good balance between "tax" and "equity" support measures is helpful (Calvino, Criscuolo and Menon, 2016[31]). Innovative support instruments such as "technological prizes" can also help direct public incentives to targeted technological areas, while maintaining competition between firms and supporting many of them at once (Brynjolfsson and McAfee, 2015[32]). Still, additional private resources (equity and bridge finance) become necessary as they grow.

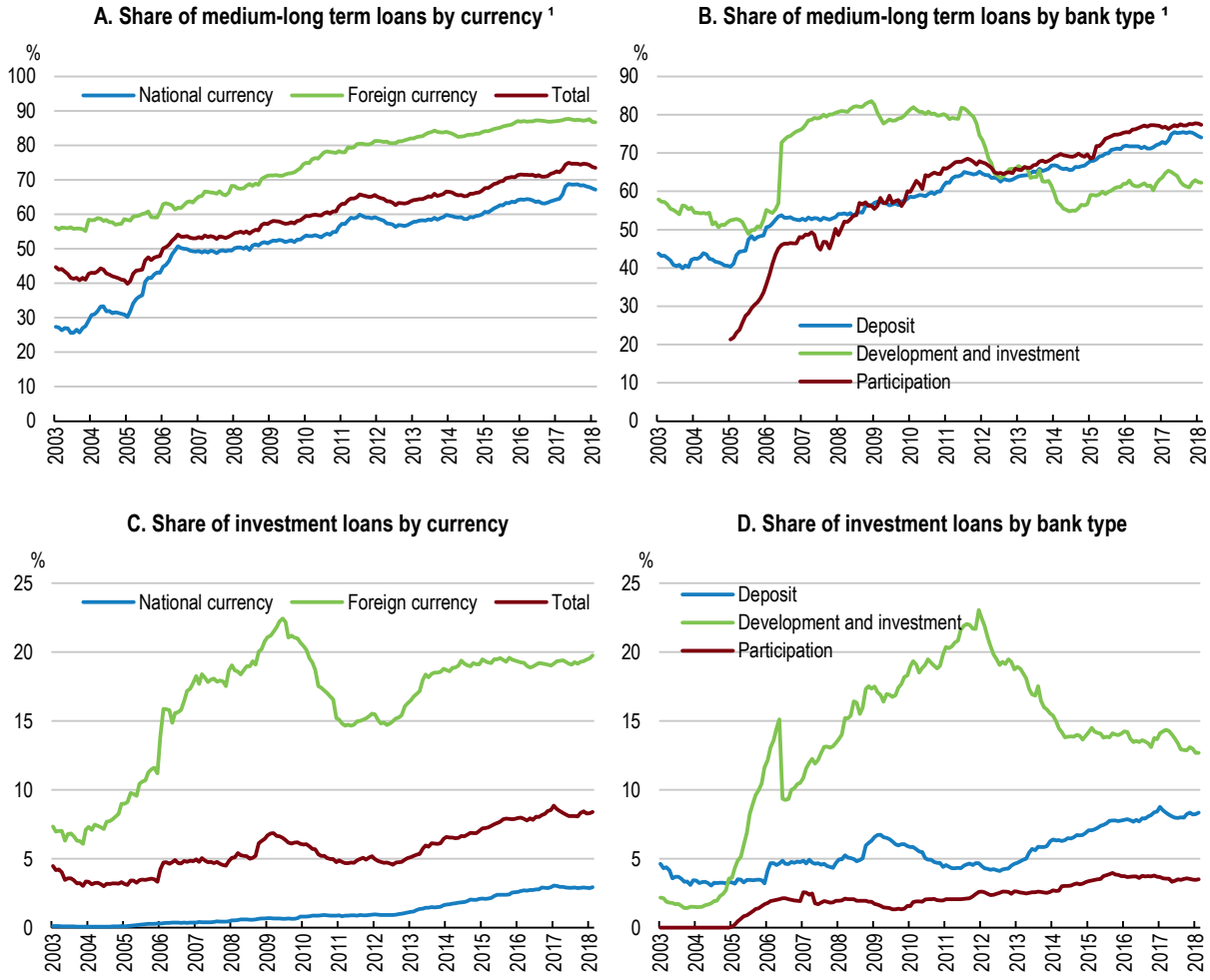
## Diversifying and strengthening the financing of investment

In Turkey, own capital and retained earnings have traditionally been the main sources of funding for investment. Going forward, financial deepening will help sustain and improve business investment. The financial system has been growing significantly faster than GDP since 2008, but 90% of the system's total assets are held by banks. Other financial intermediaries such as insurance and pension funds are relatively underdeveloped and associated capital market funding benefits only few companies. Access to new equity capital is even more restricted. Stock market capitalisation is low and private equity still scarce.

The extension of the treasury-backed credit guarantee scheme in early 2017 (Box 1.5) has reinforced bank dominance and led to an additional increase in bank loans over 2017 - albeit mostly in the form of medium-term loans (average maturity of 40 months) to support working capital. Only 2.8% of the loans provided under the guarantee scheme in 2017 were investment loans (KGF, 2018[33]) although other loans, not classified as investment loans, may also have been used for to finance investment projects.

Congruently, banks' NPL ratios have decreased and the overall quality of bank assets improved. Current capital adequacy ratios of Turkish banks are in line with a smooth transition to Basel III requirements. Nonetheless, available capital buffers also reflect the sensitivity of capital ratios to exchange rate depreciation as the share of foreign currency assets exceeds the share of foreign currency debt. On the back of healthy and well-regulated banks, loan maturity (Figure 1.21, Panels A and B) and the share of investment loans (Panel C) have increased over the past decade, mainly through loans provided by deposit banks (Panel D). In addition, internationalised firms can turn directly towards banks residing abroad. While interest rate conditions are more favourable for these dollar- and euro-denominated loans, the recent pressure on the exchange rate has led to a sharp decline in cross-border loans.

**Figure 1.21. Bank loans have supported investment**




1. Medium-long term loans are loans with a maturity of more than one year.
*Source*: Banking Regulation and Supervision Agency (BDDK).
StatLink https://doi.org/10.1787/888933799568

The loan-share of private domestic banks has fallen from more than 70% in 2005 to around 35% in early 2018. The share of foreign banks has experienced the strongest increase between 2005 and 2008, partly driven by a series of local bank acquisitions by foreign banks, when it more than quadrupled from 5% to above 20%. Apart one major

acquisition in 2015 bringing the share to around 30%, foreign banks' share in total loans has stagnated thereafter and even declined more recently. Since 2013, state-owned banks have registered considerably higher loan growth rates than private banks. Their share in total loans has risen to 38% early 2018 against an average of 28% between 2010 and 2013.

Participation banks, a synonym for non-interest-earning Islamic banks, have experienced particularly strong growth from 2005 to 2013 but their share in total banking assets and loans has diminished over the past five years. The authorities currently seek to help these banks to contribute more actively to the funding of the business sector in general and business investment in particular. A strategy document is being prepared to provide this sector with a more complete regulatory framework which could spur access to finance of firms that are out of reach of traditional bank lending activities and may search for more risk sharing forms of external finance.

**Box 1.5. The treasury-backed credit guarantee fund (KGF)**

The credit guarantee fund has been created in 1993 to provide access to bank financing for SMEs with insufficient collateral. Historically, the scope of the scheme was rather modest with a volume below 0.5% of GDP. In a response to the loss of the Turkish government's investment grade sovereign borrower status, which has affected banks' capital adequacy and lending capacity in 2016, and risks of credit rationing, the government decided to extend the scheme substantially as of March 2017. Maximum guarantees for all types of enterprises were raised, the guarantee commission fee substantially lowered and the limit of the fund increased from TL 20 billion to TL 250 billion (8% of 2017 GDP). While the extension was meant to be temporary, there is a general understanding that redemptions will be allowed to be reallocated.

The credit guarantee scheme helps overcome the lack of collateral and also gives incentives for firms to go fully formal. Indeed, to be eligible, a firm must pay taxes and social security contributions and is not permitted to have any tax and social security contribution arrears. Additionally, the firm must not be in the process of bankruptcy or termination.

Following the extension of the scheme, the number of SMEs requesting a KGF guarantee soared, from 30 000 in 2016 to more than 320 000 in 2017, with the total approved loan amount rising from less than TL 10 billion to around TL 265 billion (around 90% of which are guaranteed by the KGF) thereby giving 110 000 new SMEs access to bank-financing. Investment loans accounted for only 2.8% of guaranteed loans in 2017, well below the average share in total loans (Figure 1.15, Panel C), but other loans, not classified as investment loans, may have also been used to finance investment projects. As a result, the relaxation of the financial constraints of both borrowing firms and banks after the implementation of this measure appears to have facilitated the recovery of business investment from the second half of 2017. In addition, following a decision in February 2018, a third of the available TL 55 billion of unused and already returned guarantees shall be reserved for capital investment loans. In May 2018, TL 35 billion of guarantees, mainly from redemptions, were re-introduced, TL 30 billion of which will be

reserved for working capital loans and the rest for exporters.

Market participants estimate that the KGF extension, as a positive credit supply shock, has added between 1 and 1½ percentage points to 2017 real GDP growth in Turkey and improved bank profitability via lower provisioning (IMF, 2018[2]; Morgan Stanley, 2017[34]). The scheme guarantees loans so long as the bank's NPL ratio of KGF-guaranteed loans does not exceed 7%, which caps the contingent liabilities of the Treasury. By early 2018, the banking sector's NPL ratio had declined below 3%. It needs to be seen whether the maturation of KGF-backed loans challenges this resilience.

Turkey's credit guarantee system is currently the OECD's largest as a share of GDP and it is advisable to undertake a careful analysis of its costs and benefits. Certain OECD countries have put in place effective evaluation systems in this area, including rigorous measurements of counterfactuals. Turkey can draw on this experience, including with a view to normalise the total size of its credit guarantee system along OECD good practices. A pre-announced schedule would facilitate its implementation (OECD, 2017[35]).

Recent bank lending surveys suggest that credit demand has been fuelled by the need for working capital and debt restructuring, while the demand for loans financing capital expenditures in fixed assets has declined further. Credit instruments remain primarily confined to short and medium-term loans that are not suitable for the financing of long-term fixed investments. The main reasons behind this maturity mismatch lie in high and uncertain inflation prospects, high and rising loan-to-deposit ratios and a lack of transparency among firms leading to information asymmetries and high monitoring risks. Risks are lower for firms subject to compulsory external auditing with IFRS standards, that is, firms with more than 200 employees as well as listed firms.

The government has introduced a number of targeted investment credits via its Small and Medium Sized Enterprises Agency (KOSGEB) to help overcome bottlenecks in access to finance. Banks sign agreements with KOSGEB, which takes on part of the interest payments for the respective SME loans. Between 2003 and 2017 more than 500 000 SMEs have benefitted from KOSGEB investment credits, which has created a volume of TRY 20 billion of loans. KOSGEB offered a new wave of interest-free credits and allocated a budget for around 460 000 SMEs towards the end of 2016 which helped to lean against the adverse economic effects of the failed coup attempt in 2016. The European Commission Programme for the Competitiveness of Enterprises and SMEs (COSME) will also provide loan guarantees to over 37 000 Turkish small businesses up to TRY 750 million (around EUR 150 million) – in addition to the treasury-backed credit guarantee scheme described in Box 1.5.

The authorities have also explored other avenues to improve the business sector's access to finance and to make better use of existing assets. First, absorbing at least part of the country's massive "under-the-pillow" gold savings in the mainstream financial system would buttress financial assets and help provide collateral. Since 2011, the central bank has allowed banks to hold an increasing amount of required reserves in the form of gold. As of October 2016, the central bank also started to accept scrap gold collected by banks under the Reserve Options Mechanism (ROM) facility to incorporate "under-the-pillow" gold into the financial system. Additionally, the Treasury has recently issued gold-backed debt securities. Second, the recent creation of a sovereign wealth fund not only aims at

financing strategic infrastructure investments but also at collateralising the country's strategic assets and, directly or indirectly, easing domestic firms' access to funding notably from abroad (Box 1.6).

**Box 1.6. The sovereign wealth fund**

The "Turkey Wealth Fund" (TWF), was established in late 2016 with the aim to strengthen the development of the economy. It is not yet fully operational but its declared objective is to develop and increase the value of the country's strategic assets and to provide resources for strategic investments. The fund will focus on fostering capital market deepening, attracting foreign funds and providing financing for large-scale strategic investments.

To this end, the TWF is expected to engage in two types of activities. First, backed by the collateral on its balance sheet (which includes state-owned enterprises' equity shares and government real estate, which reportedly raised TWF's asset value at TRY 250 billion in 2017 – or 8% of GDP), the TWF will engage in long-term borrowing from international capital markets with the purpose of lending to domestic firms at lower costs. Its articles of association also permit it to participate in domestic firms' direct borrowing from abroad by providing collateral and guarantees.

Its founding law exempts TWF and its affiliated funds from a number of laws, notably from the Law on the Protection of Competition. This may reduce competition in the markets where TWF intervenes.

In the future development of the Fund Turkey should build on OECD's "Guidance on Sovereign Wealth Funds" (OECD, 2008[36]). This guidance contains principles and safeguards to help countries developing such funds, as well as those receiving their investments, to facilitate their operation in a transparent, open and commercially-oriented environment.

Non-bank avenues of financial intermediation remain nonetheless underdeveloped. Institutional investors are smaller than in other catching-up countries and pension funds have only 12% of their portfolio invested in domestic equities - a lower share than in other catching-up OECD countries (OECD, 2017[37]). As a result, stock market capitalisation as a share of GDP is very low in international comparison. Access to outside equity capital through the market is mostly confined to large companies listed at the Istanbul Stock Exchange (around 400 firms, including financial companies), which operates a rather efficient trading system as reflected in high stock market turnover ratios. Similarly, the domestic private debt securities markets are underdeveloped (so far, around 700 firms, mainly in the financial sector, have issued commercial paper and corporate bonds).

The deepening of both equity and debt markets has become crucial for widening financing sources for long-term investment projects. The OECD has recently emphasised that this requires, more than a few "silver bullet" measures, the development of a multi-dimensional eco-system with a range of investment instruments, issuers, investors, expert professionals, exchange platforms and tax rules and trading regulations (Box 1.7). The Turkish authorities have already taken an important tax measure in this direction, by

eliminating the debt-equity bias in corporate taxation in 2015 via full tax allowances for equity remuneration costs (Spengel et al., 2016[38]).

Private equity investment, including venture, growth and angel capital participation by domestic and international investors in Turkish business enterprises is another avenue of non-debt and non-bank financing. This is less demanding than the issuance of market securities in terms of an ecosystem, but requires highly sophisticated investors, who are rare. According to one source, Turkey became, together with Poland, one of the two most dynamic countries in venture and angel capital investing in Europe in 2017 - even though the total volume of investments is still very low (Start-up Watch, 2018). Venture capital placements in Turkey grew in the aftermath of the global financial crisis (OECD, 2018[39]). Venture capital and business angel investments may be compatible with non-interest earning participation investments (Islamic finance) (OECD, 2014[3]). The ongoing draft law on participation finance will possibly include provisions in this area.

**Box 1.7. Building up an ecosystem for equity investing in small firms**

Public equity markets for small companies need to be supported by a healthy ecosystem. The latter is currently undersized in Turkey and requires more fully engaged investment banks, SME-specialised banks, research analysts, brokers, market makers, and other third-party advisors focused on SMEs (Figure 19). Legal and financial advisors, accountants and other professionals providing services targeted to SMEs benefit issuing companies and investors by enhancing transparency and confidence. Such ecosystems need to be developed at both local and national levels.

The ecosystems for SMEs are generally not wide-ranging enough in other OECD countries either, impeding the functioning and deepening of equity markets and reducing companies' willingness to list altogether (Nassr and Wehinger, 2016[40]). On the basis of related OECD research and other countries' experiences, the following elements deserve particular attention in the Turkish context:

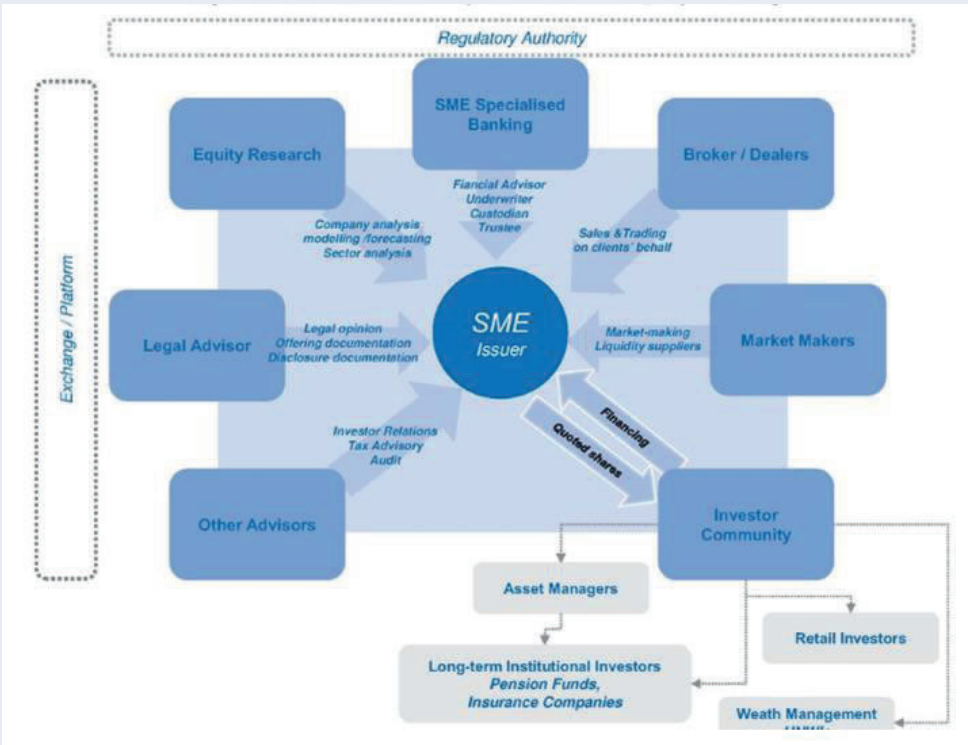
- **The absence of equity research by financial analysts on small and mid-sized firms reduces their visibility and attractiveness among investors.** International research underlines the benefits of attracting foreign analysts, notably by promoting common accounting practices (Bae, Tan and Welker, 2008[41]). Equity research assists investors in making informed investment choices, providing an evaluation of the attractiveness of an individual stock and of the expected operating performance of the underlying company. It is of particular importance in the case of small high-growth firms where information is scarce and harder to assess.

- **Equity research coverage of small and mid-sized equities is hampered by the inherent characteristics of small firms**. The small size of initial public offerings (IPOs) and secondary trades renders equity research for small companies economically challenging. The so-called "transparency barrier" resulting from the reluctance to share sensitive information by even the most successful and best managed SMEs in order to protect their

strategic position is another impediment. A large part of professional investors would reportedly not engage in a trade on either primary or secondary markets without relevant research being available.

- **Tax factors play also an important role in institutional and retail investors' portfolio allocations to small companies.** Investment-driven tax reliefs and positive incentives may induce long-term investment into SMEs. Tax relief is the most commonly cited incentive by market participants, and examples of such practices have proven to accelerate the development of SMEs equity markets. In the United Kingdom for example, tax-advantaged venture capital schemes fuelled investments in small growing businesses. The French Plan Epargne Actions (EA-PME) scheme played a similar role. The latest OECD *Economic Survey of Italy* advocated the energetic use of tax incentives to promote equity investments in small firms (OECD, 2017[42]).

**Figure 1.22. A valuable ecosystem for SME equity offerings**




*Source*: Nassr and Wehinger, 2016.

## A three-pronged structural upgrading is in order to strengthen investment

A three-pronged structural upgrading process in the business sector would help to overcome some of the main obstacles to efficient capital formation, to achieve better balanced development of physical and knowledge-based investments, and to ease the shift of capital formation toward the more productive and highest potential areas of the

economy. Turkey is in a position to achieve more rapid progress in three interrelated areas:

Much of the economy's resources remain in low-productivity informal and semi-formal activities. Policies can further address this challenge by: i) directly targeting better knowledge-building and productivity gains within these activities (training and technical support in small industrial sites (KSSs)), and ii) permit permitting the higher productivity and higher potential firms of all sizes to invest more and employ a higher share of workers via regulatory reforms reducing their burdens.

The ongoing digital transitions in the business sector, financial firms and public administration have the potential to deliver substantial efficiency gains i) within business firms (operational, managerial and financial information systems), ii) in transactions between firms and banks and capital markets, and iii) in interactions between firms and tax, customs and other regulatory authorities. The efficiency of the ever-growing business incentives can also be improved via digital monitoring of beneficiaries' behaviour and outcomes.

Progress on these fronts requires long-term knowledge-based investments and calls for a reinforcement of the equity capital basis of firms. While access of small informal firms to bank credit is not yet secured, the analysis in this chapter suggests that under high debt leverage now attained in many high-growth firms, and given the immaterial character of many of their investments, firm balance sheets must be strengthened with additional equity capital. Raising additional equity from public markets and private equity investors is compelling.

There are important synergies between these three areas: i) formal and more professionally managed businesses can produce more operational, managerial and financial information, reaping the related productivity gains; ii) progress with digitalisation facilitates internal and external (operational, managerial and financial) transparency, easing communication with financial market partners, regulators and tax administrators; iii) internal and external transparency reduce information asymmetries and facilitate additional equity financing from owner families, public securities markets and private investors.

The continuing integration of Turkish firms in GVCs, in practice often with EU business partners, holds additional promises of accelerating managerial modernisation and digitalisation, transparency, and equity absorption capacity. The updating and extension of the Customs Union agreement between the EU and Turkey along the most advanced customs union best practices would support this three-pronged process.

Several recent policy initiatives seek to upgrade the investment financing environment. Shortcomings in this environment have become more binding as a growing share of firms piled on debt and reached credit limits. New government initiatives include the massive extension of credit guarantees and several streams of low-interest loan and grant schemes for SMEs and start-ups. Government-owned banks' lending activities were also expanded, including in the first two quarters of 2018, and the newly created Sovereign Wealth Fund will purportedly support long-term and large-size investment projects and improve domestic firms' access to finance (Box 1.6).

These initiatives ought to be geared towards supporting the mainstream competitive market-based financing channels of the economy. Given their very rapid build-up there may be a risk for their turning into alternatives rather than complements to these mainstream financing channels. This risk invites well-calibrated policies to avoid

competitive distortions and crowding-out. Robustly regulated private financial intermediaries competing on a level-playing ground should be encouraged to extend long-term funds (in the form of equity, credits and other risk-sharing instruments) to formal firms with strong corporate governance and financial transparency standards. Turkey's new business finance measures could be actively used in this direction.

A stable and robust macroeconomic and financial framework may deliver sharper reductions in capital costs and stimulate more vigorous investments, capital reallocation and structural upgrading in the composition of investments than direct subsidies through government-led concessional financing. The OECD policy recommendations based on this chapter's analysis are summarised in Box 1.8 below.

**Box 1.8. Policy recommendations**

**Key recommendations**

- To reduce the funding costs of the economy improve the international credibility of governance institutions, fiscal transparency and price stability.
- Carry out a strategic review to identify and address the most binding constraints to the development of the currently weak ecosystem for equity financing of investment.
- Encourage family firms through technical support and awareness campaigns to develop standard corporate governance, professional management and financial transparency.
- Evaluate the uptake of the various recent social security contribution cuts granted and make permanent those which have proven most supportive of formalisation, financing this through better tax enforcement.
- Enforce the compulsory auditing rules of the new Company Law. Reduce audit costs - while maintaining audit quality standards- via tax incentives in the early years of audited financial reporting.
- Streamline the various R&D incentives schemes on the basis of cost-benefit analyses, and build on international best practices to improve take-up and efficiency of tax subsidies and grants.
- Streamline and stabilise business incentives. Report them according to state aid law, subject them to competition review, and monitor their impact on beneficiary firms' behaviour using the new Enterprise Information System (EIS).
- Undertake a cost-benefit analysis of the credit guarantee system and normalise its size, tighten the macroprudential rules and contain the quasi-fiscal activities of public financial institutions.

**Other recommendations**

- Promote standard accounting and financial bookkeeping in firms of all sizes. Support this by promoting the diffusion of low cost and user-friendly digital management applications.
- Improve the quality and coverage of firm-level credit information and credit rating systems.

- Encourage and publicise good quality private equity analyses.
- Monitor and evaluate the efficiency of the many incentives for high-technology start-ups. Monitor firm-level outcomes using the Enterprise Information System (EIS).

# Annex 1.A. Modelling investment

*The steady-state*

The capital stock accumulates as a result of net investments ($\dot{K}$) originating from a fraction of output that is saved ($sY$) minus the depreciation of existing capital ($\delta K$):

$$\dot{K} = sY - \delta K \tag{1}$$

Assuming a standard Cobb-Douglas production function $Y=K^{\alpha}(AL)^{1-\alpha}$ with L the labour force (growing with *l*) and A a measure of labour efficiency (growing with *g*), the capital output ratio can be shown to converge to a steady-state level given by:

$$\frac{K}{Y} = \frac{s}{g + l + \delta} \tag{2}$$

In the steady-state, output and capital grow at the same rate *g+l*. Changes to the saving rate only affect the levels of the capital stock and output but not their long-term growth rates.

*The accelerator principle*

Assuming a fixed capital-output ratio σ, a firm's "desired" capital stock is proportional to output ($K^* = \sigma Y$) which means that the growth of capital equals the growth rate of output. To reflect the notion of expected output change that determines the desired capital stock and to avoid endogeneity, forecasts from the OECD's Economic Outlook are used to represent simultaneous growth rates of real GDP.

*Tobin's Q*

To the extent that the market value of a firm reflects the discounted value of future earnings, a firm's manager has an incentive to increase the capital stock so long as the firm's market value exceeds the replacement costs of the firm's capital. The ratio between firm valuation and capital replacement costs is called Tobin's Q. In the absence of countries' net worth (measuring the replacement costs of the country's capital stock), and building on stable steady-state capital output ratios, economists commonly use the country's stock market capitalisation as a share of GDP as a proxy for Tobin's Q.

*User cost of capital*

The neoclassical theory posits that the marginal expected return on capital is equal to the real user costs of capital. The user of cost (*UCC*) of capital is a function of the real interest (*r*), the depreciation rate of installed capital ($\delta$), the price of investment goods relative to the price of output, the corporate income tax ($\tau$) and the allowance rate on capital expenditures ($\theta$).

$$UCC_t = \frac{P_t^I}{P_t^Y}\left(\frac{r + \delta}{1 - \tau}\right)(1 - \theta\tau) \tag{3}$$

Tax allowances typically depend on the type of investment, the size of the firm and on whether a firm runs profits. For the sake of simplicity, and due to a lake of sufficient and comparable data across time and countries, the econometric specification abstracts away from tax allowances and sets $\theta = 0$.

*Convergence to steady-state*

Short-run dynamics of investment should also reflect gaps with respect to long-run equilibria. Consistent with the idea of stable capital-output ratios, the lagged capital-output ratio is added to the equation inducing a mean-reverting effect. Second, the theoretical steady-state capital-output ratio from equation (2) is added. The savings rate in (2) is modelled as the sum of gross investment and the current account balance both expressed as a share of GDP and smoothed over time.

*The econometric specification*

As a result, the baseline econometric specification is given by:

$$\frac{I_{c,t}}{K_{c,t-1}} = \beta_0 \frac{I_{c,t-1}}{K_{c,t-2}} + \beta_1 y_{c,t} + \beta_2 y_{c,t-1} + \gamma Q_{c,t} + \sigma UCC_{c,t-1} + \alpha_1 \frac{K_{c,t-1}}{Y_{c,t-1}} + \alpha_2 \frac{K^*_{c,t-1}}{Y^*_{c,t-1}} + \delta_c + \delta_t + \varepsilon_{c,t} \quad (4)$$

The regression includes country-fixed effects ($\delta_c$) and year-fixed effects ($\delta_t$). As such, the model does a good job in dealing with potential omitted variables bias as it can capture time-invariant structural features inherent to countries as well as global real and financial cycles. However, the use of standard linear regressions to estimate a dynamic panel induces a Hurwicz-Nickell bias on the coefficient of the lagged dependent variable. The bias on the other regressors is limited (Barro, 2015[43]) at least so long as the regressors are uncorrelated with the lagged dependent variable.

# Annex 1.B.The drivers of investment at firm level

Following the seminal paper by (Bond and Meghir, 1994[44]), the empirical specification is derived from the first-order condition of a firm's dynamic investment choice, allowing for short-run deviations from the desired capital stock. The obtained investment equation models the firm's investment rate (annual capital expenditures divided by total capital at the beginning of the year) as a function of the lagged investment rate to account for persistence, current and lagged sales growth reminiscent of the standard neo-classical accelerator mechanism and an error correction term determining the short-run dynamics towards the desired or steady-state capital-output ratio.

To allow for sector-specific technological or country-specific shocks, the regressions also absorb industry-time and country-time fixed effects. Further, the inclusion of cash-flow and equity issuance rates as well as Tobin's Q allow for an assessment of the impact of financial constraints and expectations. The literature defines cash-flow typically as net income plus depreciation, amortisation and R&D expenses as accounting standards register the latter as operating expenses (Brown and Petersen, 2009[45]). Tobin's Q is approximated by the ratio of the firm's valuation and its total capital. The specification also adds leverage (debt over assets) to assess the role of indebtedness for investment behaviour.

**Annex Table 1.B.1. Coverage of Worldscope database**

Number of manufacturing firms included in the sample.

| | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AUS | 162 | 250 | 250 | 248 | 266 | 283 | 297 | 302 | 303 | 299 | 294 | 300 | 298 | 262 | 275 | 283 | 278 |
| BRA | 155 | 138 | 133 | 131 | 137 | 135 | 130 | 125 | 118 | 119 | 125 | 120 | 112 | 106 | 101 | 95 | 90 |
| CAN | 298 | 318 | 347 | 357 | 361 | 465 | 466 | 459 | 448 | 430 | 430 | 422 | 392 | 335 | 294 | 292 | 276 |
| CHN | 620 | 675 | 768 | 924 | 1026 | 1055 | 1140 | 1381 | 1624 | 1886 | 2006 | 2113 | 2212 | 2396 | 2535 | 2509 | 2490 |
| FRA | 362 | 357 | 350 | 351 | 335 | 337 | 321 | 311 | 308 | 302 | 288 | 288 | 280 | 284 | 289 | 278 | 260 |
| GBR | 522 | 530 | 544 | 553 | 565 | 571 | 549 | 534 | 486 | 458 | 430 | 428 | 417 | 404 | 389 | 374 | 359 |
| GRC | 24 | 55 | 40 | 41 | 42 | 144 | 142 | 142 | 132 | 130 | 126 | 117 | 106 | 101 | 95 | 90 | 84 |
| IDN | 149 | 152 | 148 | 147 | 150 | 146 | 150 | 154 | 158 | 159 | 164 | 166 | 163 | 170 | 169 | 169 | 167 |
| IND | 303 | 319 | 296 | 382 | 471 | 585 | 1473 | 1531 | 1572 | 1604 | 1592 | 1631 | 1761 | 1709 | 1685 | 1653 | 1629 |
| ISR | 48 | 55 | 61 | 86 | 89 | 200 | 211 | 213 | 215 | 219 | 213 | 204 | 203 | 185 | 170 | 166 | 160 |
| ITA | 106 | 104 | 108 | 111 | 122 | 133 | 139 | 135 | 133 | 133 | 132 | 126 | 123 | 124 | 121 | 118 | 111 |
| JPN | 1048 | 1135 | 1160 | 1192 | 1223 | 1252 | 1268 | 1273 | 1284 | 1293 | 1310 | 1318 | 1333 | 1346 | 0 | 0 | 0 |
| KOR | 524 | 555 | 641 | 676 | 725 | 1100 | 1110 | 1169 | 1256 | 1286 | 1300 | 1306 | 1338 | 1377 | 1411 | 1422 | 1408 |
| POL | 41 | 41 | 55 | 87 | 115 | 142 | 153 | 160 | 176 | 183 | 188 | 192 | 201 | 184 | 188 | 187 | 179 |
| RUS | 8 | 11 | 18 | 26 | 42 | 269 | 315 | 328 | 356 | 364 | 344 | 331 | 298 | 278 | 260 | 241 | 227 |
| SWE | 148 | 149 | 144 | 152 | 161 | 187 | 202 | 219 | 215 | 210 | 212 | 212 | 209 | 209 | 228 | 239 | 236 |
| TUR | 87 | 103 | 141 | 142 | 144 | 181 | 177 | 182 | 188 | 193 | 202 | 209 | 205 | 203 | 199 | 195 | 192 |
| USA | 3530 | 3422 | 3272 | 3243 | 3245 | 3248 | 3208 | 3157 | 2962 | 2840 | 2719 | 2648 | 2504 | 2297 | 672 | 549 | 427 |

## References


Andrews, D., C. Criscuolo and P. Gal (2015), "Frontier Firms, Technology Diffusion and Public Policy: Micro Evidence from OECD Countries", *The Future of Productivity: Main Background Papers*, OECD, https://www.oecd.org/eco/growth/Frontier-Firms-Technology-Diffusion-and-Public-Policy-Micro-Evidence-from-OECD-Countries.pdf. [28]

Atabek, A. (2018), *Catch-Up in the Turkish Manufacturing Industry: The Role of National and Regional Frontiers*, https://tcmbblog.org/en/catch-up-in-the-turkish-manufacturing-industry-the-role-of-national-and-regional-frontiers/. [16]

Atiyas, I. and O. Bakis (2018), *Sıçrama Yapan Şirketler*, Sabancı Üniversitesi - TÜSİAD Rekabet Forumu, http://tusiad.org/tr/tum/item/9977-sabanci-universitesi-tusiad-rekabet-forumu-sicrama-yapan-sirketler-raporunu-kamuoyuyla-paylasti. [17]

Bae, K., H. Tan and M. Welker (2008), "International GAAP Differences: The Impact on Foreign Analysts", *The Accounting Review*, Vol. 83/3, pp. 593-628, http://dx.doi.org/10.2308/accr.2008.83.3.593. [41]

Barro, R. (2015), "Convergence and Modernisation", *The Economic Journal*, Vol. 125/585, pp. 911-942, http://dx.doi.org/10.1111/ecoj.12247. [43]

Bigan, I., S. Decan and B. Korkmaz (2017), *How Turkish companies can become global successes*, McKinsey&Company. [26]

Bloom, N. and J. Van Reenen (2010), "Why Do Management Practices Differ across Firms and Countries?", *Journal of Economic Perspectives—Volume*, Vol. 24/1—Winter, pp. 203-224. [24]

Bond, S. and C. Meghir (1994), "Dynamic Investment Models and the Firm's Financial Policy", *The Review of Economic Studies*, Vol. 61/2, pp. 197-222, http://dx.doi.org/10.2307/2297978. [44]

Brown, J., S. Fazzari and B. Petersen (2009), "Financing Innovation and Growth: Cash Flow, External Equity, and the 1990s R&D Boom", *The Journal of Finance*, Vol. 64/1, pp. 151-185, http://dx.doi.org/10.1111/j.1540-6261.2008.01431.x. [9]

Brown, J. and B. Petersen (2009), "Why has the investment-cash flow sensitivity declined so sharply? Rising R&D and equity market developments", *Journal of Banking & Finance*, Vol. 33/5, pp. 971-984, http://dx.doi.org/10.1016/J.JBANKFIN.2008.10.009. [45]

Brynjolfsson, E. and A. McAfee (2015), *The second machine age : work, progress, and prosperity in a time of brilliant technologies*. [32]

Brys, B. et al. (2016), "Tax Design for Inclusive Economic Growth", *OECD Taxation Working Papers*, No. 26, OECD Publishing, Paris, http://dx.doi.org/10.1787/5jlv74ggk0g7-en. [7]

Burkart, M., F. Panunzi and A. Shleifer (2003), "Family Firms", *The Journal of Finance*, Vol. 58/5, pp. 2167-2201, http://dx.doi.org/10.1111/1540-6261.00601. [8]

Çağlar, E. and E. Koyuncu (2018), *Toplam Faktör Verimliliği Politika Çerçevesi Geliştirilmesi için Teknik Destek Projesi Sentez Raporu, Üçüncu Revizyon*, UNDP. [1]

Calvino, F., C. Criscuolo and C. Menon (2016), "No Country for Young Firms?: Start-up Dynamics and National Policies", *OECD Science, Technology and Industry Policy Papers*, No. 29, OECD Publishing, Paris, http://dx.doi.org/10.1787/5jm22p40c8mw-en. [31]

Clark, L. (2017), *The hottest Istanbul startups in 2017*, WIRED UK. [30]

Cravo, T. and C. Piza (2016), "The Impact of Business Support Services for Small and Medium Enterprises on Firm Performance in Low- and Middle-Income Countries A Meta-Analysis", *Policy Research Working Paper*, No. 7664, World Bank Group Development Research Group, http://documents.worldbank.org/curated/en/521211467989461591/pdf/WPS7664.pdf. [21]

Gezici, A., Ö. Orhangazi and C. Yalçın (2018), "R&D activity and financing constraints: Evidence from Turkey", *Panoeconomicus* 00, http://dx.doi.org/10.2298/PAN170420011G. [10]

Hampel-Milagrosa, A. and C. Reeg (2016), *Micro, small and medium enterprises as drivers for job creation and decent work*, United Nations Department of Economic and Social Affairs , Bangkok, http://www.un.org/esa/socdev/egms/docs/2016/AimeeHampel-MilagrosaandCarolineReeg.pdf. [20]

IMF (2018), *Turkey:2018 Article IV Consultations*, IMF Country Report No. 18/110. [2]

Johansson, Å. et al. (2008), "Taxation and Economic Growth", *OECD Economics Department Working Papers*, No. 620, OECD Publishing, Paris, http://dx.doi.org/10.1787/241216205486. [6]

KGF (2018), "2017 Activity Report", *Kredi Garanti Fonu*. [33]

McKinsey Global Institute (2003), *Turkey: Making the Productivity and Growth Breakthrough*, https://www.mckinsey.com/~/media/McKinsey/Global%20Themes/Europe/Turkey%20making%20the%20productivity%20and%20growth%20breakthrough/MGI_Turkey_Productivity_and_Growth_Breakthrough.ashx. [25]

Ministry of Science Industry and Technology (2015), *Verimlilik Stratejisi ve Eylem Planı (2015-2018)*. [22]

Morgan Stanley (2017), "Turkey Banks and Macro: Don't fear the fund; more to go.". [34]

Nassr, I. and G. Wehinger (2016), "Opportunities and limitations of public equity markets for SMEs", *OECD Journal: Financial Market Trends*, Vol. 2015/1, https://www.oecd-ilibrary.org/docserver/fmt-2015-5jrs051fvnjk.pdf?expires=1525360942&id=id&accname=ocid84004878&checksum=C9F380AA2E491F891D89301CFF261476. [40]

Nicoletti, G., D. Andrews and C. Timiliotis (2018), "Going digital: What determines technology diffusion among firms?, Working Party No. 1 on Macroeconomic and Structural Policy Analysis 22-23 March 2018, OECD Conference Centre". [12]

OECD (2018), *Financing SMEs and Entrepreneurs 2018: An OECD Scoreboard*, OECD Publishing, Paris, http://dx.doi.org/10.1787/fin_sme_ent-2018-en. [39]

OECD (2018), *OECD Strategic Approach to Combating Corruption and Promoting Integrity*. [15]

OECD (2017), *Evaluating Publicly Supported Credit Guarantee Programmes for SMEs*, https://www.oecd.org/finance/Evaluating-Publicly-Supported-Credit-Guarantee-Programmes-for-SMEs.pdf (accessed on 23 May 2018). [35]

OECD (2017), *Going Digital: Making the Transformation Work for Growth and Well-Being*, Meeting of the OECD Council at Ministerial Level., https://www.oecd.org/mcm/documents/C-MIN-2017-4%20EN.pdf. [13]

OECD (2017), *OECD Business and Finance Outlook 2017*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264274891-en. [14]

OECD (2017), *OECD Economic Surveys: Italy 2017*, OECD Publishing. [42]

OECD (2017), *OECD Science, Technology and Industry Scoreboard 2017: The digital transformation*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264268821-en. [11]

OECD (2017), *Pension Markets in Focus*, http://www.oecd.org/finance/lti.. [37]

OECD (2016), *OECD Economic Surveys: Turkey 2016*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-tur-2016-en. [4]

OECD (2014), *OECD Economic Surveys: Turkey 2014*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-tur-2014-en. [3]

OECD (2013), *Science, Technology and Industry Scoreboard 2013 Innovation for Growth*. [29]

OECD (2008), *OECD Guidance on Sovereign Wealth Funds*, http://www.oecd.org/daf/inv/investment-policy/oecdguidanceonsovereignwealthfunds.htm. [36]

Spengel, C. et al. (2015), "Effective tax levels using the Devereux/Griffith methodology. Project for the EU Commission TAXUD/2013/CC/120: Intermediate report 2015", https://www.econstor.eu/handle/10419/162729 (accessed on 28 March 2018). [5]

Spengel, C. et al. (2016), "The effects of tax reforms to address the debt-equity bias on the cost of capital and on effective tax rates", https://www.econstor.eu/handle/10419/148156 (accessed on 17 April 2018). [38]

Taymaz, E. (2016), *Estimation of Total Factor Productivity Growth in Turkish Manufacturing*, Total Factor Productivity Project, United Nations Development Programme in Turkey, mimeo. [19]

Taymaz, E. (2016), *Research on productivity dynamics in Turkish manufacturing industries*, Total Factor Productivity Project, United Nations Development Programme in Turkey, mimeo. [18]

TKYD (2017), *Kurumsal Yonetim Dergisi 35*, http://www.tkyd.org/files/downloads/faaliyet_alanlari/yayinlarimiz/kurumsal_yonetim_dergisi/TKYD_Dergi_Sayi35.pdf. [23]

Ünlü, M. (2017), "2018'de en yüksek halka arz gerçekleşebilir", http://www.hurriyet.com.tr/ekonomi/2018de-en-yuksek-halka-arz-gerceklesebilir-40658500. [27]

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