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BASIC STATISTICS OF TURKEY, 2015

(Numbers in parentheses refer to the OECD average)*

LAND, PEOPLE AND ELECTORAL CYCLE					
Population (million)	77.7		Population density per km²	99.2	(35.1)
Under 15 (%)	23.8	(18.0)	Life expectancy (years, 2013)	76.6	(80.4)
Over 65 (%)	8.1	(16.3)	Men	73.7	(77.8)
Latest 5-year average growth (%)	1.2	(0.6)	Women	79.4	(83.0)
			Latest general election	November 2015	
ECONOMY					
Gross domestic product (GDP)			Value added shares (%, 2014)		
In current prices (billion USD)	720.5		Primary sector	8.0	(2.5)
In current prices (billion TRY)	1 953.6		Industry including construction	27.1	(26.4)
Latest 5-year average real growth (%)	4.4	(1.7)	Services	64.9	(71.1)
Per capita (000 USD PPP)	20.3	(40.2)			
EXTERNAL ACCOUNTS					
Exchange rate (TRY per USD)	2.7		Main exports (% of total merchandise exports)		
PPP exchange rate (USA = 1)	1.2		Manufactured goods	43.4	
In per cent of GDP			Machinery and transport equipment	27.3	
Exports of goods and services	28.0	(54.1)	Food and live animals	10.0	
Imports of goods and services	30.8	(49.7)	Main imports (% of total merchandise imports)		
Current account balance	-4.4	(0.15)	Machinery and transport equipment	31.6	
Net international investment position	-51.4		Manufactured goods	23.4	
			Chemicals and related products, n.e.s.	13.8	
LABOUR MARKET, SKILLS AND INNOVATION					
Employment rate for 15-64 year-olds (%)	50.2	(66.2)	Unemployment rate, Labour Force Survey (age 15 and over) (%)	10.2	(6.8)
Men	69.8	(74.1)	Youth (age 15-24, %)	18.5	(13.9)
Women	30.5	(58.5)	Long-term unemployed (1 year and over, %, 2014)	2.0	(2.5)
Participation rate for 15-64 year-olds (%, 2014)	55.1	(71.2)	Tertiary educational attainment 25-64 year-olds (%, 2014)	16.7	(34.0)
Average hours worked per year (2013)[a]	1 832	(1 770)	Gross domestic expenditure on R&D (% of GDP, 2014)	1.0	(2.4)
ENVIRONMENT					
Total primary energy supply per capita (toe, 2014)	1.6	(4.1)	CO_2 emissions from fuel combustion per capita (tonnes, 2013)	3.7	(9.6)
Renewables (%)	9.3	(9.1)	Water abstractions per capita (1 000 m^3, 2012)	0.7	
Fine particulate matter concentration (PM2.5, µg/m^3, 2013)	17.2	(13.8)	Municipal waste per capita (tonnes, 2014)	0.4	(0.5)
SOCIETY					
Income inequality (Gini coefficient, 2012)	0.402	(0.308)	Education outcomes (PISA score, 2012)		
Relative poverty rate (%, 2012)	17.8	(10.9)	Reading	475	(496)
Median disposable household income (000 USD PPP, 2012)	8.6	(22.1)	Mathematics	448	(494)
Public and private spending (% of GDP)			Science	463	(501)
Health care (2013)	5.1	(8.9)	Share of women in parliament (%, May 2016)	14.9	(27.9)
Pensions (2013)[b]	8.1	(8.7)	Net official development assistance (% of GNI)	0.54	(0.39)
Education (primary, secondary, post sec. non tertiary, 2012)	3.0	(3.7)			

Better life index: *www.oecdbetterlifeindex.org*

a) 2014 for the OECD aggregate.

b) 2011 for the OECD aggregate.

* 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.

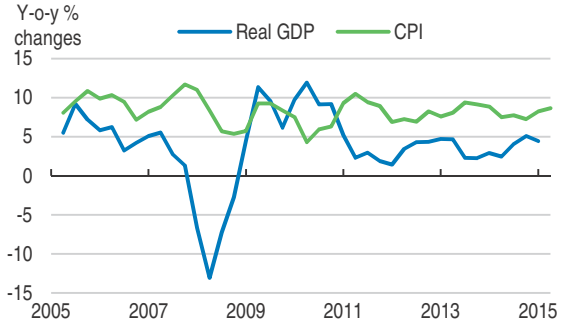
Source: Calculations based on data extracted from the databases of the following organisations: OECD, International Energy Agency, World Bank, International Monetary Fund and Inter-Parliamentary Union.

Executive summary

- *Growth has been robust despite adverse circumstances but must be rebalanced*
- *Removing structural bottlenecks would boost productivity*
- *Deeper participation in global value chains could help rebalance growth*

Growth has been robust despite adverse circumstances but must be rebalanced

Growth has picked up but inflation remains high



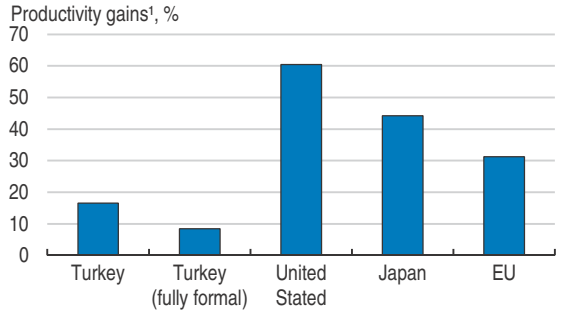
Source: OECD Economic Outlook database.

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Growth has been robust in recent years despite very adverse regional and domestic conditions. Job creation has been strong, in particular for vulnerable groups and less-developed regions. Turkey is no longer experiencing "boom-and-bust" cycles, but external deficits expanded and the net external investment position has deteriorated somewhat over the past decade. To achieve strong and sustainable growth, domestic saving should be increased and demand rebalanced between domestic and external sources. The needed competitiveness gains must be achieved by reducing wage and price inflation and boosting productivity growth. Following a period of stalling reform progress, the authorities launched an ambitious economic reform agenda in early 2016 aiming at raising productivity and living standards.

Removing structural bottlenecks would boost productivity

Employment is concentrated in less productive firms



1. Increase in productivity, compared to unweighted average productivity. 2013 for Turkey, latest available year for others.

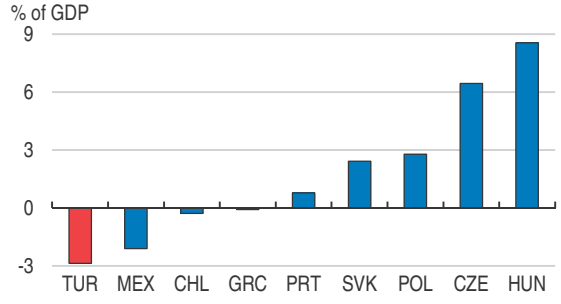
Source: Andrews and Cingano (2014); OECD calculations.

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Turkey's manufacturing sector has expanded considerably, but a core of well-performing firms is still hindered by shortcomings in the policy framework. A second category of firms sustain competition and deliver jobs, but have fallen behind in productivity. A large, third group of firms employ many low-skilled workers, but have low productivity and survive in an "informality trap" due to ineffective enforcement of rules and regulations. Improving this situation requires a comprehensive upgrading of the business environment to boost productivity and allow the most promising firms to grow faster.

Deeper participation in global value chains could help rebalance growth

A large trade deficit has built up (2015)



Source: OECD Economic Outlook database.

StatLink http://dx.doi.org/10.1787/888933388770

While the import content of Turkey's exports has increased, Turkey's capacity to provide intermediate inputs to other countries remained limited. This partly reflects Turkey's specialisation in final products, but also hints at obstacles in trade and investment policies, underdeveloped human capital and still insufficient investment in innovation, R&D and knowledge-based capital. The adjustment towards a more export-oriented economy operating on a level playing field needs to be supported by social policies to ensure displaced workers can find productive employment.

MAIN FINDINGS	KEY RECOMMENDATIONS
Strengthening macroeconomic resilience, institutions and social cohesion	
The economy remained resilient under very adverse circumstances and stronger growth is within reach. The authorities rebooted the structural reform process in early 2016.	Fully implement the reforms of the 2016 Action Plan and enact systematic monitoring and reporting on actual implementation.
The credibility of governance institutions could be improved.	Strengthen the rule of law, judiciary independence and the fight against corruption.
Women's participation in the labour force has increased but remains very low in international comparison.	Upgrade child care facilities throughout the country.
External liabilities are tilted towards debt. The foreign direct investment stock remains too low.	Reduce barriers to foreign direct investment.
Domestic saving is too low and inflation has persistently exceeded the target, exacerbating the dilemma between disinflation and external price competitiveness. The credibility of monetary policy could be improved.	• Continue to contain consumer credit. • Promote private pension savings. • Increase foreign exchange reserves. • Simplify the monetary policy framework. • Tighten monetary policy unless inflation declines faster than projected. • Encourage minimum wage moderation and engage social partners in a wage path consistent with disinflation and external rebalancing.
Consistent fiscal prudence successfully reduced public debt but there is a need to improve public finance statistics.	• Publish consolidated quarterly general government accounts according to international accounting standards. • Publish a regular Fiscal Policy Report including all contingent and long-term liabilities.
Removing structural bottlenecks to boost productivity	
The business sector is vibrant but low skills and high employment costs, amplified by the recent minimum wage hike, foster informality, as the burden of going formal is too high. Informality and semi-formality, in turn, slow down productivity growth.	• Implement the education reforms foreseen in the 2016 Action Plan to improve curricula and increase the autonomy of schools and universities. • Reduce labour tax wedges and employment costs for the low-skilled.
High-productivity firms are not growing at full potential, due to shortcomings in basic governance, the regulatory framework and business taxation.	• Enhance the flexibility of employment rules for all firms. • Avoid tax thresholds for higher productivity and larger firms.
Many small entrepreneurs and workers have low skills, inhibiting the growth of productivity and incomes.	Focus upskilling programmes for small entrepreneurs on basic management, foreign languages and digitalisation.
Many low-productivity firms will need to exit. This will raise adjustment challenges for their workers and reduce employment prospects for refugees.	Improve the social safety net for displaced workers by upgrading active labour market programmes, including those adapted to refugees.
Reaping the benefits of global value chains	
Participation in GVCs is below potential, consistent with the low share of exported value-added in Turkey's total value added and relatively subdued export performance.	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's export share for intermediate goods in the world market is particularly low, especially in high value-added sectors, reflecting limited human and knowledge-based capital.	Invest more in vocational training and research-and-development.
Less stringent environmental regulations may attract polluting activities, fostering Turkey's participation in global value chains for the wrong reasons.	Improve the monitoring of polluting activities and the enforcement of environmental regulations, and use economic instruments such as pollution taxes, carbon taxes and emission permits.

Assessment and recommendations

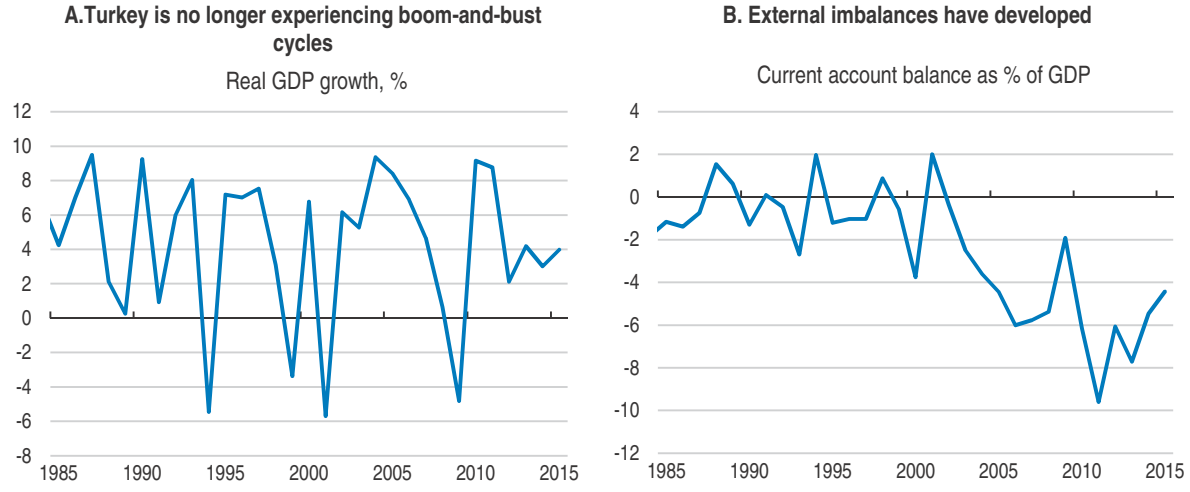
- *Recent economic developments and short-term macroeconomic outlook*
- *Economic rebalancing to make growth sustainable and more inclusive*
- *Strengthening the resilience of the economy*
- *Restructuring the tradable sector by upgrading the business environment*
- *Reforms and green growth*

Economic growth has proved remarkably vigorous given the very adverse circumstances of the past two years, which included four national elections, wars across the southern border, severe domestic tensions in the Eastern regions, trade restrictions with Russia and the inflow of millions of refugees. Domestic demand retained momentum. Public spending pressures were strong but the fiscal deficit was kept in check. The external deficit declined thanks to falling oil prices and market share gains especially in the European Union, but is still very large in underlying terms. Growth remains disproportionately centred on domestic demand and is overly funded by debt-creating capital inflows.

The combination of strong growth and external imbalances has characterised Turkey's growth pattern over the past 15 years. Major institutional and structural reforms introduced after the 2001 crisis helped overcome the earlier "boom-and-bust" cycles, but external deficits expanded (Figure 1). This pattern has helped draw capital to Turkey, but features two important imbalances: i) private consumption contributes excessively to growth and reduces domestic savings; and ii) the output and employment composition of the economy is skewed to servicing the domestic market, with too low a share of tradables. This situation creates a tension between strong growth and external sustainability. To rebalance the growth pattern, the international competitiveness of the economy and the export sector should be considerably strengthened.

To shift to a more balanced, sustainable and stronger path, the authorities pushed ahead with a wide-ranging reform strategy after the general election in late 2015, building on the Priority Transformation Programmes of the National Development Plan 2014-18. An Action Plan for 2016 was announced in January, containing 216 measures to be

Figure 1. **Long-term macroeconomic performance**



Source: OECD (2016), OECD Economic Outlook: Statistics and Projections (database), http://dx.doi.org/10.1787/data-00688-en.

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implemented on a specific schedule (Table 1). This plan is retained by the new government established in May 2016 and provides a blueprint for important structural initiatives. The 2016 Action Plan was meant to be followed by longer-term reforms to upgrade the business and regulatory environment along international standards. Priorities included additional labour market reforms to reduce informality, the simplification of business entry and exit rules, and new trade policies to foster exports – notably updating the 1995 Customs Union Agreement with the European Union along the lines of the most advanced international free trade agreements.

Table 1. **The 2016 Action Plan**

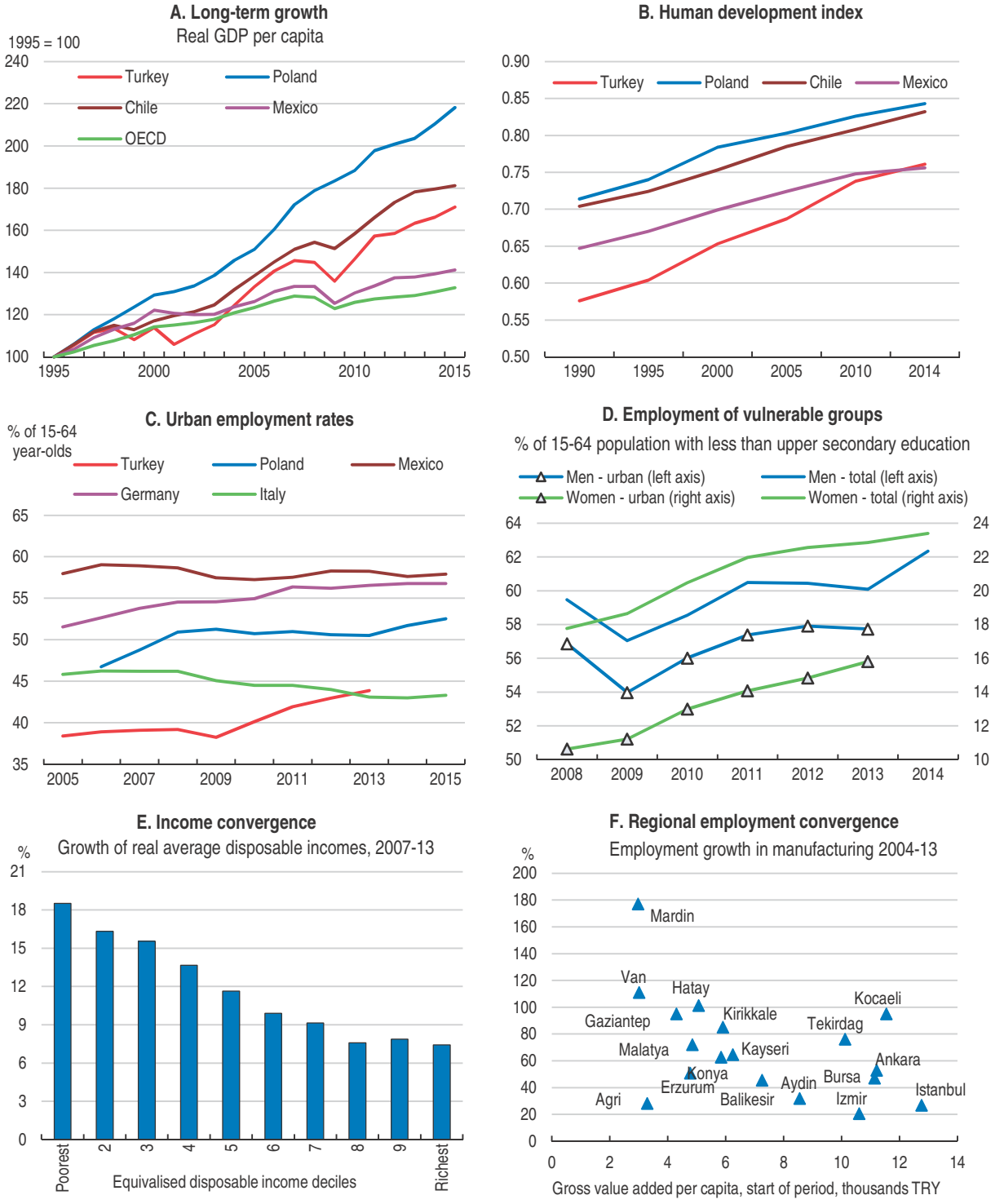
Policy areas	Selected measures[1] (Numbers in brackets refer to the reference number of each measure in the Plan)
Fundamental rights and freedoms	(21) International conventions on fundamental human rights and freedoms will be transposed in national legislation; (110) A "judicial assistance" right will be established in national law.
Transparency	(3) A "political ethics" law to promote transparency, openness and accountability in political life will be adopted along international good practices; (5) real estate capital gains resulting from public land planning decisions will be made transparent and taxed.
Social policies and working life	(10) Labour legislation will be extended according to flexicurity principles, on the basis of EU good practices; (11) temporary work agency contracts will be liberalised, (12) severance compensation will be reformed, (54) all ongoing active labour market schemes will be made subject to impact analysis and re-designed; (88 and 89) skilled foreign professionals' work in Turkey will be facilitated.
Economy, finance and commerce	(56) personal income and corporate income taxes will be merged into a simple income tax regime along international good practices; (65) custom procedures will be consolidated into a single-shop system; (67) corporate governance of state-owned firms will be aligned with international codes; (64) railway transportation will be liberalised..
Justice	(26) The settlement of labour litigations will be accelerated; (25) benchmarks will be set and enforced for the duration of different categories of court cases; (36) a strategy and action plan against cyber-crime will be adopted.
Education	(130) Current curricula in all education layers will be updated according to targeted "basic skills" for each level; (40) vocational school curricula will be aligned with professional standards; (41) a new tertiary education law will promote the autonomy and quality orientation of universities; (133) schools will be funded on a per student basis via their own budget.
Investment environment	(78) Enterprise creation and liquidation rules will be re-evaluated and streamlined; (76) business licencing rules will be unified across government levels; (71) new measures will be introduced to attract foreign direct investment; (81) Islamic finance instruments and institutions will be developed; (146) specialised courts will be established, especially in the finance and information technology sectors; (141) the Public Procurement Law will be revised; (16) the Istanbul Arbitration Center will become functional.
Savings	(79) Automatic enrolment in private pension schemes will be generalised with opt-out rights; (140) the Public Financial and Management Control Law will be updated.
Science, technology and innovation	(32) A "Digital Turkey" masterplan will be prepared; (84) a new Patent Law giving stronger support to high value-added activities will be adopted; (90) employment of foreign researchers by Turkish firms will be facilitated.
Environment, local administration	(115) The relation between central and local governments will be re-modelled according to the European Chart of local governments; (96) the resources of district municipalities inside metropolitan areas will be augmented; (164) a new greenhouse gas emission monitoring system will be implemented; 92) a new Water Law will be adopted.
Foreign policy	(100) An impact assessment of Turkey's development aid policies will be produced.

1. Additional industry-relevant measures of the 2016 Action Plan are reported in Chapter 1, Table 1.2.
Source: Prime Ministry (2016).

Turkey's strong growth over the past decade has paved the way for convergence in living standards with higher-income OECD countries. Improvements in life expectancy and expected years of schooling have fostered human development (Figure 2, Panel B). Employment rates, in particular those of the most vulnerable groups, have increased (Figure 2 Panels C and D). While income inequality remains high, the recent growth period has also seen less-developed regions catch up (Figure 2 Panels E and F).

Nonetheless, gaps with other OECD countries remain sizeable for many dimensions of well-being (Figure 3). Despite the gains achieved by low-income groups in the 2000s and the decline in poverty, average household disposable income per capita was still 54% of the

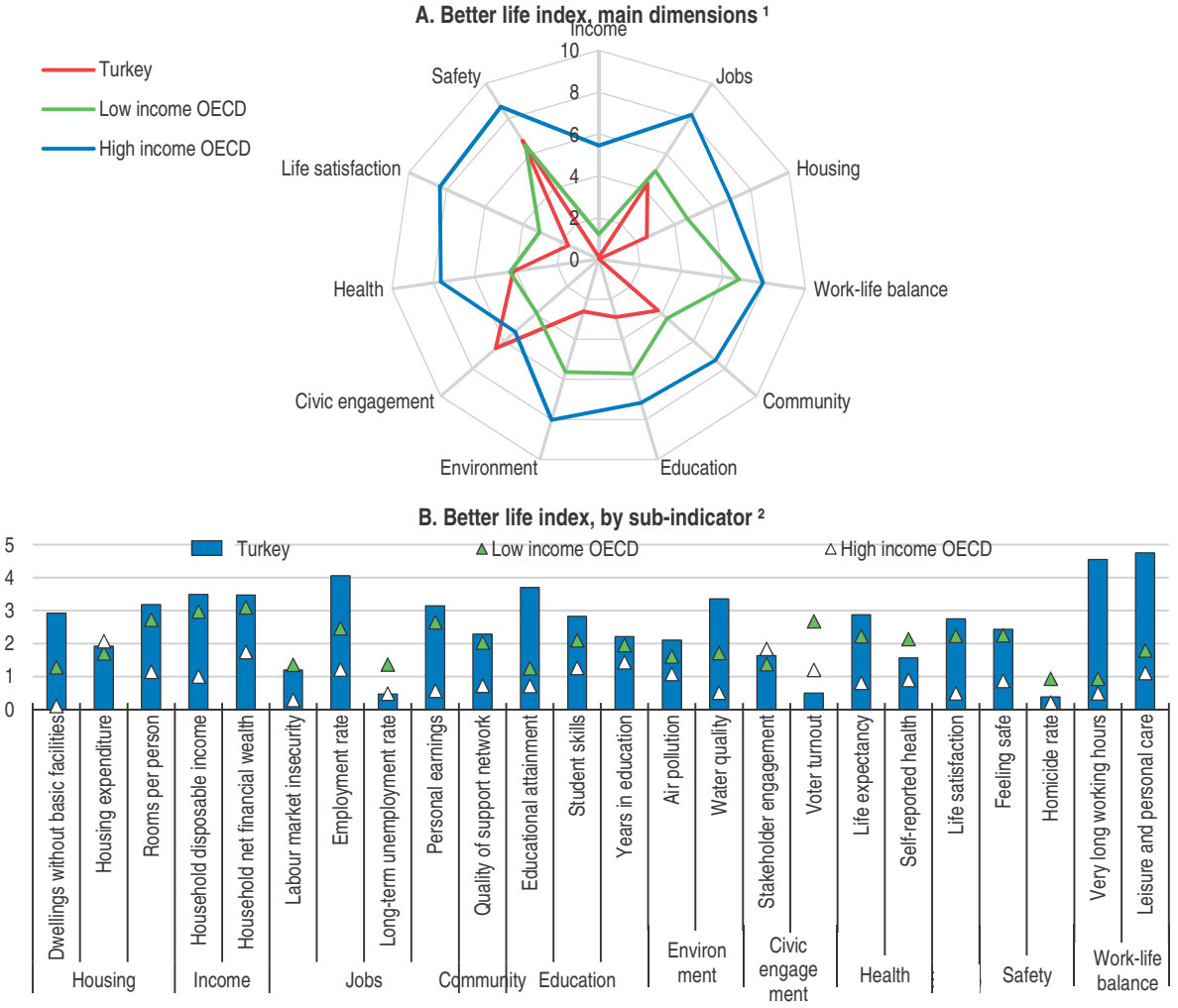
Figure 2. **Growth and social inclusion**



Source: OECD National Accounts database (panel A); United Nations Development Programme (2015), Human Development Report (panel B); ILO, LABORSTA (http://laborsta.ilo.org , panel C); Turkish Statistical Institute (panel D to F).

StatLink http://dx.doi.org/10.1787/888933388799

Figure 3. **Well-being indicators**



1. Each index dimension is measured by one to four indicators from the OECD Better Life Index (BLI) set (see Panel B). Indicators are normalised to range between 10 (best) and 0 according to the following formula: (indicator value – minimum value) / (maximum value – minimum value) x 10. Normalised indicators are averaged with equal weights for each dimension. Low and high income refers to averages for the top and bottom tier of OECD countries ranked by GDP per capita (PPP USD, 2014). Low income countries are Czech Republic, Slovenia, Portugal, Slovak Republic, Estonia, Greece, Hungary, Poland, Chile and Mexico. High income countries are: Luxembourg, Norway, Switzerland, United States, Ireland, Netherlands, Austria, Denmark, Sweden, Germany and Australia.
2. Distance in standard deviations from top three performers.

Source: OECD (2016), OECD Better Life Index, *www.oecdbetterlifeindex.org*.

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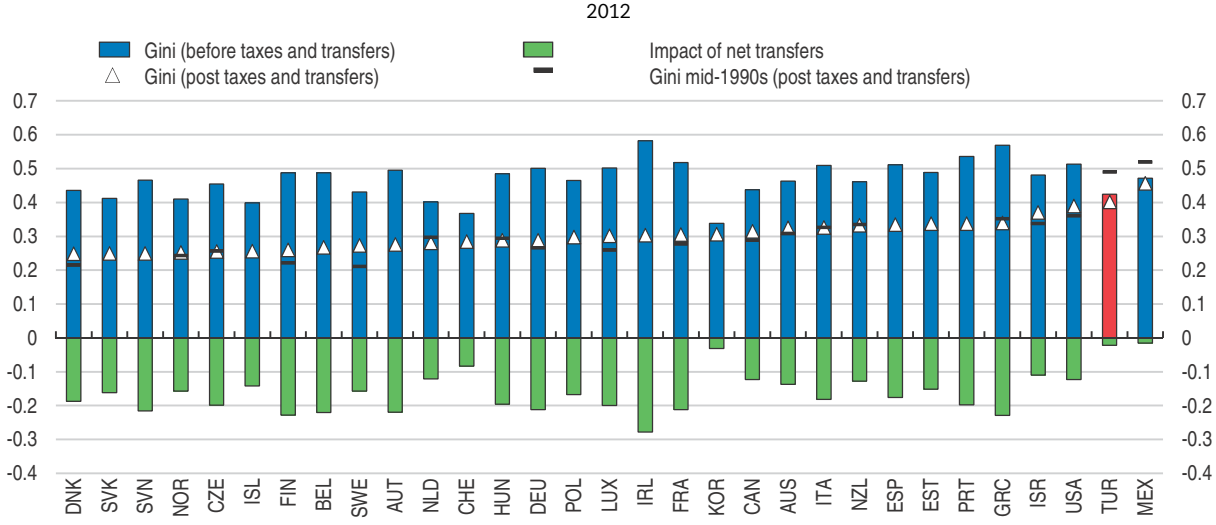
OECD average in 2014 (at current PPPs). Working conditions are, on average, below OECD standards and, for those at work, work-life balance is affected by excessive working hours (OECD, 2015a). Educational achievements are modest, with 36% of Turkish adults aged 25-64 having completed upper secondary education. Partly as a result, the employment rate is low. Air and water quality too are still far below OECD averages.

Gender inequality is more pronounced than in other OECD countries, with few women in parliament and large gender pay gaps. Housing conditions are affected by restricted access to waste water treatment. The healthiness of the sea water is reduced by limited awareness in Turkey of its rich natural capital and by the adverse effects of tourism as coastal protection initiatives remain insufficient (Ocean Health Index, 2016). Likewise, the

share of protected terrestrial areas is lower than in other OECD countries (Environmental Performance Index, 2016).

Absolute poverty, measured as the share of people living below the national poverty line declined sharply, from 28.8% in 2003 to 13.3% in 2006, and settled at 1.6% in 2014 according to national sources (Turkstat, 2006 and Turkstat, 2014). However, relative poverty as measured by the poverty rate (share of the population earning less than 50% of the median disposable income) is higher (at 18% in 2012, and, according to national sources, 15% in 2014) than the OECD average (11%). While market income inequality is below the OECD average, the tax- and-benefit system contributes less to inequality reduction than in other countries. Turkey still exhibits the second highest level of disposable income inequality in the OECD (Figure 4). Broadening the tax base, including through a reduction of informality, would generate fiscal revenues that would provide scope to enhance the redistribution system and reduce income inequality further.

Figure 4. **Income inequality has declined despite low redistribution**



Note: Income distribution data refer to the total population and are based on equivalised household disposable income, i.e. disposable income adjusted for household size. The Gini coefficient takes values between 0 (where every person has the same income), and 1 (where all income goes to one person). Data refer to 2011 for Canada and 2012 for the other countries. Data shown for mid-1990s refer to 2011 income definition of the OECD Income and Distribution database.

Source: OECD Income distribution database. *www.oecd.org/els/soc/income-distribution-database.htm.*

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In addition, inter-regional disparities are large: in Istanbul, where 20% of the population live and where living costs are higher, average household income is nearly three times higher than in south-eastern Anatolia, the highest regional gap among OECD countries. While less than 5% of people in Istanbul live with less than half of the national median income, this share is 50% in some areas of south-eastern Anatolia. Similarly large regional differences are observed with respect to educational attainment, access to broadband connection and life expectancy.

These shortcomings affect children in particular. Child-poverty rates were close to 30% in 2011. Underdeveloped pre-school programmes and unequal access to education impede social mobility. In 2013, only 36% of the four-year olds were enrolled in early childhood education against an OECD average of 88% (OECD, 2015b). At the same time, over 40% of the children with a lower socio-economic background were deprived from at least four out of

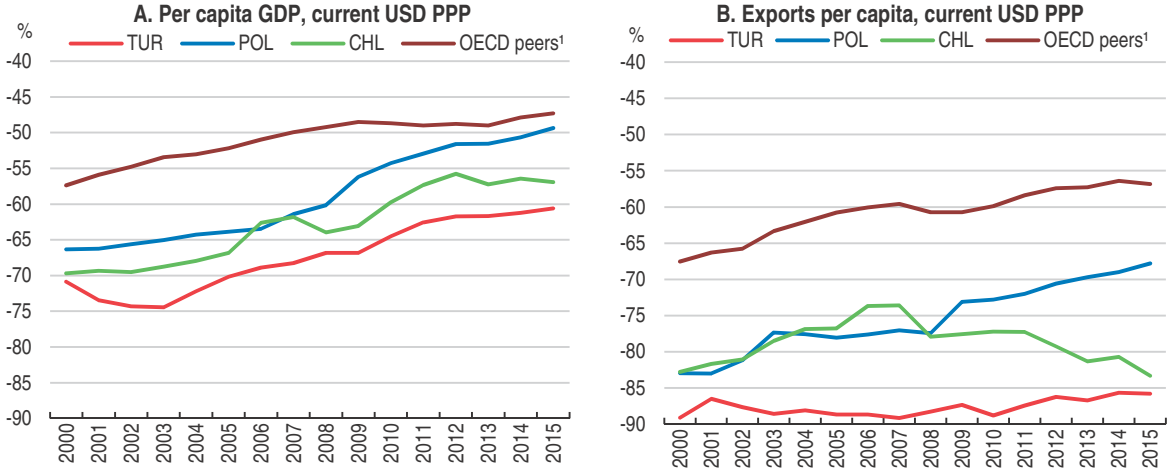
seven educational items (a desk to study, a quiet place to study, a computer for school work, educational software, access to internet, books for school and a dictionary) against less than 10% on average across OECD countries (OECD, 2015a). Broad-based access to high-quality education, notably for the young, would not only lift human capital and foster growth; it would also make sure that the benefits of strong growth are more widely shared by preparing more people for better jobs (OECD, 2015l; Keeley, 2015).

Important progress has been made in the provision of critical services for well-being and social cohesion, such as health care and old-age support, with the transition to universal health insurance (Atun et al., 2013) and to universal old-age benefits (Devlette, 2015). Still, wide inequalities remain in the quality and accessibility of services between regions and social groups (Canatan and Yıldırım, 2015). The accessibility of all essential services would be improved if public policies focussed more on a quality, made results transparent, and enhanced outcomes by tracking and selecting the most efficient delivery channels (OECD, 2014c; World Bank, 2015).

Employment and job quality largely determine household living standards. Greater job creation in formal wage-earning occupations rather than informal self-employment and low productivity jobs in semi-formal firms would enhance incomes and improve social inclusion. Upgrading existing firms to higher productivity and quality levels, and enabling the more successful firms to expand faster are the most promising avenues to improve the material foundations of well-being and increase economic participation of vulnerable groups. While growth remains higher than in most other OECD countries, reflecting stronger labour force growth, the rebalancing of demand from domestic to external sources is needed to resume the convergence of GDP per capita toward the upper half of OECD countries (Figure 5 Panel A). The required acceleration of exports per capita has not yet started (Figure 5 Panel B).

Figure 5. **Convergence with the upper half of OECD countries has slowed**

Percentage gaps with upper half of OECD



1. OECD peers comprises lower income OECD countries: Czech Republic, Slovenia, Portugal, Slovak Republic, Estonia, Greece, Hungary, Poland, Chile and Mexico.

Source: OECD National Accounts database.

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Against this backdrop, the main messages of this *OECD Economic Survey* are:

- Increasing domestic savings and rebalancing demand between domestic and external sources is indispensable for stronger and sustainable growth. The launch of the 2016 Action Plan by the previous government boded well for the reforms that are necessary to achieve such rebalancing, strengthen the resilience of the economy and raise living standards for all.
- Manufacturing is undermined by a deep segmentation between high-quality modern corporations and low-quality semi-formal and informal firms. Ensuring a level-playing field for businesses and improving the quality of human capital are essential to revive productivity growth, accelerate the convergence between different types of firms and generate broad-based formal employment.
- Turkey's integration in global value chains remains below its potential due to structural bottlenecks. This calls for changes in trade and investment policies to make export orientation more profitable and attract more foreign direct investment. Substantial investment in human and knowledge-based capital will be necessary to catch up with international best practices.

Recent economic developments and short-term macroeconomic outlook

GDP growth was in 2015 driven by household consumption (Figure 6). Contrary to expectations, the sharp deterioration in household confidence following severe regional conflicts and domestic political uncertainties has not held back consumption. Household spending has increased in the run-up to the national elections, which involved promises of a large hike in the minimum wage and substantial increases in social transfers. The influx of refugees from Syria also stimulated demand, partly funded from government sources. In contrast, private business investment remained subdued, increasing by less than 3% for the year. Government consumption contributed 0.7 percentage points to growth, and public investment 0.3 percentage points.

As a result of sharp contractions in regional markets such as Iraq and Russia, weak growth in the main EU market and subdued tourism, total exports remained weak despite competitiveness gains stemming from exchange rate depreciation through the year (by about 13% against a basket of dollars and euros). Manufacturing exporters managed to widen their market share in the EU as well as in the US market. Still, aggregate goods and services exports contracted by nearly 1% in volume. Imports grew slightly and net trade contributed negatively to growth by 0.3 percentage points. Nonetheless, the trade and current account balances improved thanks to terms-of-trade gains (due notably to dropping oil prices) and the normalisation of gold trade. The current account deficit shrank from to 5.5% of GDP in 2014 to 4.4% in 2015.

At the start of 2016, the minimum wage was increased by 30%, to about 90% of the estimated median wage, although cost pressures will be temporarily mitigated because the government will subsidise between 25% and 40% of the cost increase for employers for one year. The impact of this jump in the minimum wage, which is earned by at least a quarter of all workers, remained difficult to assess as of mid-2016. Various informal employment and remuneration responses and practices appear to have tempered the impact of the hike (for example, part of the official minimum wage increase has been reportedly withheld by some employers).

Table 2. **Macroeconomic indicators and projections**

Annual percentage change, volume (1998 prices)

	2012 Current prices (billion TRY)	2013	2014	2015	2016 (projected)	2017 (projected)
GDP[1]	1 417	**4.2**	**3.0**	**4.0**	**3.9**	**3.7**
Private consumption	994	5.1	1.4	4.5	4.2	4.0
Government consumption	210	6.5	4.7	6.7	8.0	2.7
Gross fixed capital formation	287	4.4	-1.3	3.6	1.8	4.0
Final domestic demand	1 492	5.2	1.4	4.7	4.3	3.8
Stockbuilding[2]	-2	1.4	-0.1	-0.3	0.0	0.0
Total domestic demand	1 490	6.5	1.3	4.6	4.5	3.9
Exports of goods and services	373	-0.2	7.4	-0.8	2.7	5.2
Imports of goods and services	446	9.0	-0.3	0.3	5.6	5.4
Net exports[2]	-73	-2.9	2.0	-0.3	-1.0	-0.3
Other indicators (growth rates, unless specified)						
Potential GDP	. .	4.5	4.3	4.2	4.0	3.8
Output gap[3]	. .	-0.3	-1.5	-1.7	-1.8	-1.9
Employment	. .	2.9	5.1	2.9	3.0	2.8
Unemployment rate	. .	9.0	10.0	10.3	10.1	10.2
GDP deflator	. .	6.2	8.3	7.5	7.0	6.5
Consumer price index	. .	7.5	8.9	7.7	7.4	7.5
Core consumer prices	. .	6.3	9.2	8.0	8.7	7.8
Current account balance[4]	. .	-7.7	-5.5	-4.4	-4.8	-4.6
Three-month money market rate, average	. .	6.9	10.3	11.0	11.4	11.1
Ten-year government bond yield, average	. .	7.7	9.2	9.3	10.2	10.0

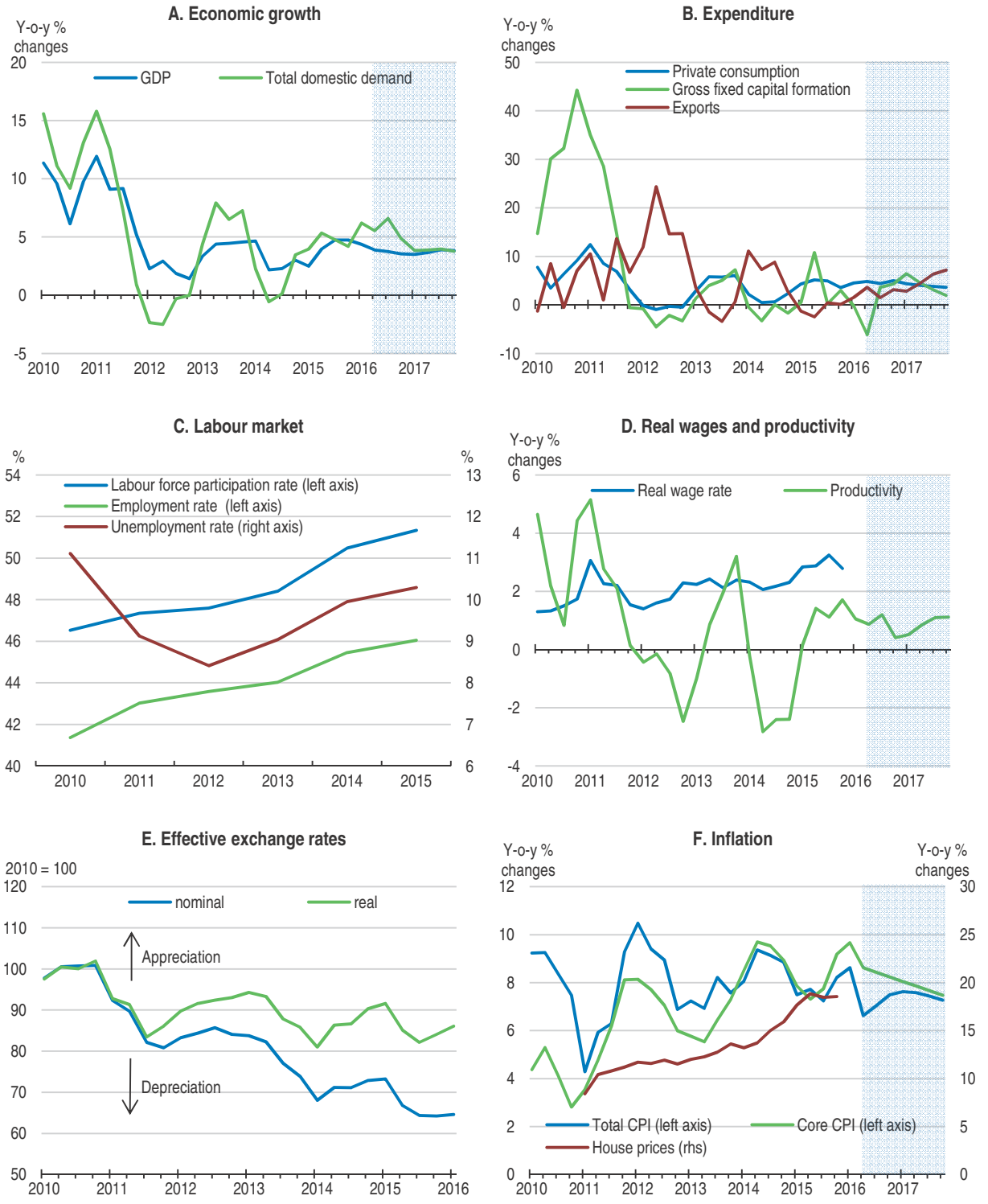
1. Working day-adjusted.
2. Contributions to changes in real GDP, actual amount in the first column.
3. As a percentage of potential GDP.
4. As a percentage of GDP.

Source: OECD (2016), OECD Economic Outlook: Statistics and Projections database.

On the other hand, business confidence was strengthened in early 2016 by the introduction of a new 2016 Action Plan which included important structural reform targets in eleven areas (Table 1 above). In contrast, the escalation of tensions with Russia led to an embargo on Turkish exports and an additional fall in tourism and construction service revenues. Furthermore, a series of terrorist attacks affected general confidence.

The government was replaced in May by a new cabinet in the context of discussions on constitutional changes. Macroeconomic policies remain supportive, and the projections of this Survey assume that the new government will stick to the basic orientations of the Medium-Term Economic Programme 2016-18 published in January. The fiscal stance is expected to be expansionary in 2016, with the fulfilment of November election promises, but spending restraint is planned from 2017. General government spending according to one measure is projected to increase from 41% of GDP in 2015 to 42% in 2016 before declining to 41% in 2017 and 40% in 2018. Although inflation is well above target, monetary policy was eased from early 2016 in the context of more supportive global capital market conditions, with a decline in the average funding rate of the Central Bank and cuts in the upper bound of the interest-rate corridor. The Central Bank considers that, as of mid-2016, positive real interest rates combined with a horizontal yield curve denote a tight monetary stance. Macro-prudential measures regarding instalment caps were relaxed somewhat, to facilitate the use of credit cards for certain categories of consumer purchases. To support

Figure 6. **Recent economic developments and outlook**



Source: OECD (2016), OECD Economic Outlook: Statistics and Projections (database), http://dx.doi.org/10.1787/data-00688-en.

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the squeezed tourism sector, banks will be allowed until the end of 2016 to restructure loans in this sector before declaring them non-performing.

The domestic and regional geopolitical environment continues to present risks, which are tilted to the downside. Any major deviation in macroeconomic policy from the targets enshrined in the medium-term economic programme 2016-18 issued in January might weaken confidence and increase exchange rate volatility. Tensions on the Syrian border and relations with Russia might improve or worsen. Internal tensions in the Southeastern regions are exposed to similar symmetric risks. In addition, even if direct trade with China is limited, Turkey stays exposed to the indirect global risks arising from China's prospects, lower than expected growth in Europe, as well as from the expected normalisation of US monetary policy. In contrast, the removal of the international embargo on Iran may boost Turkish exports more than foreseen. Table 3 presents some specific risks which are hard to quantify.

Table 3. **Shocks that might affect economic performance**

Shock	Impact
The fiscal and monetary framework of the medium-term economic programme 2016-18 is breached.	International confidence may weaken, affecting capital inflows and exchange rate volatility. Reserve assets may shrink and reduce the central bank's fire power further.
Further escalation in regional and domestic tensions.	Growth would be weaker due to falling tourism revenues and severe spill-over effects (tourism accounts for 4% in GDP and 7% in employment). Additional weakening in business and household confidence would curb investment and consumption. Export markets would shrink.
An exchange rate or other shock pushes inflation into double-digit territory.	Inflation expectations could become unanchored, fuelling a further wage – price – exchange rate spiral calling for sharp monetary policy tightening and leading to lower private domestic spending.

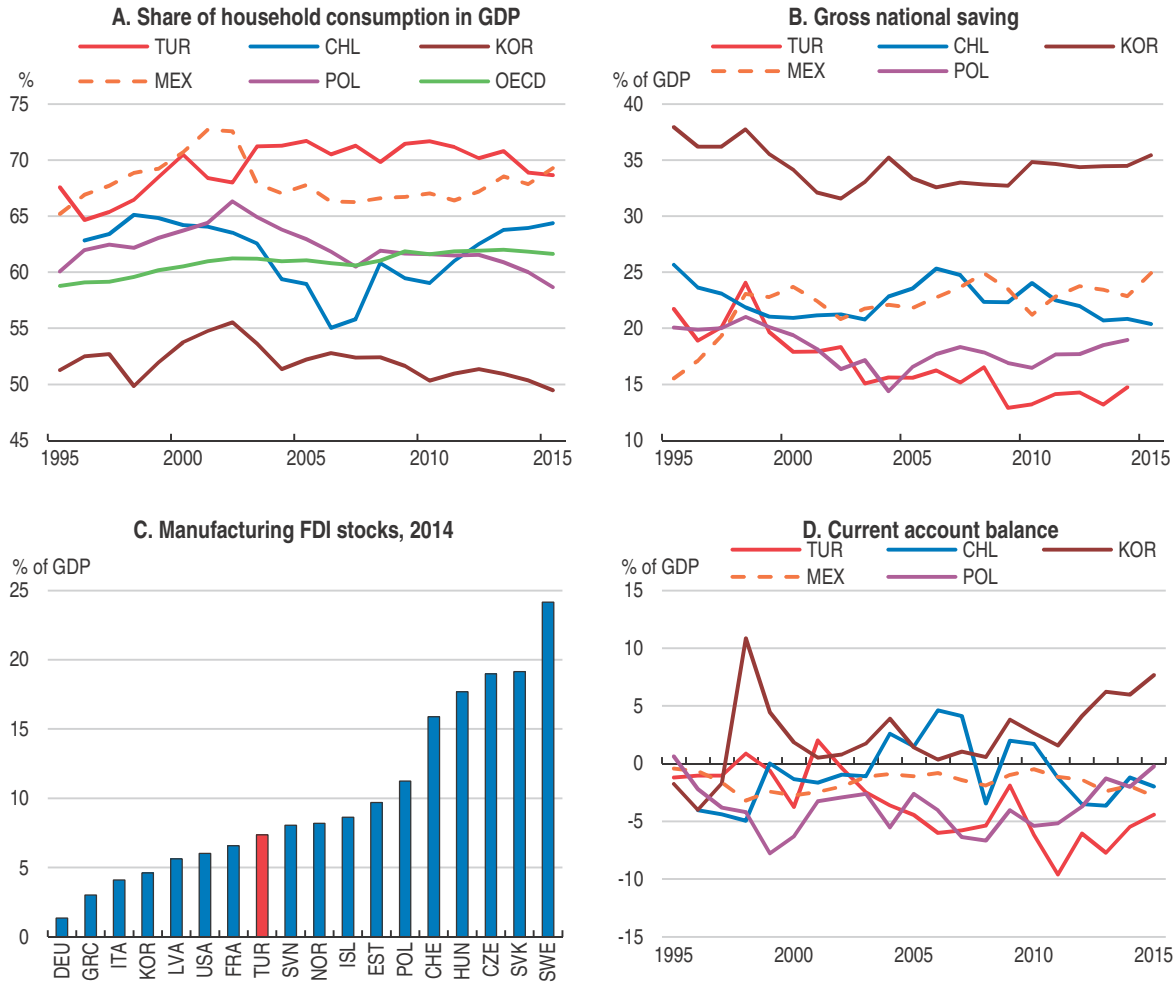
Economic rebalancing to make growth sustainable and more inclusive

Demand became excessively tilted towards private consumption during the high-growth period (Figure 7, Panel A), and final demand was financed too much by foreign savings (Panel B). As a result, the current account deficit has been high for some time (Panel D; OECD, 2014a). Concurrently, FDI inflows have been small (Panel C), resulting in debt finance and limiting benefits such as technology transfer. Policymakers introduced several measures to slow down the utilisation of consumer credits and credit cards to curb credit-financed private consumption, but some relaxation took place recently.

Increasing domestic saving will be crucial for rebalancing growth. The past decade's strong consumption expansion was driven simultaneously by employment, wage and credit growth. Increasing domestic saving requires not only a containment of credit, but also an increase in saving incentives. A government-backed private pension saving scheme was put in place in 2013, whereby the government tops up participants' savings by up to 25%, subject to a cap. As of May 2016, TRY 54.1 billion (2.7% of annual GDP) had been accumulated in this scheme and the authorities plan to automatically enrol all wage-earners (with a possibility to opt out).

Successful rebalancing requires not only slowing down domestic consumption, but also substituting it by external demand. Improving competitiveness is crucial for this. Turkey's price competitiveness worsened during the high-growth period (Figure 8, Panel A). Sharp nominal exchange rate depreciation since the financial crisis has allowed Turkey to recover some of the lost ground, even though the gains were partly offset by persistently high inflation (Panel B). Concomitantly, Turkey's share in world exports has increased, but

Figure 7. **Structural imbalances**



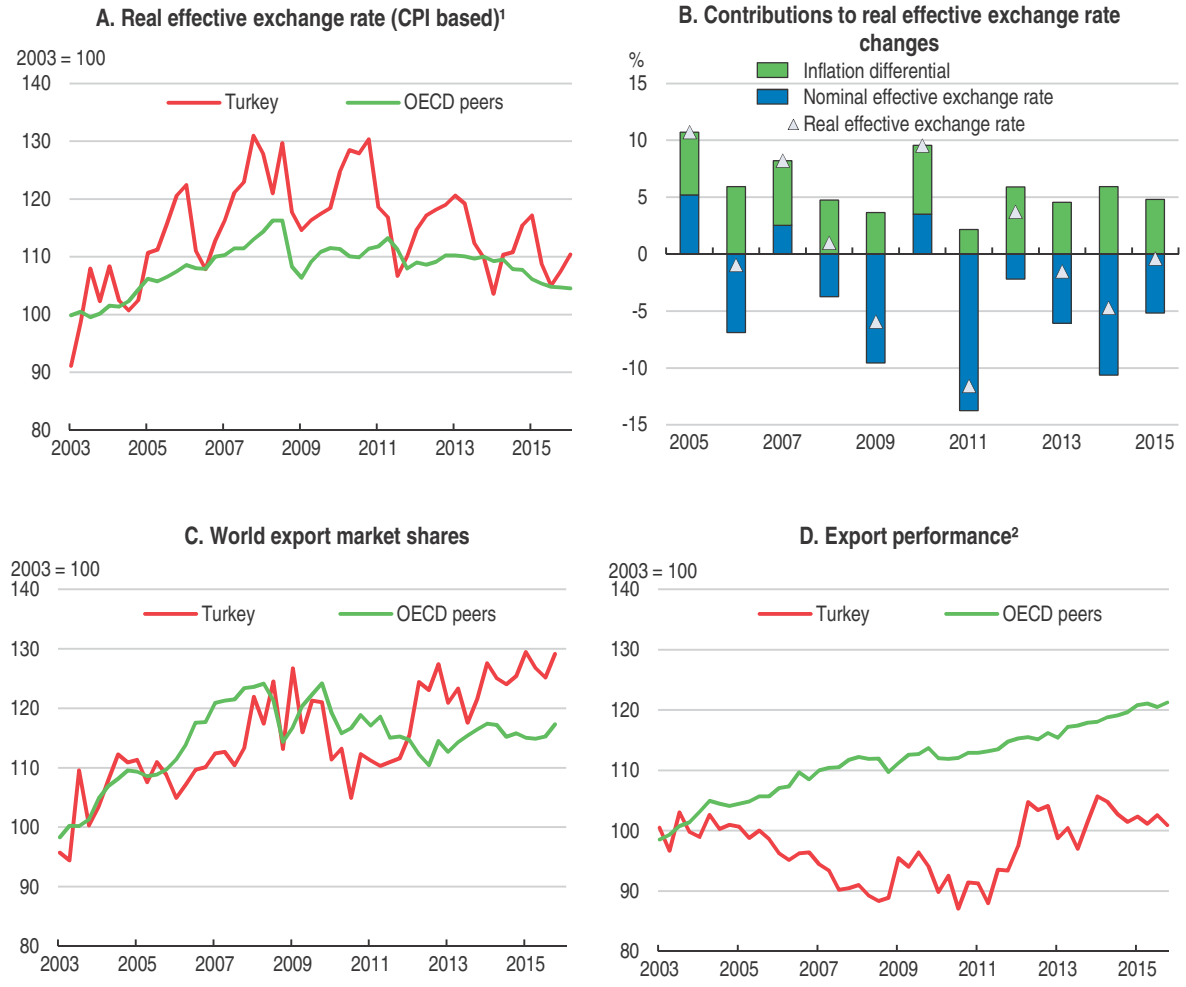
Source: OECD (2016), OECD Economic Outlook: Statistics and Projections (database), http://dx.doi.org/10.1787/data-00688-en; World Bank (2016), World Development Indicators; OECD's Benchmark Definition of FDI, 4th edition.

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this reflected vibrant growth of trade partners rather than market share gains (Panel C). In contrast to OECD peers (i.e. the bottom third of OECD countries in terms of GDP per capita, listed in Figure 3), the cumulated growth of exports relative to the cumulated growth of Turkey's markets (referred to as export performance), has only slightly improved since 2003, much less than in peer countries (Panel D). Total exports of goods and services as a share of GDP increased from 22% in 2005 to 28% in 2015, while they increased from 37% to 45% in Korea and from 35% to 49% in Chile in the same period.

Vigorous and sustainable growth underpinned by stronger price competitiveness and exports is needed to expand high-quality jobs throughout the country. This is required to foster simultaneously economic rebalancing and social inclusion, and in particular gender equality. The employment rates of those with no secondary education, of the 55-64 age cohorts and of youth have increased over the past decade, but remain below OECD standards. About 40% of the men and 75% of the women with no secondary education were jobless in 2014. About 28% of youth aged 15 to 29 were neither in education nor in employment (NEET) – 17% of the men and 46% of the women. Stronger growth would help

Figure 8. **International competitiveness**



1. Increase signifies appreciation and decrease depreciation.
2. Cumulated growth of exports relative to cumulated growth of export markets.

Source: OECD (2016), OECD Economic Outlook: Statistics and Projections (database), http://dx.doi.org/10.1787/data-00688-en.

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include such people, notably in the less advanced regions, where their demographic weight is larger. As well, Turkish women's very low average employment rate (34% in 2014 against an OECD average of 63%) calls for facilitating their participation in the labour market, inter alia through broad-based development of child care infrastructure across the country.

Turkey currently exhibits one of the lowest shares of employment related to exports in the OECD, highlighting the importance of external competitiveness for social inclusion (OECD, 2015g).The challenge of job creation in sustainable export-oriented activities is heightened by the presence of 1.4 million working-age Syrian refugees. Better integrating them in the labour market would strengthen supply potential but will be challenging in the short term (Box 1).

Box 1. **Integrating Syrian refugees**

Turkey has been experiencing massive inflows of refugees from Syria since 2011. As of early March 2016, more than 2.7 million registered Syrian immigrants resided in Turkey according to the United Nations Refugee Agency. This corresponds to 56% of the total number of registered Syrian immigrants worldwide. These numbers exclude immigration from other countries (in particular around 300 000 from Iraq) as well as unrecorded illegal immigration. Thus, Turkey should be commended for shouldering a disproportionate burden in the global refugee crisis.

In order to respect the non-refoulement principle, the Turkish authorities issued new legislation and offered "temporary protection status" to immigrants. While this status provides all immigrants with shelter, only those who enter into Turkish territory via customs are allowed to apply for work visas. Field research conducted by the Turkish Confederation of Employer Associations revealed that less than 5% of Syrian immigrants fall into this category (Erdoğan and Ünver, 2015). The overwhelming majority was excluded from the labour market until February 2016. Since then, a new regulation allows every immigrant to seek a job albeit with a number of restrictions such as local authority approval requirements and firm-level quotas. Immigrants are also allowed to set up firms and are supported through training programmes.

Accommodation conditions differ considerably across immigrant groups. The Disaster and Emergency Management Authority (AFAD) data indicates that around 10% of immigrants live in the camps established along the border. The remaining part is dispersed throughout the country, including the most developed western regions. In terms of demographic structure, immigrants form a young population. More than half are below 18 years old and 20% below 11 years old. Those over 65 account for only 2%. Gender-wise the population is balanced.

In terms of school attendance, AFAD finds a big difference between those who live inside and outside the camps. For the 6-11 year-olds, the school attendance ratio is 83% in the camps, but it falls below 15% outside the camps, which undermines the United Nations' "no lost generation" strategy.

Turkey's Ministry of Foreign Affairs stated that, by the end of 2015, total government spending for Syrian immigrants exceeded USD 8 billion (1.1% of 2015 GDP). Around 5% of this amount has been co-financed by the international community. The 19 March 2016 agreement between the EU and Turkey, which includes a financial assistance package of EUR 6 billion until 2018, would increase co-financing. At the same time, further spending needs are building up in the areas of education, health and language training, which are essential for the integration and social inclusion of immigrants, and will continue to put pressure on Turkey's public finances.

The labour market integration of immigrants in the short term will also be demanding. AFAD found that only 20% of Syrian immigrants have a secondary education background or more. The estimated number of working age immigrants attained about 1.4 million (5% of Turkey's labour force) and their entry in the labour market will represent a major expansion in the lower-skilled end of the market. Studies by Ceritoğlu *et al*. (2015) and Del Carpio and Wagner (2015) suggest that immigrants started to replace Turkish employees in significant numbers in certain market segments, such as seasonal agricultural work, informal work and female service jobs. They also find positive signs that Turkish employees in border regions secure better-paying, formal jobs due to increased spending by and for the immigrants.

Overall, the opportunities for low-skilled immigrants to find jobs in the formal sector are low under existing employment rules and regulations (including the new minimum wage). This is why many immigrants work in the informal sector. Labour market reforms would considerably facilitate the legal employment of refugees in higher-quality jobs in the formal sector.

Strengthening the resilience of the economy

The European Commission developed a range of cross-country indicators of macroeconomic imbalance (Table 4). In Turkey's case, despite improvements in a number of sub-indicators, vulnerabilities are apparent in three main areas: i) dependence on external capital inflows, ii) credit-dependence of domestic demand, and iii) inflation inertia. As highlighted in related OECD research, macroeconomic imbalances risk being perpetuated by exceptionally supportive global capital market conditions (Roehn, 2016).

Table 4. **Macroeconomic imbalances**

Variable	Current account balance	Net int. investment position	Real effective exchange rate	Export market shares	Nominal unit labour cost	Deflated house prices	Private sector credit flow	Private sector debt	Public debt	Unemployment rate	Financial sector liabilities
Statistic	3 year Average	% of GDP	% change (3 years)	% change (5 years)	% change (3 years)	% change (1 year)	% of GDP	% of GDP	% of GDP	3 year Average	% change (1 year)
Turkey (2015)	-5.9	-51.2	-6.5	12.3	26.0	11.1	10.3	88.7	32.9	9.8	3.2
Average EU	1.8	-31.6	-1.1	-1.1	2.6	3.2	1.0	148.1	72.5	10.4	5.1
Average OECD peers among EU	1.1	-69.1	-2.2	-2.2	1.9	3.8	0.5	104.6	77.4	11.7	4.4

Note: OECD peers among EU countries are: Czech Republic, Slovenia, Portugal, Slovak Republic, Estonia, Greece, Hungary and Poland. Data refers to 2015 or latest year available.
Source: European Commission; OECD (2016), OECD Economic Outlook: Statistics and Projections (database), http://dx.doi.org/10.1787/data-00688-en; Central Bank of Turkey.

Coping with a high dependence on capital inflows

Large current account deficits have eroded Turkey's net international investment position. Moreover, between 2007 and 2015, the composition of gross external liabilities has shifted towards debt while the share of FDI and equity has declined over the decade – notwithstanding some improvement in 2015 (30% of external liabilities in 2015 against 45% in 2007 and 2010). Over the same period, the share of short-term debt in total external debt has nearly doubled and reached more than 33% in 2013-14, before dropping to about 30% in late 2015 (Figure 9). As a result, gross external financing needs including the funding of the current account deficit and maturing external debt are projected to reach around 25% of GDP in 2016. Turkey remains vulnerable to volatile international capital flows and erratic exchange rate movements. Worldwide, large debt inflows have tended to increase the probability of banking crises or sudden stops (Catão and Milesi-Ferretti, 2014; Ahrend *et al.*, 2012; and Furceri et al., 2011). Further FDI inflows and accumulation of foreign exchange reserves would reduce exposure to such shocks

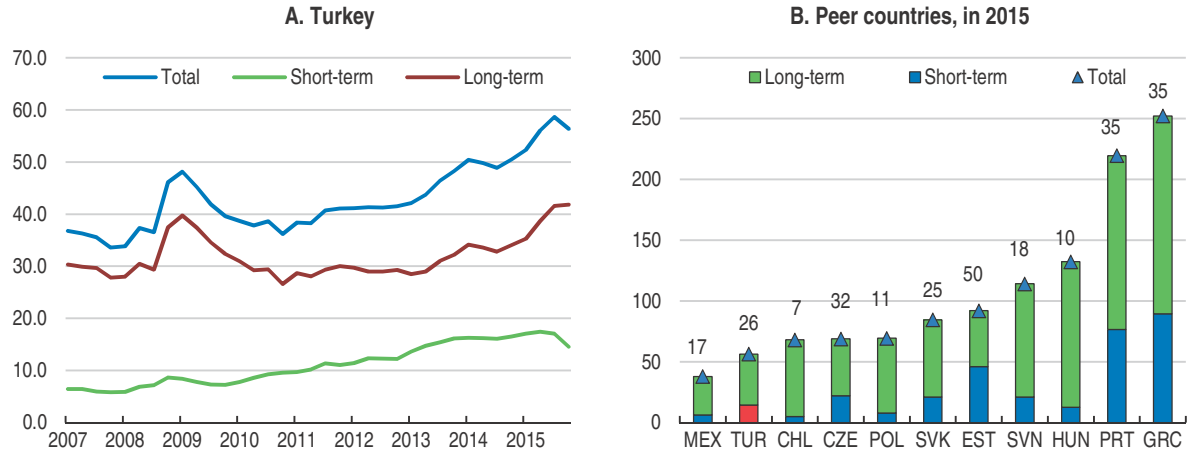
Foreign exchange selling auctions and several interventions by the Central Bank to alleviate exchange rate pressures over recent years have reduced foreign exchange reserves, whose level as a share of GDP is low compared with many other countries and below adequate levels according to the latest IMF Article IV report on Turkey (IMF, 2016). In early 2016, amid a gradual easing of perceived global risks, international reserves, measured in US dollars, rebounded from their 2015 lows albeit without reaching levels observed in 2012-14. Given the large structural current account deficit and the volatile external environment, the central bank should accumulate more international reserves.

As a response to the increasing share of short-term external debt positions, reserve requirement ratios for short-term loans, in particular forex loans, have been increased

several times (most recently in March 2015) resulting in a slowdown of forex loan growth in the course of 2015.

The resilience of large enterprises, which hold the bulk of external private debt, is further strengthened through the use of hedging vehicles. However, the share of the inward FDI stock remains low in international comparison despite the recent acceleration of inflows. Turkey is generally open to FDI but has restrictions in a number of sectors, in particular in certain transport and business services (OECD, 2015c). Lifting the remaining restrictions and, more importantly, making the business environment more attractive for large formal firms would facilitate FDI in all sectors, reduce the relative weight of external debt, and strengthen the economy's resilience.

Figure 9. **Gross external debt**
% of GDP



Note: Panel B: Numbers above bars indicate percentage share of short-term debt in total external debt.
Source: World Bank, Quarterly External Debt Statistics.

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Preventing excessive credit growth and mitigating contagion risks

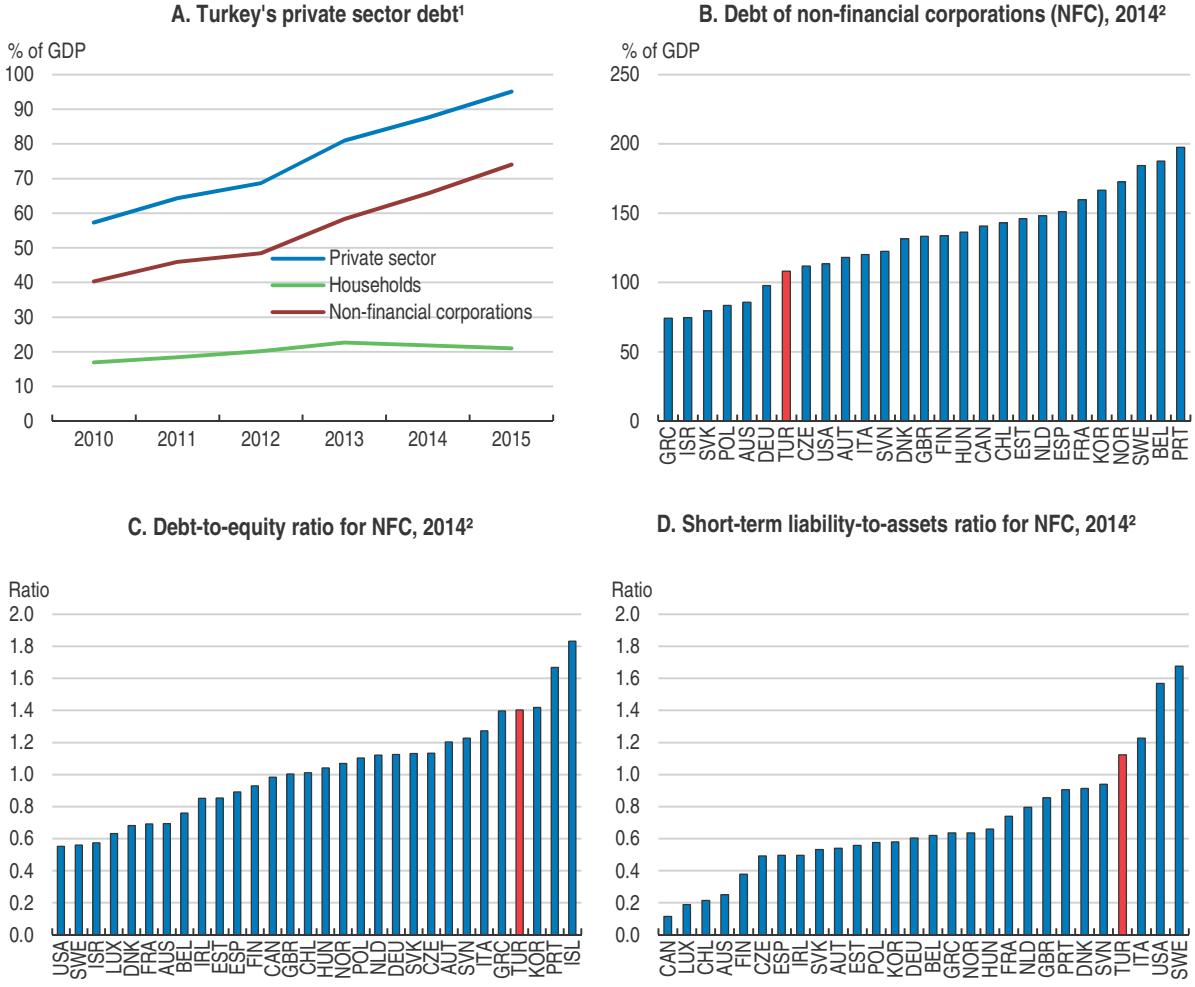
Consumer credit growth exceeded 20% per annum on average between 2010 and 2013, prompting the introduction of a set of macro-prudential measures in late 2013, as documented in the previous *OECD Economic Survey* (OECD, 2014a). The growth of credit card and vehicle loans subsequently declined but housing loan growth has remained relatively strong, spurring vibrant housing construction. At the same time, the introduction of loan-to-value ceilings at the end of 2010 has reduced the risk that sudden price corrections could generate substantial losses for banks on their mortgage books. The ban of variable interest rate and forex loans for consumers has further strengthened the resilience of household balance sheets.

The recent surge in price-to-income and price-to-rent ratios has heightened the risk of sudden price corrections in the housing market. Yet, much of the measured increase in house prices can be attributed to demographic developments, the liberalisation of the real estate market and the improved quality of the housing stock (Hülagü et al., 2016). Moreover, the ratio of gross rents to house prices in Istanbul, though falling, is still higher

than in most other European countries' major cities – suggesting that prices may not yet have peaked (Global Property Guide, 2016).

Corporate debt has continued to expand at a sustained pace (Figure 10, Panel A), although, as a share of GDP, it remains low in international comparison (Panel B). Nonetheless, Turkey is the only OECD country alongside Italy where both the ratio of debt-to-equity and the ratio of short-term liabilities to short-term financial assets exceed 1 (Panels C and D). The number of bankruptcies has increased at a rather moderate pace in recent years (UYAP, 2016), but a number of experts anticipate a spurt in 2016, as many medium-sized firms with weak capital structures face more difficult market conditions (Özüner, 2016), for example in tourism. Even if some bankruptcy applications may seek to exploit loopholes in bankruptcy legislation (Hisarcıklıoğlu, 2016), stronger capital structures would help reduce these vulnerabilities.

Figure 10. **Private sector debt**



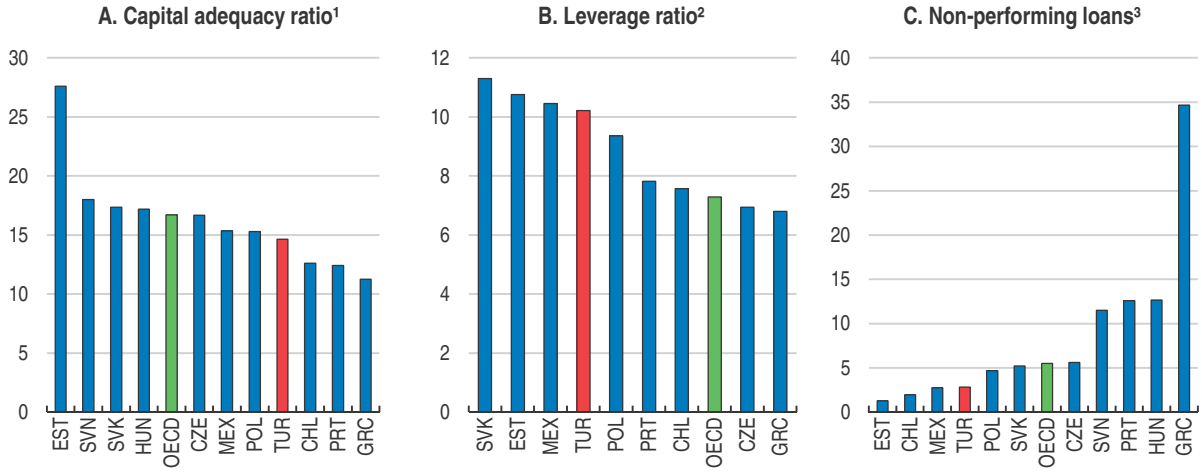
Note: All debt figures come from non-consolidated financial accounts.
1. Debt definitions according to European Commission (loans and debt securities).
2. Debt definitions according to IMF (gross liabilities minus equity and financial derivatives).
Source: Central Bank of Turkey; and OECD Financial Dashboard (2014).

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On the back of fast credit growth, and in a context of exchange rate pressures and falling returns on equity, domestic banks' capital adequacy ratios have declined until late 2015, before improving thanks to higher profits. Overall, equity buffers remain strong in the banking sector and leverage ratios (which are not risk-based) easily exceed the minimum legal requirement of 3% (Figure 11, Panel B). Non-performing loan ratios are also lower than in most peer countries (Figure 11, Panel C). Further measures such as accepting foreign exchange reserves as collateral or increasing remuneration of TRY-denominated reserves have supported banks' liquidity management and their core liabilities. Credit conditions tightened from the second half of 2015, however, amid domestic uncertainties and as capital requirements started to constrain lending.

Figure 11. **Banks remain well capitalised**

Q3 2015 or latest available



1. Capital adequacy ratio is defined as regulatory capital divided by risk-weighted assets.
2. Leverage ratio denotes Tier 1 capital divided by total unweighted assets.
3. Non-performing loans are expressed in percentage of total gross loans.

Source: IMF (2016), Financial Soundness Indicators database.

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Curbing inflation and reducing exchange rate volatility

Despite collapsing international oil prices in 2015 and early 2016, consumer price inflation has continued to overshoot the official 5% target (Figure 6, Panel F). Inflation appears entrenched at high single-digit levels, reflecting strong and asymmetric pass-through from exchange-rate fluctuations (Kal et al., 2015), the indexation of many wages and service fees, and low downward flexibility of prices in several markets, including food products. Core inflation and inflation expectations also stayed consistently above target. In addition, the central bank projects that the 30% jump in minimum wages in January 2016 may add another percentage point to inflation by the end of 2016 (CBRT, 2016).

Under exceptionally supportive global financing conditions and a fully open capital account, the central bank continues to face an acute monetary policy dilemma: on the one hand, high domestic inflation calls for tight monetary policy; on the other hand, high interest rates tend to draw in capital inflows that fuel domestic credit and push up the real exchange rate. So far the central bank has handled this tension by operating an unorthodox interest-rate corridor, meant to help lean against volatile capital flows (Figure 12, Panel A). At the same time it tried to contain domestic demand with the help of

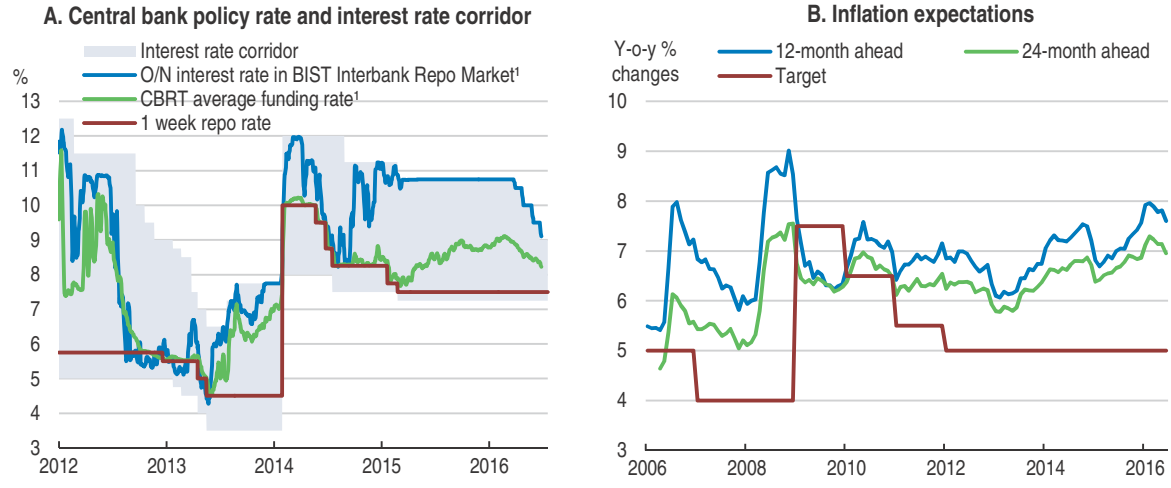
an active macro-prudential policy. This instrument mix helped stabilise the real exchange rate, but failed to achieve the inflation target. The credibility of the target is currently very low (Figure 12, Panel B), while the Central Bank aims at regaining credibility in the short term by anchoring inflation expectations around its forecasts (as in some past episodes, see Başkaya *et al.*, 2012).

The central bank projects that, under current policies, inflation will converge to target in 2018. However, there is a risk that inflation will fall considerably less, in which case monetary policy will need to be tightened to bring inflation back towards the target and prevent further erosion of central bank credibility.

Policymakers and social partners can support central bank's efforts to regain credibility by moderating wage and price pressures. The official minimum wage is earned by a large number of workers, has spill-over effects throughout the entire wage spectrum and is determined by a commission where government, employee and employer representatives are equally represented. Consensus between social partners on a sustainable real wage path may help achieve disinflation. International experience suggests that minimum wage policy settings avoiding rigid nominal indexation on price or wage inflation can be helpful (OECD, 2015k).

The credibility of the central bank would be improved by further narrowing the policy-interest-rate corridor, in line with what has been recommended in the previous OECD Economic Survey (OECD, 2014a) and more recently by the IMF (IMF, 2016). Indeed, the current 7.25% to 9.00% corridor is still relatively wide by international standards.

Figure 12. **Monetary policy and inflation expectations**



1. 5-day moving averages are shown.
Source: Central Bank of the Republic of Turkey.

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The role of fiscal policy

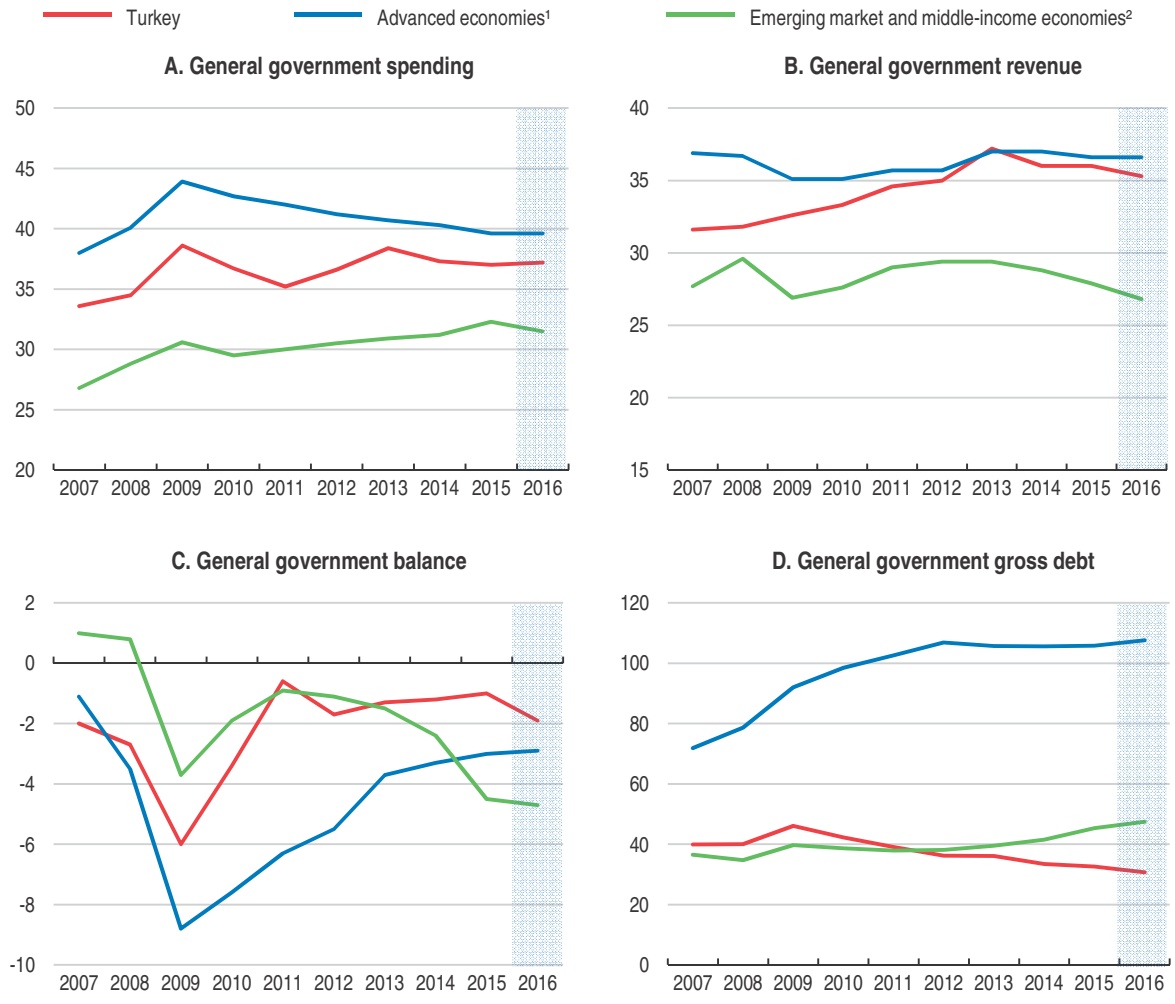
As emphasised in past OECD Economic Surveys, the transparency of public finances should be improved to better assess fiscal outcomes and space. General government accounts should be consolidated and published according to international national accounting standards, validated by the Court of Accounts and Eurostat, and used as the central reference in fiscal policy-making and medium-term macroeconomic planning.

Progress has been achieved on individual components of these accounts, including on a quarterly basis, and alternative general government figures have been published by different ministries in different official documents. However, the objective of a standard consolidated data set has remained elusive so far. Fiscal transparency along international good practices would reinforce the hard-won credibility of public finances, and help manage the fiscal stance after controlling for cyclical and one-off effects.

In the absence of a unified national general government accounting system, IMF Fiscal Monitoring Reports are the best available source to evaluate Turkey's fiscal position. According to IMF indicators, Turkey's general government balances have remained on a broadly sound path over the past decade, despite an uptick in expenditures in 2016 due to election promises. Prospects appear sound in the short term (Figure 13). At the same time, these accounts do not include all relevant liabilities for long-term fiscal sustainability, such as long-term pension and health liabilities.

Figure 13. **Fiscal performance in international comparison**

In per cent of GDP



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 (2016), Fiscal Monitor, April 2016.

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The periodic publication of Fiscal Policy Reports would be useful to monitor the cyclically-adjusted and underlying fiscal stance, as well as the long-term sustainability of public finances. All explicit and implicit government guarantees should be covered, including those given to public-private partnerships and to the public banks having financed them. Quasi-fiscal activities in the public sector should also be included. Progress with fiscal transparency would facilitate the introduction of a formal fiscal rule, after an unsuccessful attempt in 2010.

Restructuring the tradable sector by upgrading the business environment

Macroeconomic rebalancing and social inclusion call for faster productivity growth, which would deliver competitiveness gains, boost exports and help reduce external imbalances, while fostering high-quality job creation throughout the country. Rebalancing would thus serve to overcome the enduring tension between growth and external sustainability. Faster productivity growth necessitates speeding up structural change in the business sector and requires improving the environment for doing business, a broad-based upgrading of the skill base, reliable governance institutions, level playing enforcement of the rule of law, alignment of product, labour and capital market rules with OECD good practices, and a streamlined tax and subsidy system. Many of these requirements were reflected in the 2016 Action Plan and in follow-up preparations.

A large potential for productivity-enhancing structural change

To foster rebalancing, the international competitiveness of the economy should be durably improved. As room is limited for reducing factor costs (wages and capital costs), this necessitates a substantial increase in productivity. Even if, in the long term, it is only by improving Turkey's human capital that productivity can permanently improve, in the short and medium term there is significant room for achieving productivity gains under existing resources. An overly large share of employment is currently trapped in low-productivity informal and semi-formal firms. If this divide in the business sector can be overcome and a larger share of employment can shift to better-performing firms, productivity would significantly increase. This calls for:

- Fostering market entry, notably in new tradables with high value-added.
- Reorienting domestic market-driven firms to foreign markets, to stimulate "learning by exporting".
- Strengthening productivity of existing exporters by more intense training, better management and additional R&D activities, including by enhancing R&D collaboration between exporters, universities and public research institutes.
- Promoting entrepreneurship in sectors that have high growth and export potential such as health related industries, biotechnology, information and communication technology and environmental technologies.
- Allowing high-productivity firms to grow faster by facilitating the reallocation of employment to these firms.

All these improvements would be accelerated by better integrating Turkish firms in global value chains (GVCs). Integration into GVCs facilitates market entry, boosts the productivity of existing operators through know-how and technology transfers, and fosters the growth of successful firms by offering access to large customer networks.

Reducing domestic productivity gaps

Manufacturing plays a particularly important role in employment creation in less advanced regions and in aggregate export performance. It includes a large proportion of domestic service inputs and ties them to the "global reach of manufactured products" (De Backer et al., 2015). Compared with other catching-up OECD economies, Turkey's manufacturing sector has had slower productivity growth, lost competitiveness and fared less well in international markets. Manufacturing accounts for a smaller share in national output and employment than in many other emerging market OECD countries (Figure 14).

Weak productivity growth is rooted in substantial gaps in firms' resources and capacities, i.e. their access to technology, capital, professional labour and international partnerships. A first divide resides in the degree of firm institutionalisation. The most formal enterprises comply fully with existing rules and regulations and issue regular and comprehensive financial statements. They are captured in the central bank's balance sheets database. They have relatively high sales per worker and robust productivity growth, but represent a minority of firms in manufacturing.

Most firms, however, do not attain the same degree of formality and transparency. Performance gaps between the narrow population of fully formal firms in the central bank dataset (described below as the "fully formal" sector) and the total population of manufacturing firms (captured in a wider Turkstat dataset) hints at massive performance divergences between the two groups. In particular, labour productivity growth among fully formal firms has been much stronger over the past decade than in the rest of manufacturing (Figure 15, Panel A).

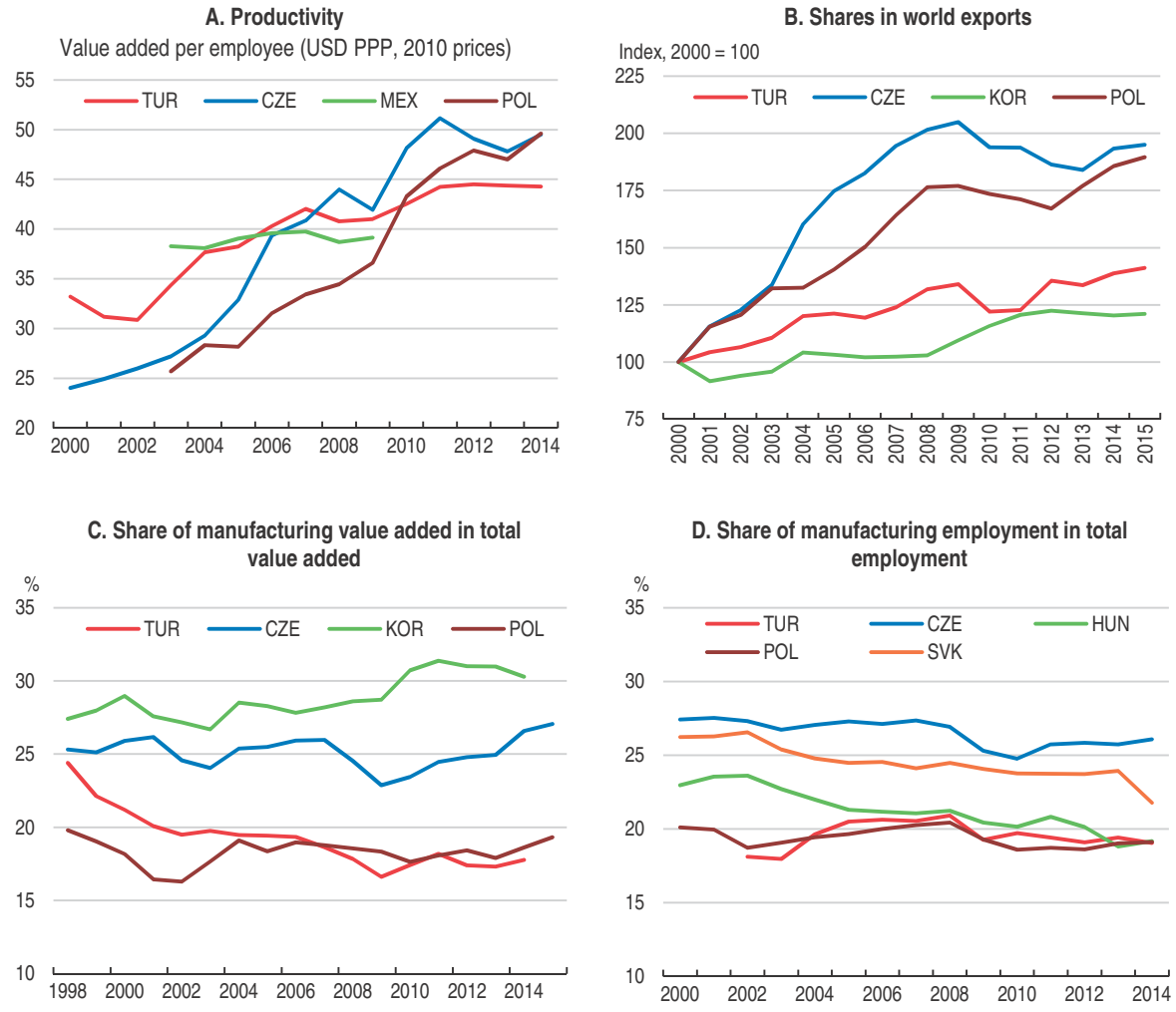
Divergences are also deep between "national frontier firms" (the top 10% firms in sales per worker), "laggards" (the bottom 20%) and "intermediary" or "follower" firms (the rest). These gaps are found both within the fully formal sector (Figure 15, Panel B), and in broader manufacturing (Panel C). Labour productivity growth between 2003 and 2013 was much stronger for the frontier firms than for followers, which in turn achieved stronger productivity gains than the laggards. This suggests that productivity diffusion works very poorly. Thus, strengthening the linkages between national frontier firms and others offers a big potential for productivity growth in the Turkish manufacturing sector, similar to integration into GVCs.

Average productivity is considerably undermined by the low performance of laggards (Figure 15, Panels B and C). Detailed information is not available on the characteristics of these firms, but available evidence suggests that they face challenges in two key areas: managerial quality, and employees' human capital (Bloom et al., 2014). A large proportion of these firms likely consist of small businesses run by low-skilled entrepreneurs employing low-skilled workers (Figure 15 Panel D). These operate informally or semi-formally, and therefore face lower legal and regulatory costs than larger firms. Many would struggle to survive if the business environment were level. Their exit, however, would create challenges in terms of re-employing their workers.

A number of structural features perpetuate the deep segmentation between different types of firms, hinder productivity diffusion and curb higher-productivity firms' share of total employment:

- Gaps in basic human capital across firms. These appear particularly severe in general management know-how, foreign language proficiency and basic digitalisation knowledge of business owners, as well as with respect to access to vocational training for their employees.

Figure 14. **Turkish manufacturing underperforms international peers**

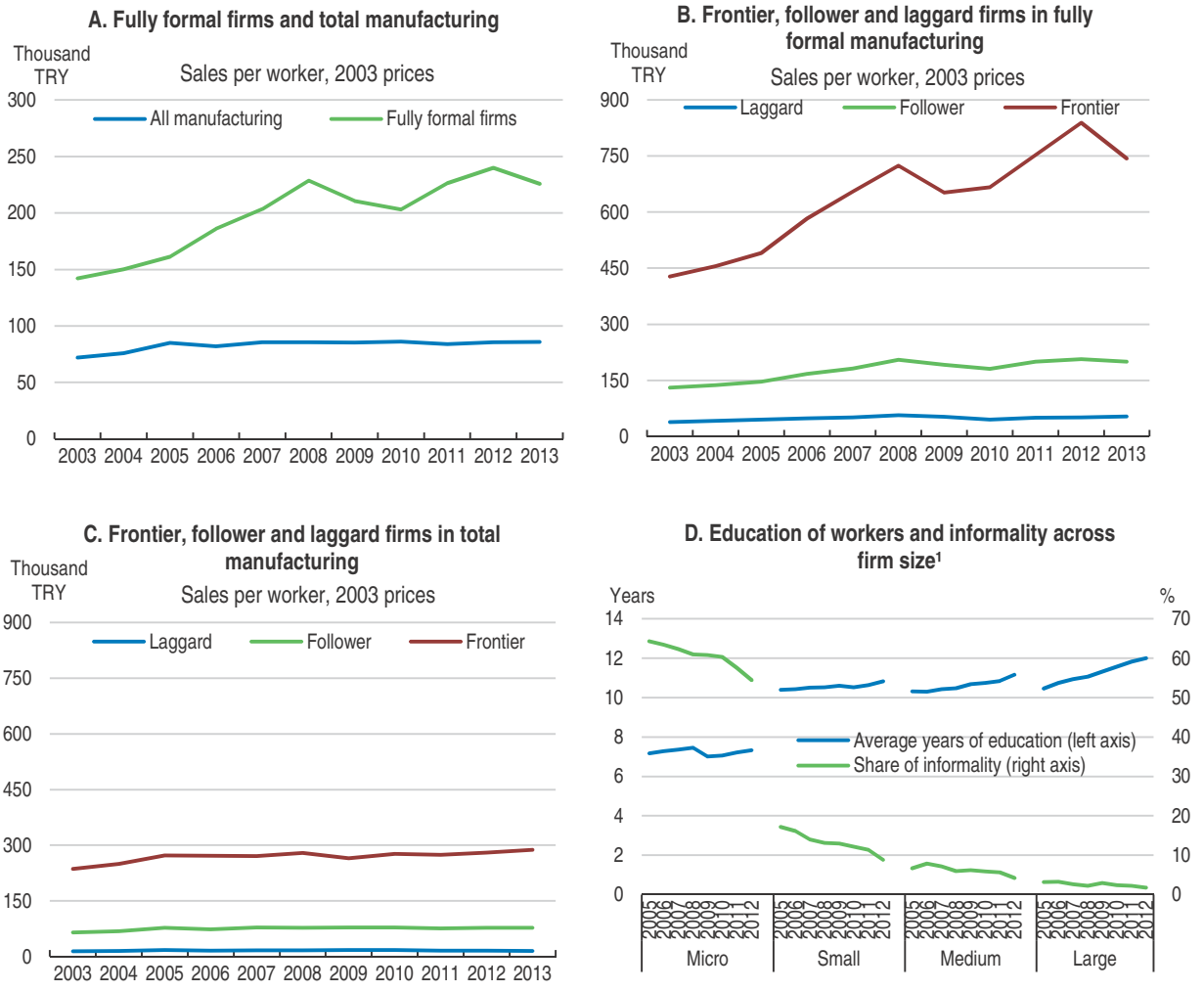


Note: Different international comparators are used for different indicators, according to data availability.
Source: Turkish Statistical Institute; OECD National Accounts at a Glance database; OECD calculations.

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- Many medium-sized family firms achieve only limited formalisation, sticking to semi-formal business practices. Minimising tax liabilities and maintaining family control may be slowing down their transition to formal corporate governance arrangements, to the professionalisation of management and to fuller financial transparency.
- Lack of formalisation and transparency hampers firms' access to banking and financial services, to the stock market and to international partnerships. As these services and resources become more important for firm performance, the gap between fully formal and less formal firms widens.
- Fully formal firms, both domestic and foreign-owned, are highly sensitive to the quality of their business environment. They acknowledge that the rule of law, the fight against corruption and competition improved in their markets in the 2000s, but also caution against a deterioration in recent years, which harms foreign firms even more than domestic ones (Figure 16, Panel A).

Figure 15. **Significant productivity divergences**



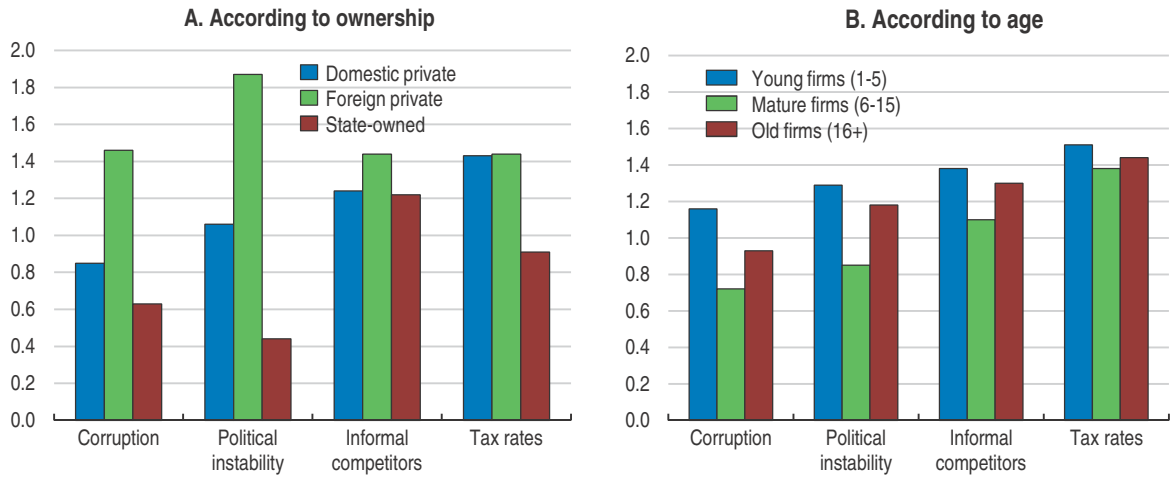
1. Informality is defined as share of workers not registered with social security institutions.
Source: Turkish Statistical Institute; Central Bank of the Republic of Turkey.

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- Large formal firms are particularly hindered in labour-intensive activities, despite the recent liberalisation of temporary work agency contracts. Turkey's employment regulations deprive law-abiding enterprises of the wide range of employment forms available in other OECD countries (OECD, 2014a). So far, more flexible employment forms have been mainly accessible for informal and semi-formal businesses, for both regulatory and practical reasons. These jobs are very precarious and lack the social protection associated with the flexicurity systems in place in other OECD countries.
- There are also obstacles to the growth of young, human capital-intensive and high-performance firms. These firms declare being particularly affected by pressures arising from illicit practices, non-level playing competition and political unpredictability (Figure 16, Panel B). As they are generally law-abiding and financially transparent, they cannot escape taxes and find the prevailing tax system insufficiently supportive of their activities.

Figure 16. **Investment obstacles reported by fully formal firms**

Index scale 0 (no obstacle) to 4 (very severe obstacle)



Source: World Bank (2013), Enterprise Survey; and OECD calculations.

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Fostering integration into global value chains

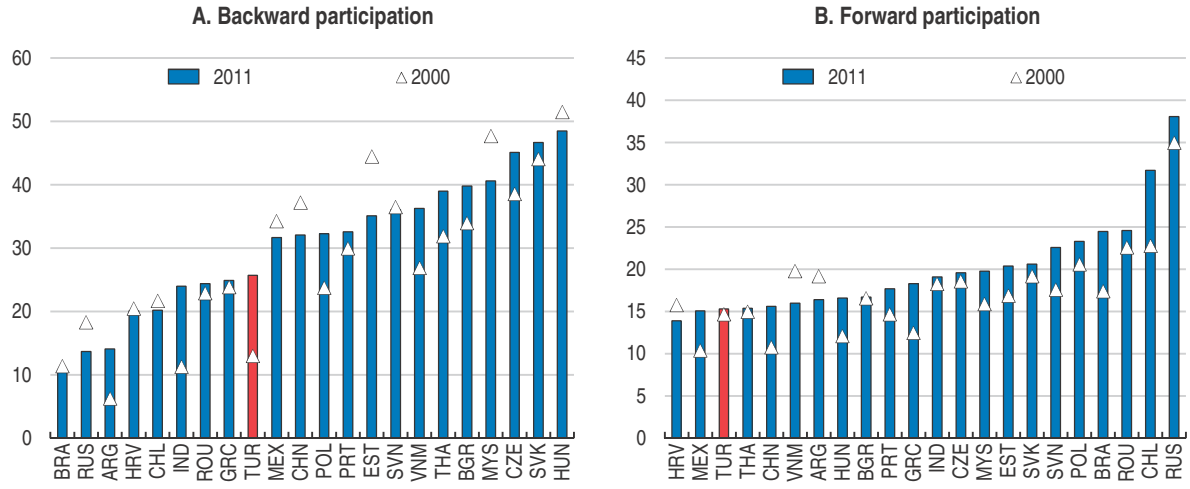
The level of exported value added per capita has increased thanks to the dynamism of Turkey's exporters and export markets but remains low (Figure 8, Panels C and D). The emergence of regional and world-wide supply chains has radically modified the organisation of global production over past decades. Capital has become increasingly mobile, including across borders, and production chains more and more geographically fragmented. Against this backdrop, reaping the benefits of GVCs is a major challenge for Turkey. Fostering integration into GVCs would not only boost growth and productivity, but also help rebalance final demand and reduce current account deficits. It can also generate ample benefits for employees and consumers owing to better quality products and improved working conditions provided that firms operate in the formal sector and are amenable to international codes and standards (Gereffi and Luo, 2015).

A major advantage of GVC data is that it can distinguish foreign from domestic content embodied in exports and final demand. A country's backward participation measures the import content of exports and hints at the extent to which a country's export industry relies on upstream international production chains. Forward participation reflects the extent to which a country's exports are used as inputs in other countries' exports, or in other words the extent it feeds into global downstream activities. TiVA data suggests that the integration of Turkish firms in GVCs falls short of potential (Figure 17). Backward participation more than doubled between 2000 and 2011, but is still below what could be expected given Turkey's relatively favourable geographical position and the scarcity of its primary products. Forward participation has remained low since 2000.

Turkey's still-low backward participation is partly explained by industry composition, as Turkey's gross exports are more concentrated in low- to medium technology sectors that typically rely less on foreign intermediate inputs. Also, the particularly low import-intensity of service sectors in Turkey reduces average backward participation. Forward participation, on the other hand, tends to be weak across the board. Controlling for factors

Figure 17. **Global value chain participation indices**

As % of total gross exports



Source: OECD/WTO (2016), "Trade in value added", OECD-WTO: Statistics on Trade in Value Added (database). DOI: http://dx.doi.org/10.1787/data-00648-en.

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that generally affect participation in GVCs does not significantly alter Turkey's relative position, hinting at bottlenecks in its policy framework. Turkey exhibits one of the lowest shares of employment that is sustained by foreign demand. Deeper GVC integration would generate new jobs and employment, including for the low skilled, and would further benefit better capital and human resource allocation. Innovation, more intense competition and better resource reallocation are also conducive to enhancing social mobility (Aghion et al., 2015).

Avenues to promote stronger integration of Turkish firms into GVCs include:

- Raise the quality of basic institutions. World governance indicators suggest ample room for improvement in voice and accountability, political stability, government effectiveness, regulatory quality, the rule of law and the control of corruption.
- Improve ICT infrastructure, in particular internet-based and software-based business solutions (E-purchases, E-sales, enterprise resource planning systems).
- Increase cross-border cooperation and reduce cumbersome custom procedures.
- Deepen trade agreements. Turkey has concluded many agreements to abolish tariffs on trade of manufactured goods, and agreements should also be reached on the liberalisation of services, investment, competition, intellectual property and public procurement.
- Reduce entry barriers for foreign capital in the services where they remain high.
- Improve business conditions to attract more FDI, which has been very low.
- Raise R&D spending, which has increased over the past decade but falls short of the government's own longer-term targets. Make the policy framework more experimentation-enabling, including by reducing the costs of failure.
- Better match skills and labour market needs by raising educational spending, improving attainment in literacy, numeracy and problem-solving skills, further raising enrolment in higher education, and developing vocational training.

- Raise the standards of corporate governance and managerial skills.

Progress along these dimensions would lift Turkey's integration into GVCs, in particular its forward dimension. This would improve openness to trade which is arguably a significant driver of per capita GDP growth (e.g. Barro, 2015). Greater integration into international supply chains would also trigger new investments in Turkey and generate technological and skill spillovers thereby boosting productivity. Increased forward participation requires the production of competitive intermediate products and services which could also spill over to a reduction of the import content of domestic consumption. In the latter case, backward participation would be reduced, but both would contribute to reducing the structural current account deficit and make growth less dependent on external financing conditions.

GVCs extend the potential market for Turkish firms but also expose the economy to a greater number of shocks. To this extent, the resilience of the Turkish economy would benefit from greater product and regional diversification of export activities. Moreover, potential adverse distributional and environmental effects need to be monitored. Progress with GVC integration could, in the short term, increase the distance between national frontier firms and national laggards which could mechanically increase inequality, although all income levels would rise. Furthermore, Turkey's environmental policies, which are the least stringent in the OECD (Botta and Kozluk, 2014), could draw a disproportionate share of resources into energy-intensive or polluting production (Kozluk and Timiliotis, 2016).

The 2016 Action Plan

Most of these policy issues are recognised in the 10th National Development Plan 2014-18, adopted in June 2013. The Plan included an extensive reform agenda with 25 "Priority Transformation Programmes". However, in a difficult political context and amid four national elections over 2014-15, implementation lagged. Following the establishment of a single party government after legislative elections in November 2015, the authorities launched a new Action Plan. Unveiled in January 2016, it included an implementation deadline for each measure. However, this government was replaced by a new one in late May. The new government declared its continuing commitment to the reforms enshrined in the 2016 Action Plan in the new Government Program which is published on May 24, 2016.

The Plan comprised 11 sections, ranging from fundamental human rights to local administration (Table 1 above). The bulk of the package was dedicated to the practical needs of business enterprises. A total of 216 measures covered technical improvements in public services to firms, new incentives for vocational and on-the-job training, improvements in commercial courts and customs, new industrial zone development initiatives, etc. The Plan also included a number of reform orientations long advocated by the OECD, including measures to promote flexicurity in labour markets, initiatives to enhance performance transparency and accountability in the education system, and regulatory impact assessments in all future legislative initiatives.

Since the Plan's launch in January 2016, the previous government repeatedly stated their commitment to implement the planned measures in the course of 2016. They reported that, despite an intense legislative agenda with the enactment of a new budget for 2016 and the completion of the legislative procedures for the visa waiving deal with the European Union, 70% of the actions scheduled for end-March had been completed. These

included a new package strengthening the rights of working parents and maternity leave entitlements, and new legislation improving the effectiveness of publicly-funded R&D and design centers.

Some of the most critical measures scheduled for end-March could, however, not be implemented. These notably include the severance pay reform. The strong opposition by unions and the reluctance of parts of the business sector once again delayed the adoption of this fundamental reform. Work agency services started to be liberalised with a new law adopted in May 2016. Further progress with labour market and flexicurity reforms should have particularly high priority. If the new government maintains the reform targets, regular implementation reports, including as much detail as possible on the actual progress achieved in each individual area, would uphold the credibility and momentum of the reform agenda.

The previous government had also started to work on a follow-up to the 2016 Action Plan. The objective was to make progress with a more comprehensive upgrading of the business and regulatory environment. To this effect, the Coordination Council for the Improvement of the Investment Environment (YOİKK) (OECD, 2010) was revived. This body, created in the early 2000s to advise the government on reforms, was tasked with making concrete legislative and regulatory proposals to facilitate the conditions for doing business. As of May 2016, also building on the "Investment Climate Improvement Programme" of the National Development Plan 2014-18, this Council had elaborated some 50 proposals, most of which the previous government was envisaging to transform into law as a follow-up to the 2016 Action Plan.

Priorities for reforms

This section presents a comparative picture of parameters of the business environment which, according to the analysis in this Survey, are crucial for productivity growth, competitiveness gains, sustainable and high-quality job creation and progress with social inclusion. It focusses on four areas: i) human capital, ii) integrity of governance institutions, iii) quality of product and labour market regulations, and iv) the tax and subsidy system. It appraises Turkey's relative position against OECD comparators and highlights areas which invite special attention. It could help authorities monitor progress with ongoing reform initiatives (including the 2016 Action Plan and follow-ups to it) and assess priorities for future reform efforts.

Education and human capital

Turkey has made substantial progress in the area of education and human capital, but gaps vis-à-vis OECD benchmarks remain very large. This is due on the one hand to the incremental nature of improvements in the human capital stock because of very gradual cohort effects, and, on the other hand, to the quality of education lagging behind quantitative changes in school years. Table 5 highlights Turkey's position in key educational indicators in international comparison.

Figure 18 illustrates the room remaining for Turkey to converge with OECD educational standards. In each area, the average score of the top three OECD performers sets the frontier, and Turkey's distance to this frontier is shown in form of bars. The average distances of catching-up OECD economies as well as the distance of the best three performers among these catching up OECD economies are also shown. Lower bars show a relatively good position and higher bars a large room for catching-up. The same

Table 5. **Educational indicators in international comparison**

Key Indicators	**TURKEY**	Average OECD countries	Best 3 OECD countries	Average OECD catching-up countries	Best 3 OECD catching-up countries
Average schooling years of adults (25-34)	8	11	14	10	12
Percentage of adults (25-64) with at least secondary education	36	76	92	71	92
Percentage of young adults (25-34) with at least secondary education	50	83	96	79	94
Percentage of young adults (25-34) with at least tertiary education	25	41	59	33	40
Percentage of 25-34 year-olds that have attained an upper secondary VET qualification as highest level of education	11	28	55	31	53
Gender gap in average schooling years (in number of years)	1.84	0.42	0.04	0.50	0.14
PISA Mathematics score	448	494	540	475	513
PISA: percentage of top performers in mathematics	6	13	25	9	15
PISA: percentage of low performers in science	26	18	6	22	9
PISA: variation of mathematics scores across schools (% of average OECD variation)	61	37	9	40	19
PISA: gender gap in mathematics performance (points)	8.0	10.9	2.5	9.9	4.2
Education spending per student (in 2012 USD PPPs)	3 514	10 220	18 509	6 284	8 222
PIAAC: percentage of low performers	39	15	7	21	9
Employment rate of the low-skilled (percentage of 25-64 with less than secondary education)	48	55	71	51	64
Employment rate of high-skilled (percentage of 25-64 with secondary education and more)	75	82	90	81	87
NEET: Percentage of youth 15-29 neither in education nor employment	28	16	7	18	13
Earnings premium for adults (25-64 years) with tertiary education over adults with upper secondary education (average earnings of upper secondary graduates= 100)	188	160	127	181	151
English Proficiency Index	48	...	71	58	64

Source: OECD calculations based on World Bank, Education Statistics database; OECD (2015), Education at a Glance; OECD (2014), PISA 2012 Results: What Students Know and Can Do; OECD Survey of Adult Skills (PIAAC); OECD (2016), Building More Resilient and Inclusive Labour Markets: How does your country compare?, OECD Labour and Employment Ministerial Meeting; and Education First, EPI 2015.

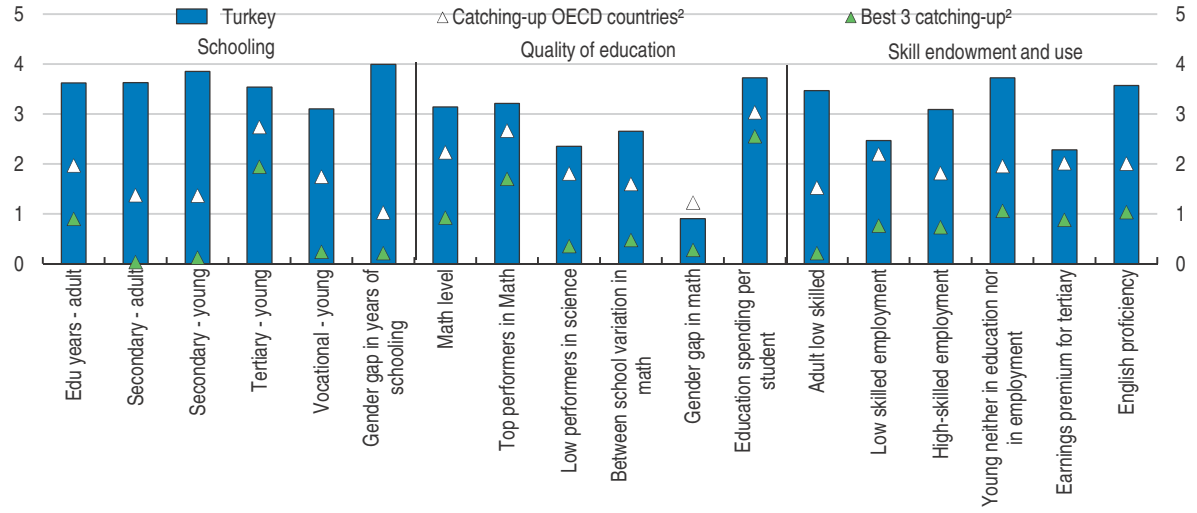
representation is used in the rest of this section to plot Turkey's position in other key business environment areas. More detail on the calculation and sources of the indicators used in these figures can be found in Annex A1.

OECD recommendations for Turkey's education policies span a very wide set of areas, from children's participation to pre-school education to teachers' training and incentives (OECD, 2015b). Despite a real increase of 55% between 2005 and 2013, spending still falls far short of OECD averages. Turkey, like other OECD countries facing specific education challenges, should actively use international instruments such as the OECD PISA and PIAAC performance evaluation methods to investigate outcomes for vulnerable population groups.

In the short term, and taking the educational background of the existing working age population as given, two important labour market priorities emerge as: i) improving the basic capabilities of low-educated entrepreneurs, in particular in the areas of basic management, basic English, and basic digitalisation know-how; and ii) elementary upskilling for low-skilled workers, in particular the unemployed and those exiting declining low-productivity firms.

Figure 18. **Overview of human capital**

Distance to OECD frontier[1]



1. The OECD frontier is the average of the top three OECD performers: a higher bar indicates a country is farther from best practice. The distance is expressed in standard deviations.
2. Catching-up OECD countries includes Chile, Czech Republic, Estonia, Greece, Hungary, Mexico, Poland, Portugal, Slovak Republic, Slovenia and Turkey (selected as the bottom third of OECD in GDP per capita).

Source: OECD calculations based on World Bank, Education Statistics database; OECD (2015), Education at a Glance; OECD (2014), PISA 2012 Results: What Students Know and Can Do; OECD Survey of Adult Skills (PIAAC); OECD (2016), Building More Resilient and Inclusive Labour Markets: How does your country compare?, OECD Labour and Employment Ministerial Meeting; and Education First, EPI 2015.

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Governance of the business environment

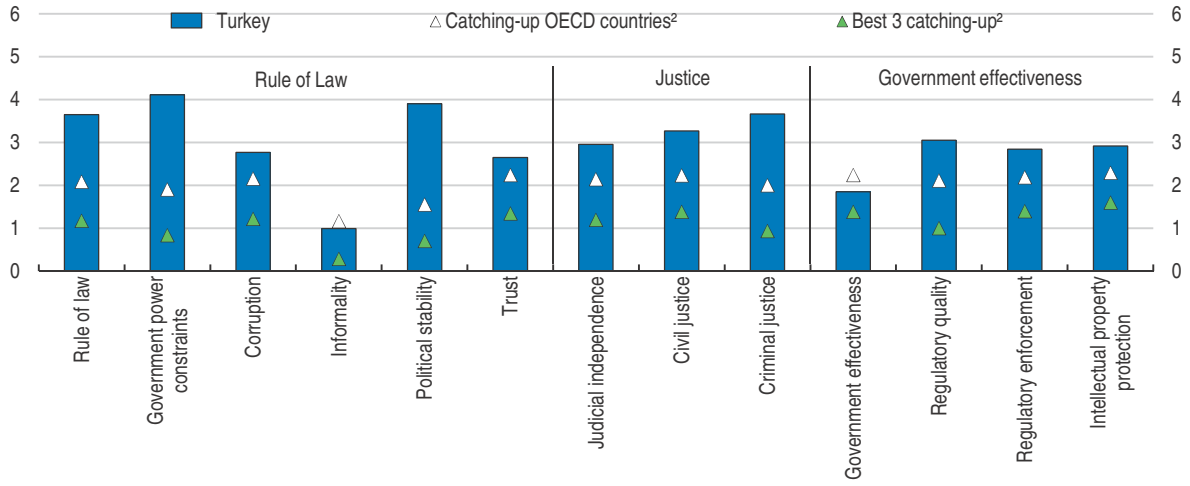
The soundness of governance institutions is a key driver of business performance and productivity convergence (Dorrucci, 2015). The rule of law is particularly relevant (OECD, 2013; Barro, 2015). The quality of governance institutions is also crucial for effective integration into GVCs, particularly in emerging economies (Kowalski et al., 2015).

As of 2014-15, Turkey substantially lags the most credible OECD countries in terms of perceived quality of governance. It also falls behind other catching-up OECD economies, and notably its best performing peers in this area (Figure 19). Four areas stand out: i) the judiciary system should operate more dependably and efficiently, with an assurance of full independence; ii) the effectiveness of the government should be enhanced as a provider of political stability and as an efficient regulator; iii) corruption should be curbed and an active anti-corruption strategy, including by drawing on OECD guidelines, should be implemented (OECD, 2014a); and iv) competition policy and the transparency of state aid should be reinforced.

Figure 19 captures Turkey's standing in the area of informality by the share of firms reporting that they compete directly against unregistered firms. However, semi-formal practices of registered competitors are also severely distorting competition in Turkey. They are not captured in these indicators.

Figure 19. **Overview of basic institutions**

Distance to OECD frontier[1]



1. The OECD frontier is the average of the top three OECD performers: a higher bar indicates a country is farther from best practice. The distance is expressed in standard deviations.
2. Catching-up OECD countries includes Chile, Czech Republic, Estonia, Greece, Hungary, Mexico, Poland, Portugal, Slovak Republic, Slovenia and Turkey (selected as the bottom third of OECD in GDP per capita).

Source: OECD calculations based on World Bank, Worldwide Governance Indicators; World Bank, World Development Indicators; World Economic Forum, The Global Competitiveness Index Historical Dataset 2005-2015; World Justice Project, Rule of Law Index 2015.

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Product and labour market regulations

More restrictive product and labour market regulations are associated with less investment (Égert and De Serres, 2016). In addition, employment protection reduces investment further when product market regulations are too strict. According to OECD indicators, Turkey has particularly rigid rules concerning individual dismissals (notice periods and severance pay), standard fixed-term contracts and temporary work agency services (OECD, 2014a). A legislative amendment in May 2016 started to liberalise temporary work agency contracts and is an important step forward.

Turkey exhibits substantial gaps with both OECD best performers and other catching-up economies according to most regulatory indicators (Figure 20). This suggests important benefits from: i) further labour regulatory reforms (notably from reforming severance pay and standard fixed-term contracts); ii) a more efficient and sustainable utilisation of the official minimum wage (by increasing it in line with productivity, therefore not penalising formal firms; iii) easing the licensing and permit system (for example by introducing "zero licencing" type of initiatives; OECD, 2016a); iv) liberalising competition in all network industries (OECD, 2015h); and v) improving trade policies.

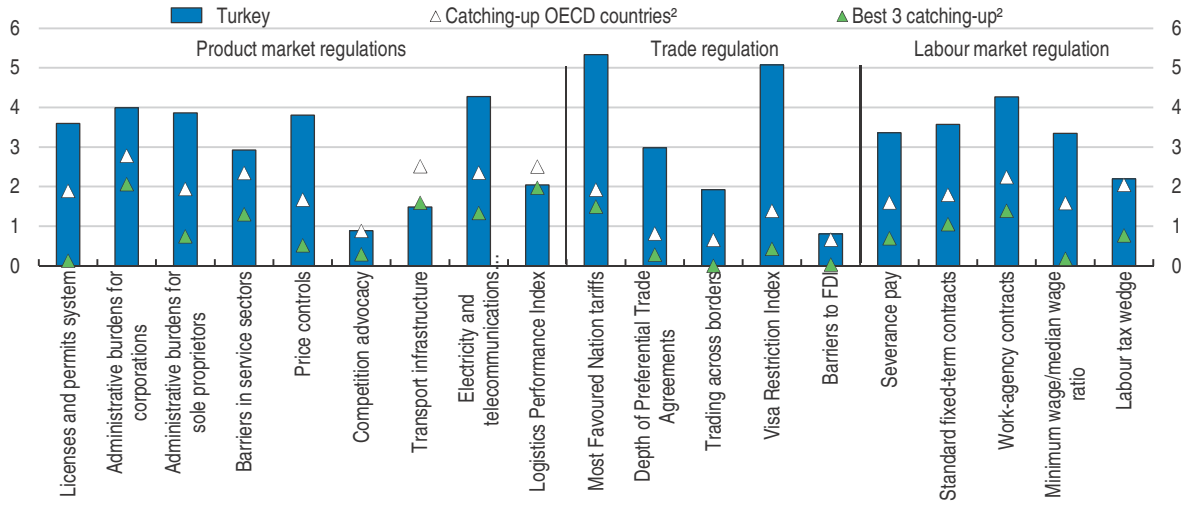
Tax and subsidy system

Turkey scores unevenly in international comparison on tax policy and knowledge-based capital indicators (Figure 21):

- Corporate tax revenues are relatively low, which reflects a narrow base due to widespread informality. Broadening the tax base by bringing the informal sector within the reach of the tax system will improve economic performance. However, only a

Figure 20. **Overview of specific regulations**

Distance to OECD frontier[1]



1. The OECD frontier is the average of the top three OECD performers: a higher bar indicates a country is farther from best practice. The distance is expressed in standard deviations.
2. Catching-up OECD countries includes Chile, Czech Republic, Estonia, Greece, Hungary, Mexico, Poland, Portugal, Slovak Republic, Slovenia and Turkey (selected as the bottom third of OECD in GDP per capita).

Source: OECD calculations based on OECD Product Market Regulation database; World Economic Forum, The Global Competitiveness Index Historical Dataset 2005-2015; OECD, Employment Protection Legislation indicators; Henley and Partners, Visa Restriction Index 2015; World Bank, Doing Business database; OECD Minimum wage database; OECD Labour Tax Wedge Decomposition database.

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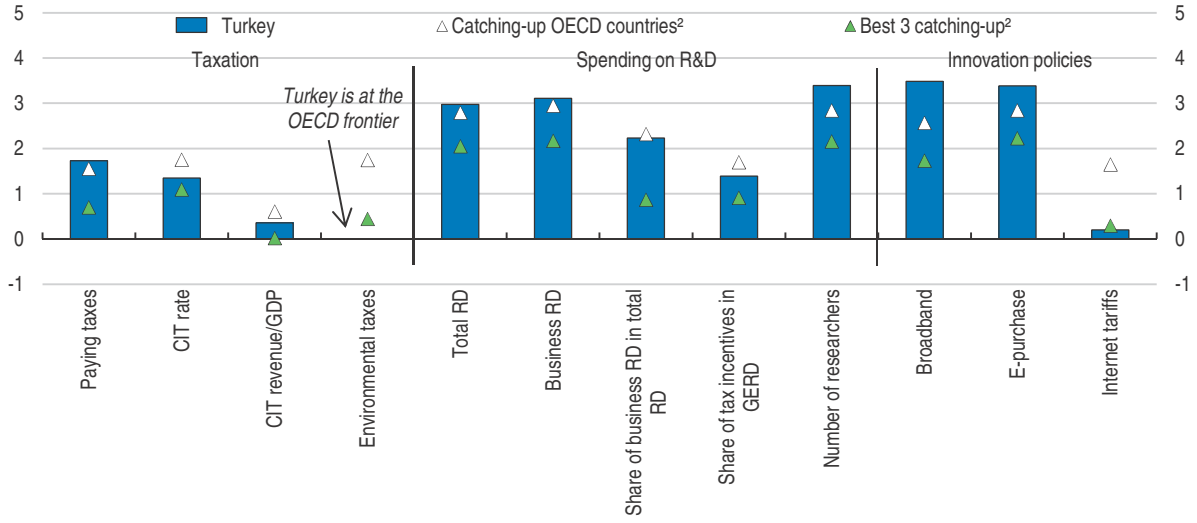
detailed review of the current complex tax system can highlight what the top reform priorities should be.

- Environmentally-related taxes are among the highest in the OECD, but their distribution across pollution sources and types is uneven, with particularly high taxes on road transport fuels but much lower and sometimes zero taxes elsewhere (including for coal). Although differing pollution profiles can justify tax differentiation from an environmental point of view, current taxes are poorly aligned with pollution profiles implying that pollution is too high and current abatement not cost-effective. Systematic monitoring of all pollution emitters would allow designing and implementing a more cost-effective environmental tax system.
- R&D tax incentives were augmented over the past decade. This contributed to the increase of R&D expenditures and R&D employment. Nevertheless, knowledge-based capital use and supply, which also depend on several other factors, continue to fall short of OECD comparators.

An important dimension of the tax and subsidy system concerns Turkey's complex regime of investment tax subsidies (OECD, 2012). This regime is based on transparent rules, but subsidisation rates may reach very high levels for certain projects, depending on their product, regional and technological characteristics. Certain large investments may be subsidised for more than half of their cost. To ensure that these incentives do not distort competition excessively, the outcomes should be analysed with the help of the legislated but not yet implemented state aid monitoring system. The authorities plan to fully activate the implementation regulations of this system by the end of 2016.

Figure 21. **Overview of the tax system and knowledge-based capital**

Distance to OECD frontier[1]



1. The OECD frontier is the average of the top three OECD performers: a higher bar indicates a country is farther from best practise. The distance is expressed in standard deviations.
2. Catching-up OECD countries includes Chile, Czech Republic, Estonia, Greece, Hungary, Mexico, Poland, Portugal, Slovak Republic, Slovenia and Turkey (selected as the bottom third of OECD in GDP per capita).

Source: OECD calculations based on World Bank, Doing Business database; OECD Tax database; OECD Revenue Statistics database; OECD Main Science and Technology Indicators database; OECD Science and Technology Outlook 2014 database; OECD Science and Technology Indicators Scoreboard 2015.

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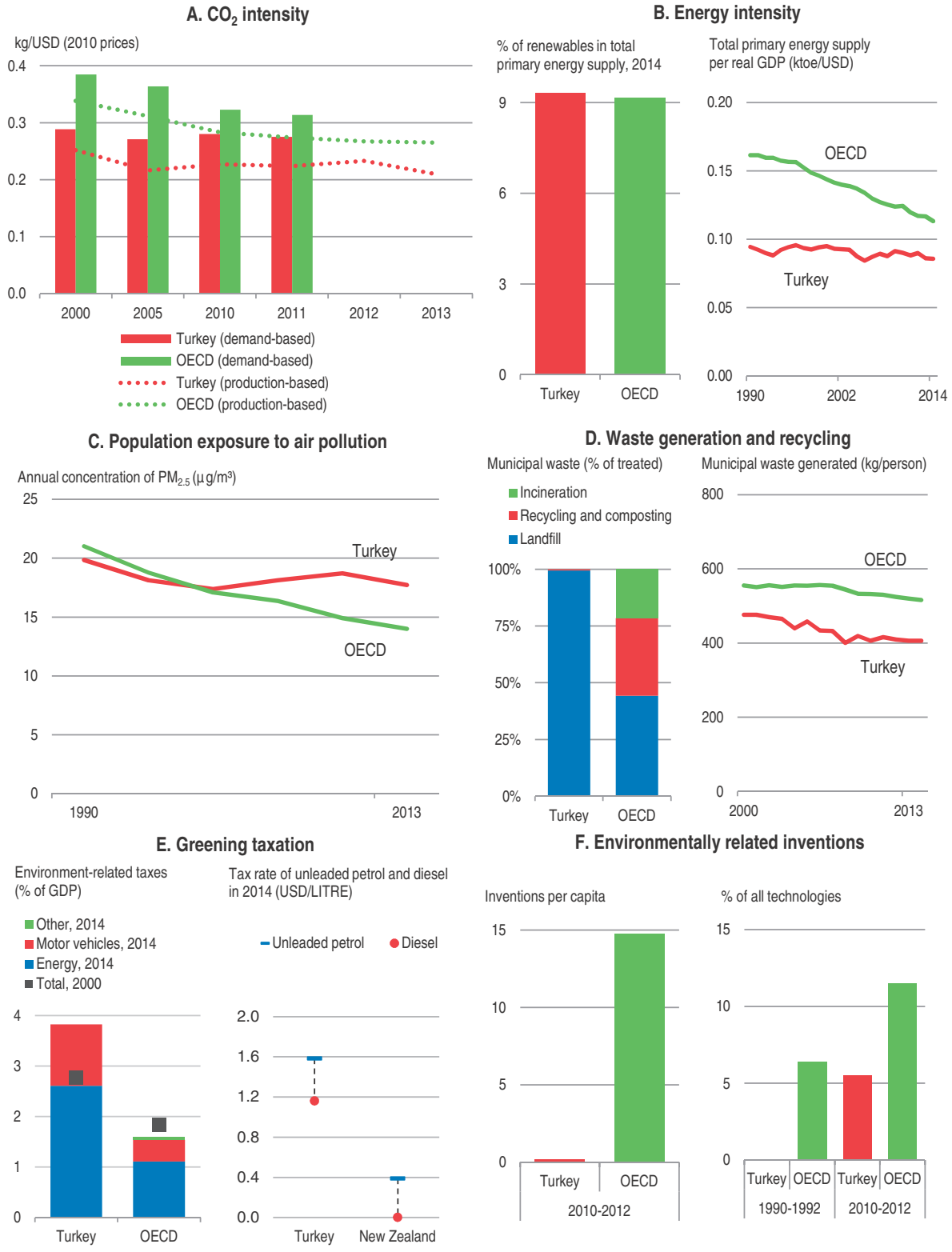
Reforms and green growth

Implementing the reforms discussed so far would raise Turkey's potential growth rate and promote social inclusion, but some of them will also help ensure that growth becomes greener. Progress with the formalisation of business activities would improve the transparency in this area, and shed light on environmental externalities, thereby contributing to the design and implementation of mitigation policies. Figure 22 brings to light Turkey's present standing in some key environmental areas.

Two areas where gains from progress in transparency should be large are climate change strategies and local air pollution. Turkey's greenhouse gas emissions per capita are still relatively low but are increasing rapidly. As shown on Figure 23, they have not yet been decoupled from GDP growth in comparison to the OECD average. In the context of COP 21, Turkey announced that it would reduce GHG emissions by up to 21% from the "business-as-usual" level by 2030. Nonetheless, this entails a more than doubling of emissions from 430 $MtCO_{2e}$ in 2012 to 929 $MtCO_{2e}$ in 2030.

Turkey's 6th National Communication under the United Nations Framework Convention on Climate Change, issued in 2015, indicates that Turkey's GHG emissions have increased by about 110% between 1990 and 2013. This resulted from a 137% increase in emissions in the energy sector, a 132% increase in industrial processes, a 20% increase in agriculture and a 87% increase in the waste sector. Concerning industrial processes, which are of special interest in this Survey, Turkey has tried to contain emissions by applying EU pollution prevention and control standards, and voluntary instruments such as the EU Eco-Management and Audit Scheme (OECD, 2015i). Given the emission record and future saving needs, more effective mitigation instruments should be used.

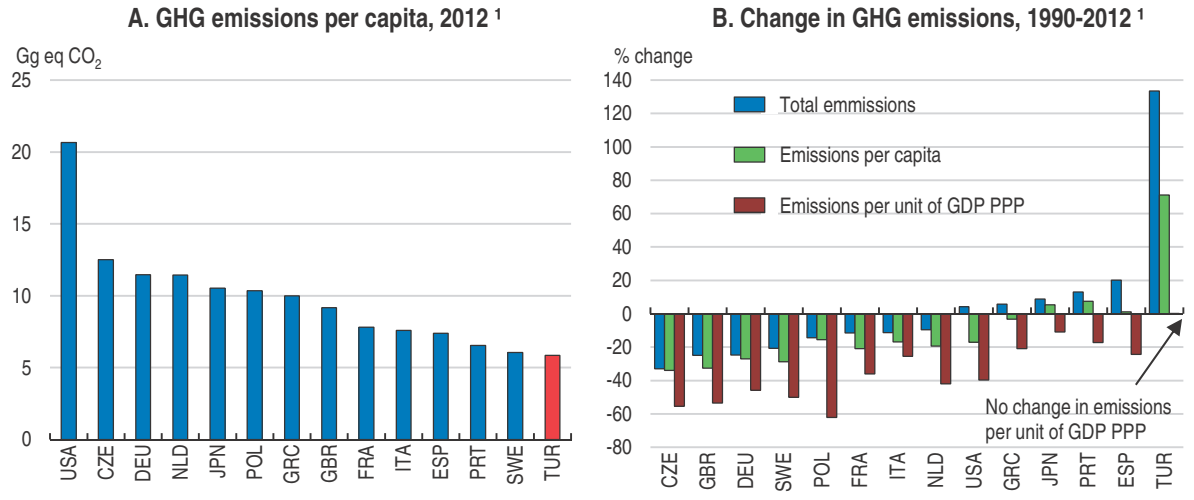
Figure 22. **Green growth indicators for Turkey**



Source: OECD Green Growth Indicators, OECD Environment Statistics, OECD National Accounts; World Energy Balances (IEA), OECD Municipal waste statistics, Taxes and charges – Environment-related database; OECD Environmental Patents, OECD Historical population and projections.

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Figure 23. **Greenhouse gas emissions**



1. Excluding land use, land-use change and forestry (LULLUCF).
Source: OECD Green Growth database.

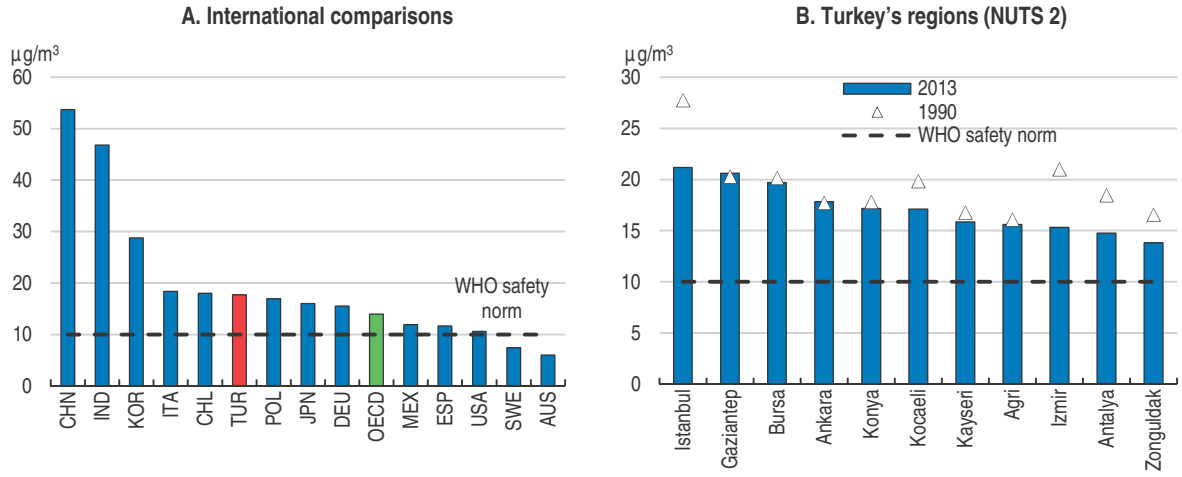
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Both more effective regulations and economic instruments (such as explicit carbon prices and tradable emission permits) will be required and all industrial emissions should be monitored and measured. In the process, in order not to penalise higher-productivity businesses, broad-based transparency should apply to firms of all sizes, sectors and regions. Formalisation and institutionalisation in manufacturing and the business sector at large is expected to facilitate this effort.

Local air pollution by fine particles in Turkey is higher than the OECD average (Figure 24, Panel A), and above World Health Organisation safety norms, particularly in more industrialised regions (Panel B). Recent progress in the transparency of exposures at NUTS 2 level is welcome, including concerning PM2.5 particles which have the highest potential adverse effects on human health (OECD, 2014b). Existing data suggests that industrial sources play an important role in particle pollution in Turkey. In a recent EU review Turkey was ranked highest among 19 different regions and countries with respect to the share of industry in PM2.5 sources at 29% (European Union, 2015b). The regional distribution of PM2.5 exposures analysed by the OECD on the basis of data developed for a headline Green Growth indicator (Mackie *et al.*, 2016) confirms this, as industrial regions display particularly high pollution levels and a particularly low improvement between 1990 and 2013 (Figure 24, Panel B). Similar to GHG emissions, a firmer mitigation effort is needed for fine particles. This would necessitate progress in the transparency of emission sources and formalisation would help.

Coal used in electricity generation is a major source of both GHG and fine particles, sulphur oxides and mercury. Yet, a national "coal strategy" aims at raising the share of coal in electricity generation from 26% in 2013 to 35% in 2030. Unlike other fuels, coal is currently not subject to special consumption taxes and yearly coal consumption subsidies have been estimated at 730 million USD in 2013 (Acar et al., 2015; OECD, 2016b). Turkey's climate change and air pollution mitigation strategies would need to tackle coal-originated emissions more actively, including by promoting cleaner technologies in new plants.

Figure 24. **Air pollution**
Population exposure to PM2.5, 2013



Source: OECD calculations based on data from Brauer et al. 2016.

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Turkey also faces important water management issues. Water competition across sectors is growing and is expected to become more challenging with increased urbanisation, expansion of irrigation areas (Turkey is the only OECD country planning to do so) and climate change. Pressures from agriculture are particularly strong, as it represents 85% of freshwater withdrawals – the second-highest proportion in the OECD (OECD, 2013b). In the face of these challenges, Turkey's efforts to upgrade water management along the lines of the EU Water Framework Directive are welcome. However, progress with transparency is needed to support monitoring and contribute to the implementation of reforms. For example, groundwater use is growing disproportionately and calls for improved surveillance. Without adequate information systems it will not be possible to monitor and manage depletion rates and external effects (OECD, 2015f).

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ANNEX

Progress in key structural reforms

This Annex reviews the measures taken since 2014 in response to key recommendations from OECD Economic Surveys (recommendations identified as ES, year) and OECD Economic Policy Reform – Going for Growth (identified as GfG, year).

A. Education

Recommendations in previous *Surveys*	Actions taken and current assessment
Reduce the persisting large quality gaps among both schools and universities by granting them more autonomy and resources per student, against greater performance accountability (GfG, 2015)	Several quality improvement projects have been implemented in the education system, but there was no action to increase the autonomy of schools and universities. Increasing the autonomy and performance transparency of universities was an objective in the previous government's 2016 Action Plan.
Develop pre-school education (ES, 2006 and GfG, 2015).	Pre-school enrolment rates of three-, four- and five-year old children have increased in the 2010s (reaching 43% for the four-five year olds in 2016) but remain below OECD averages. The 2016 Action Plan aimed at better enforcing the pre-school capacity development obligations of municipalities.

B. Product and labour markets

Recommendations in previous *Surveys*	Actions taken and current assessment
Accelerate the liberalisation of all network sectors (GfG, 2015).	Eligible consumer thresholds for access to competitive procurement were reduced in 2014 and 2015 for gas, and in 2014, 2015 and 2016 for electricity. The 2013 Law on the liberalisation of rail transport has started to be implemented for freight.
Liberalise fixed-term and temporary work agency contracts (ES, 2014 and GfG, 2015).	A law including several clauses liberalising temporary work agency contracts (subject to a number of restrictions) was adopted in May 2016.
Limit the growth of the official minimum wage and promote minimum wage settlement at regional level through local consultations between government, employer and employee representatives.	Following an election promise, the official minimum wage was increased by 30% in January 2016. The government will subsidise up to 40% of the cost increase for employers for the first year.
Make permanent the social security contribution cuts granted during the crisis and further reduce them for low-skilled workers throughout the country, financing this with a widening of the tax base (ES, 2014 and GfG, 2015).	Some of the principal social contribution cuts for specific worker groups were extended. For example, incentives for the employment of women were extended until 2020.
Replace the severance payment regime (available and reliable for a minority of formal sector workers) with "portable" severance saving accounts available for all workers (ES, 2012 and GfG, 2015).	This reform was a top goal in the 2016 Action Plan but was delayed following strong union opposition and limited support from parts of the business sector.
Strengthen the social safety net and the up-skilling avenues for the unemployed, expanding the most successful schemes (ES, 2014 and GfG, 2015).	Unemployment insurance coverage is limited, but budget resources for active labour market policies more than doubled between 2015 and 2016. The number of participants in the subsidised on-the-job training programmes increased from 12 000 in January-February 2015 to 37 000 in the same period of 2016.

C. Transparency

Recommendations in previous *Surveys*	Actions taken and current assessment
Improve fiscal transparency at general government level, on a unified accounting basis according to international national accounting standards, and publish a comprehensive report on fiscal policy covering all fiscal and quasi-fiscal activities (ES, 2014).	Quarterly Government Finance Statistics (GFS) started to be reported to the IMF in 2015. However, consolidated general government accounts according to international national accounting standards are still missing.
Implement the legislated but not yet operational state aid monitoring system (ES 2014). Evaluate the outcomes of the support programmes for the SMEs (ES, 2014).	The regulations regarding the implementation of the state aid monitoring system (Law 6015) are to come into force by the end of 2016.

D. Environment

Recommendations in previous *Surveys*	Actions taken and current assessment
Consider harmonising the implicit carbon tax rate across fuels in different uses in the medium-term (ES, 2014).	No action.

Thematic chapters

Chapter 1

Rebalancing growth by strengthening the manufacturing sector

Turkey's manufacturing sector has expanded considerably but not efficiently and competitively enough. This chapter documents the drivers of its recent growth and diversification, and the factors that have held it back. It documents its segmentation and the outsized tail of poorly performing firms, which undermines aggregate productivity growth. Low productivity eases job creation in the short term, but undermines it in the long run and holds back improvements in living standards because of competitiveness losses. A core of well-performing firms ("frontier firms") is not growing at full potential because of shortcomings in the policy framework. Intermediary ("follower") firms sustain competition and deliver jobs, but tend to fall behind in productivity. Lower productivity units ("laggards"), which employ a large share of the low-skilled majority of the working age population, survive mostly thanks to the incomplete enforcement of rules and regulations. The resulting stalemate requires a coherent strategy of "systemic upgrading" of the business environment. This would enable all firms to operate in compliance with the law and on a level-playing field, under supportive regulations, taxation and innovation incentives. All firms could then achieve stronger productivity gains and the most promising firms could grow faster. At the same time, a credible flexicurity system needs to be put in place that facilitates adjustment in the labour market while protecting those affected by structural change.

Introduction: upgrading manufacturing to rebalance the economy

Rebalancing Turkey's growth path in order to make it externally sustainable requires a durable improvement in international competitiveness. Demand must be rebalanced between domestic and external sources, and supply between domestic and export-oriented activities. A more competitive manufacturing sector, with a heavier weight in the economy and higher net exports can deliver such rebalancing. Many other activities including agriculture, mining, construction, tourism generate tradeable value added but manufacturing is particularly important. Even in regions with poor natural resources and low local demand levels, manufacturing can generate higher-earning jobs and contribute to broad-based growth and social inclusion.

Manufacturing sector competitiveness can be enhanced via reductions in the cost of capital and labour. There is indeed room for such reductions. Real interest rates for premium borrowers declined sharply in Turkey since the mid-2000s (OECD, 2010a), but are still above comparable countries. Employment costs for low-skilled workers are high, especially after the 30% increase in the official minimum wage in January 2016. Social contribution cuts can serve to reduce those costs but entail a fiscal burden. Against this background, improving productivity via more efficient production processes, greater product differentiation and higher value added is the most reliable and sustainable avenue for durable competitiveness gains.

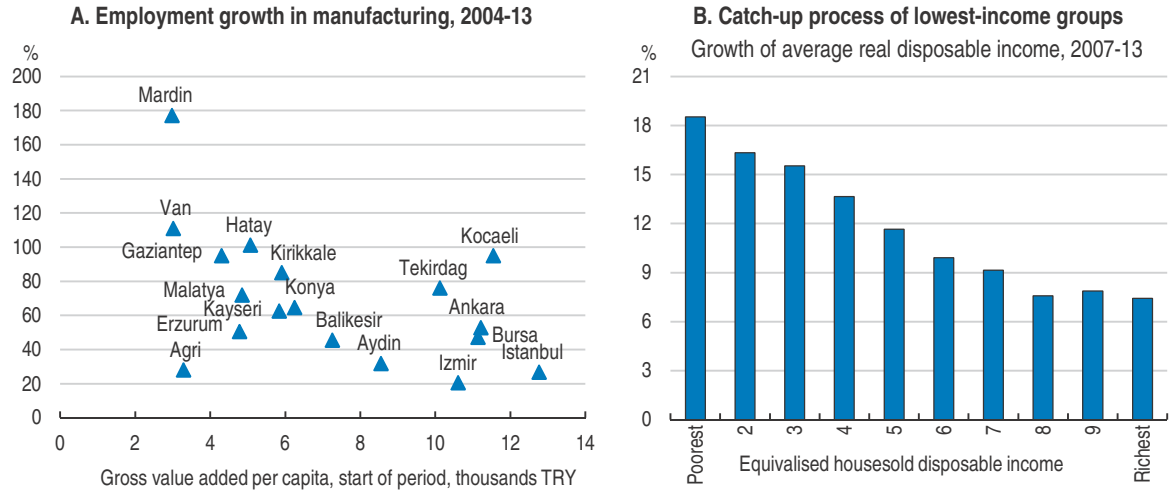
Faster productivity growth first and foremost requires a significant upgrading in the quality of Turkey's human capital, as emphasized in the 2006 *OECD Economic Survey of Turkey* (OECD, 2006a). But productivity gains can also be achieved in the shorter term, with existing resources. Wide gaps in the productivity level and growth rates across different types of firms point to large potential productivity gains "within" and "between" firms (i.e. through efficiency gains in existing firms, and employment shifts from lower to higher productivity firms). Improving the diffusion of productivity-enhancing know-how, techniques and management practices can deliver such gains (Andrews *et al.*, 2015).

The development of manufacturing has strengthened social inclusion but has hit a glass ceiling

Value added in Turkey's manufacturing sector has expanded by around 70% and employment by nearly 30% between 2003 and 2013. The development of export-oriented manufacturing, not only in the traditional industrial strongholds of the West, which have expanded further, but also across the poorer regions of inland Anatolia, played a major role. This trend was documented in the 2014 *OECD Economic Survey of Turkey* (OECD, 2014a) and has persisted since (Figure 1.1 and Box 1.1).

Manufacturing jobs grew in all regions, albeit unevenly. Job creation was also dynamic in construction and services. Overall, and in particular in catch-up low-income regions, job creation in manufacturing appears to have provided a significant impulse to employment growth in other sectors (Box 1.1).

Figure 1.1. **Broad-based industrialisation has promoted social inclusion**



Source: Turkish Statistical Institute.

StatLink http://dx.doi.org/10.1787/888933389023

Box 1.1. **Manufacturing led broader employment growth in many emerging regions**

The profile and composition of employment in Turkey's 26 NUTS 2 regions suggests that growth and job creation in manufacturing back broader-based employment in other non-farm activities (Figure 1.2 next page). This is possibly related to export-oriented activities' generating an initial increase in local enterprise and household incomes, and generating induced demand for local services and construction.

The link between job creation in manufacturing and other non-farm activities (excluding construction) was tested econometrically across Turkey's 26 NUTS-2 level regions between 2006 and 2013 (the period for which data is available) with Arellano-Bond dynamic panel estimation and fixed effect methods. The dependent variable is employment in services and other industry, and explanatory variables include manufacturing employment, both in per cent change. Both models include time dummies and variables that control for aggregate activity and regional circumstances. The data are from Turkstat's AIS database.

Table 1.1. **Estimation results**

	Arellano-Bond	*p-values*	Fixed Effect	*p-values*
Dependent variable (t-1)	-0.316	0.000	-	-
Manufacturing	0.339	0.003	0.260	0.002
Manufacturing (t-1)	0.244	0.000	0.201	0.032

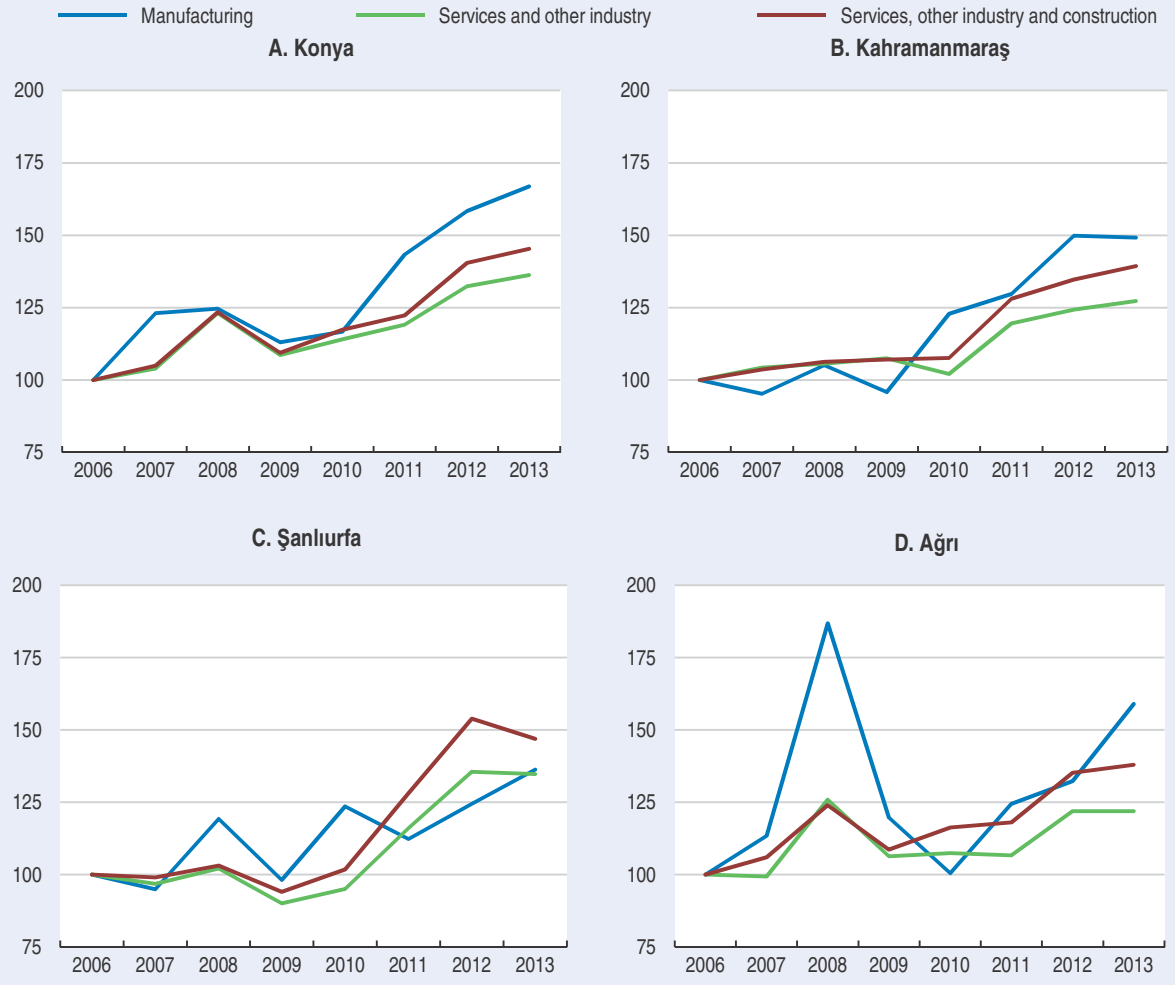
Source: OECD calculations based on data from Turkish Statistical Institute.

The results suggest that a 10% increase in manufacturing employment is associated with a 3.4% contemporaneous and 4.4% long-term increase (after taking into account the lagged dependent variable) in the "services and other industry" employment. The fixed effect model, similarly, suggests that a 10% increase in manufacturing employment is associated with a 2.6% contemporaneous increase, and a total increase of 4.6% in the other sectors. In level terms, the first model implies that for each job created in manufacturing, 0.77 jobs are created right away in the other sectors and 1.01 jobs over time. The corresponding gains in the second model are 0.59 and 1.05 respectively.

Box 1.1. **Manufacturing led broader employment growth in many emerging regions** *(cont.)*

Figure 1.2. **Job creation in manufacturing led broad-based employment growth in catching-up regions**

Employment index, 2006 = 100



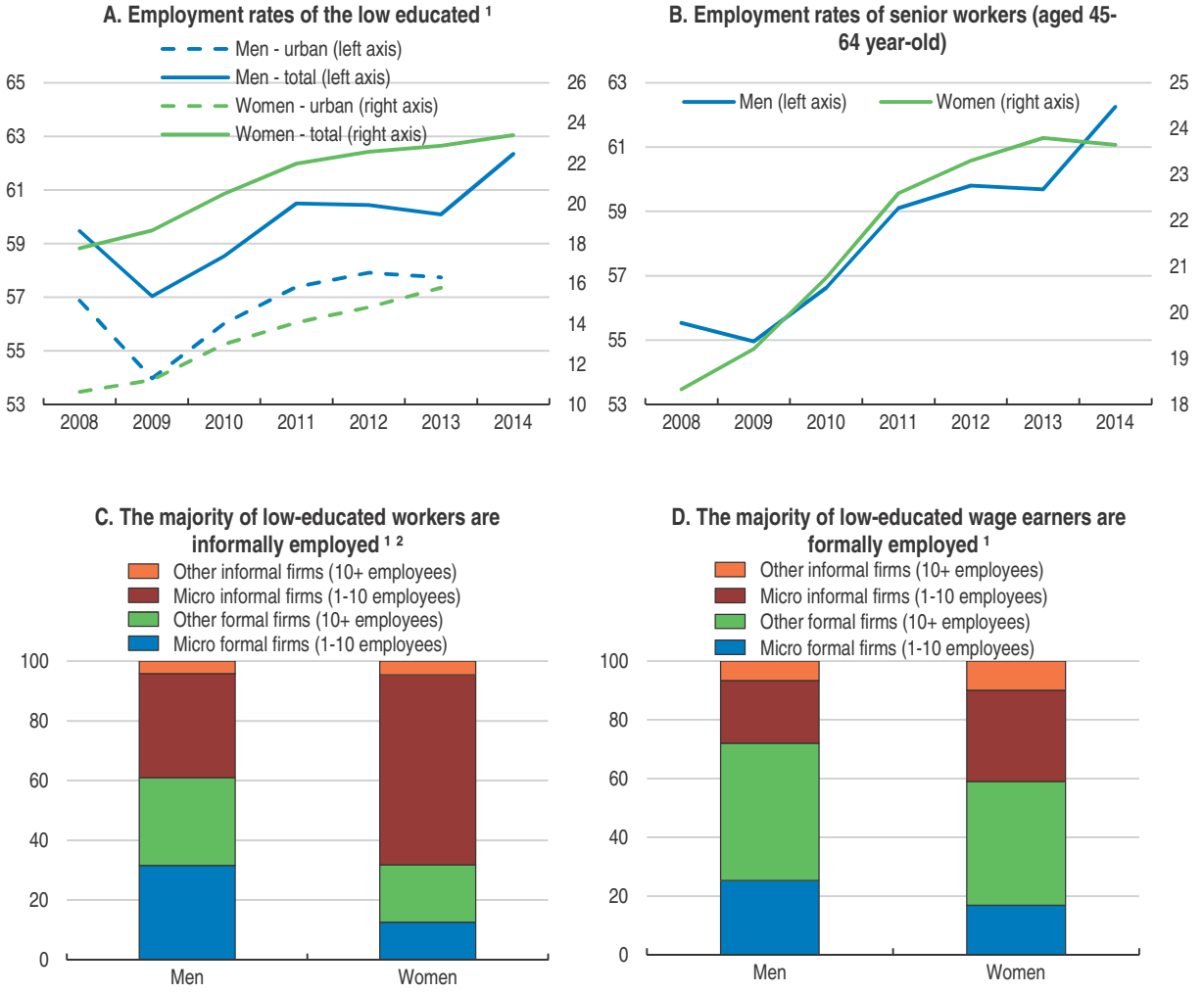
Source: Turkish Statistical Institute.

StatLink http://dx.doi.org/10.1787/888933389031

As a result of these developments, a rising share of the low-skilled majority of the population has found employment in higher-quality occupations. Men and women with less than secondary education, who represent 65% of the working age population, have been traditionally employed at the periphery of the formal labour force. Low-educated women remained inactive in urban areas, or worked as unpaid family members in agriculture. Low-educated men were mostly self-employed in low-income jobs, or were hired by small informal businesses. Workers above age 45 had a low employment rate. All these groups have started to participate more actively and to take up wage-earning jobs in formal businesses (Figure 1.3). This helped reduce the rate of extreme poverty (Azevedo and Atamanov, 2014), which, according to official figures, declined from 13.3% in 2006 to

Figure 1.3. **Previously less active groups are better mobilised**

Per cent, 2014



1. Persons with less than secondary education.
2. Including the self-employed.

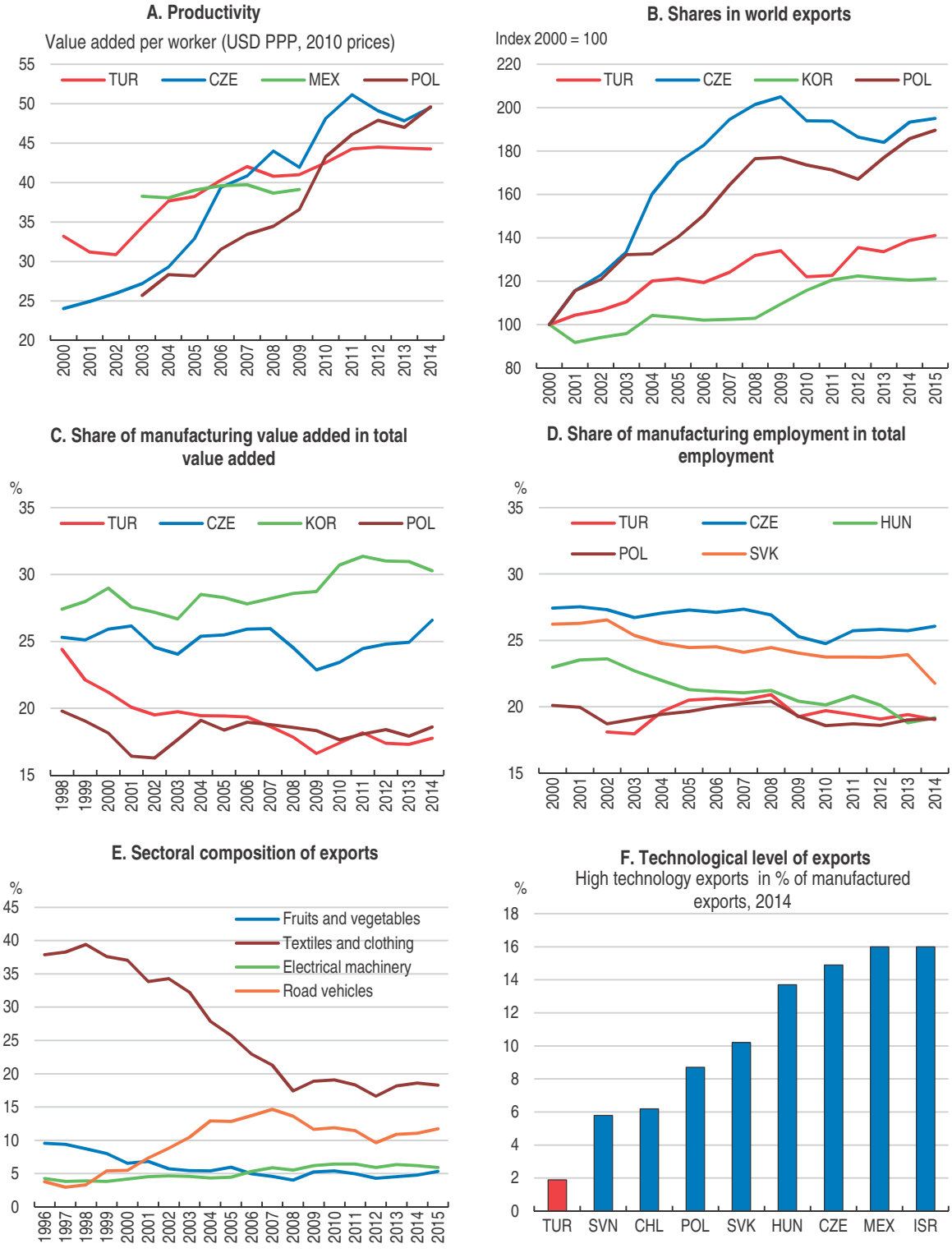
Source: Turkish Statistical Institute.

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1.6% in 2014. The contribution of job creation to keeping income inequality in check contrasts with experience in other countries, where social transfers played a more important role (Taşkın, 2014; Şeker and Dayıoğlu, 2015).

However, compared with other catching-up OECD economies, Turkish manufacturing has suffered from slower productivity growth, is less competitive, fares less well in international markets, and accounts for a smaller share of national output and employment (Figure 1.4, Panels A to D). Significant real exchange rate depreciation after the global financial crisis delivered competitiveness gains, but these did not suffice to restore the position of manufacturing against comparable countries. Exports have been gradually diversified from agricultural products and textiles-and-clothing to other sectors, such as road vehicles and electrical machinery, but the share of high-technology products remained very low (Figure 1.4, Panels E and F).

Figure 1.4. **Turkish manufacturing underperforms international peers**



Source: OECD National accounts database; Turkish Statistical Institute; World Bank, World Development Indicators database.

StatLink http://dx.doi.org/10.1787/888933388917

Disaggregated analysis confirms deep fragmentation

The previous *OECD Economic Survey* highlighted several facets of the segmentation of the business sector (Box 1.2). Recent cross-country OECD work has shown how economy-wide productivity in each country reflects the more or less efficient diffusion of productivity-enhancing know-how, techniques and practices: leading national firms need to come close to global standards, and follower firms need to come close to national leaders (Andrews *et al.*, 2015). Many factors may slow down, break up or accelerate this process. This chapter seeks to establish how well this diffusion process operates in Turkish manufacturing.

The chapter documents the distribution of firms according to their performance, with a view to assess the width of the gaps and the degree of divergence. Even though microeconomic data is incomplete, as discussed below, two microeconomic data sets provide a wealth of information:

- The national statistical office database on industry (AIS-Turkstat) is a quasi-census which in principle covers all firms, except the totally informal ones (which is a marginal group). Enterprises employing less than 20 employees are monitored through a sample. In 2013, the database covered 85% of the total manufacturing employment captured in the household labour force survey.
- The corporate balance sheets database of the central bank (CBRT) includes the enterprises that are sufficiently formalised (and financially transparent) to have regular credit relations with banks. The database thus embraces the more institutionalised part of manufacturing, which henceforth is referred to as the "fully formal sector". As of 2013, the firms covered in this database employed 25% of the total manufacturing employment captured in the household labour force survey.

In principle, the Turkstat database covers all the firms featuring in the CBRT database. Yet, as common identification numbers are missing, and coverage is not perfect, precise overlaps cannot be identified, precluding the creation of two mutually exclusive "fully formal" versus "less formal" data sets. The chapter ponders the differences in performance between the "fully formal" and the "total" manufacturing sectors.

Firm-level productivity can only be quantified through proxies. Firm output is measured via real (sectoral price deflated) sales of goods in the CBRT database, and adequate value added data is not available for all enterprise size groups in the Turkstat database. Faced with similar data limitations in other countries, recent international research, including at the OECD, generally opted for the use of "sales per worker" data as a proxy for labour productivity. Tests suggested that the analyses produced on the basis of this proxy are broadly congruent with those drawing on more accurate value-added based productivity indicators (Bartelsman et al., 2013; Andrews and Cingano, 2014). The latter type of data is however only available for fewer countries and for much smaller populations of firms. The analysis in this chapter uses real sales data to measure output per worker, with as much as possible a focus on growth rates rather than levels, so as to control for the fact that capital intensity and vertical integration differ across firms.

Frontier, intermediary and laggard firms

The broader Turkstat database includes nearly 300 000 manufacturing firms. The large majority (78%) are micro units employing less than nine workers, 18% small enterprises with 10 to 49 workers, 3.5% medium-size firms employing 50 to 249 employees, and less

Box 1.2. **Business sector segmentation**

The *2014 OECD Economic Survey of Turkey* distinguished five types of firms which have fared differently since the early 2000s: i) micro informal businesses (type 1); ii) semi-formal SMEs (type 2); iii) large family enterprises (type 3); iv) firms listed on the stock market, including FDI corporations (type 4); and v) human capital-intensive start-ups (type 5).

Type 1 (micro) and type 2 (SME) enterprises have grown faster since the 2000-01 crisis, including in the less advanced regions. However, these firms have expanded to a significant extent by circumventing Turkey's regulatory framework. In particular, labour regulations and the tax system, which had been designed for higher productivity type 3 and type 4 firms, proved ill-adapted. Most micro firms and SMEs do not operate as financially transparent and fully law-abiding enterprises. As a result, the most dynamic and job-creating part of the industry has had to rely on the "tolerance" of policymakers. In contrast, type 3, 4 and 5 firms have remained subject to costly burdens that policymakers have tried to offset with a complex set of incentives.

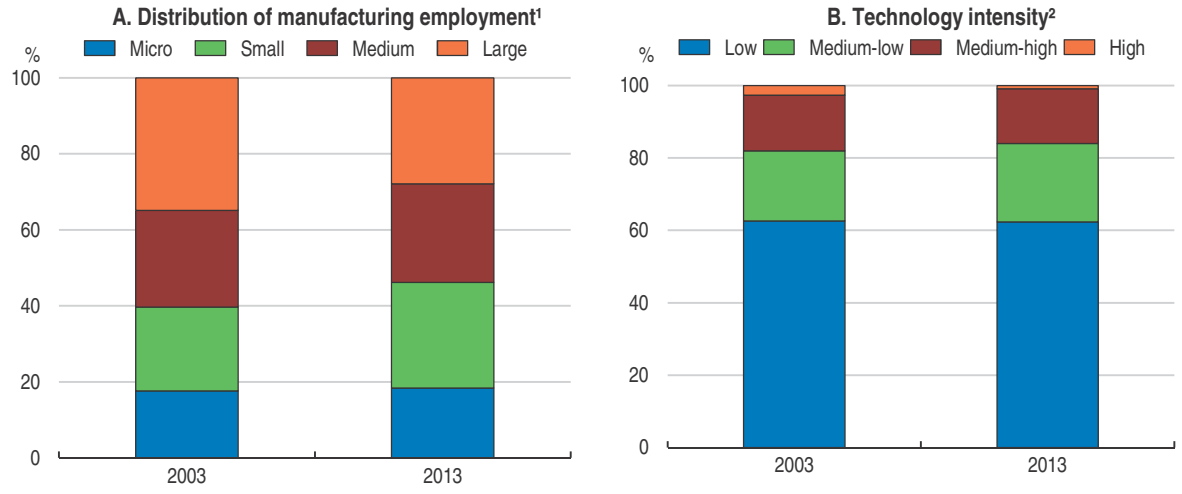
This has nurtured a business environment excessively exposed to the discretion of public officials in charge of enforcing regulations. Such an environment is not supportive of productivity growth: it amounts to subsidising less productive firms, while sending mixed signals to the more productive ones. It hinders within-enterprise productivity growth (as successful type 1 and type 2 firms may be deterred from growing in size) as well as between enterprise productivity gains (as type 3, 4 and 5 firms may refrain from absorbing a higher share of the labour force). FDI is undermined, as reflected in Turkey's weak FDI stock.

than 1% large firms with more than 250 workers. The bulk of these firms are based in developed Western regions (75%), but 12% operate in the so-called Anatolian Tiger areas (Aydın-Denizli, Konya-Karaman, Hatay-Kahramanmaraş, Kayseri and Gaziantep). Most are in low-technology activities (64%) such as textile and clothing, but a growing 35% are in medium-technology areas, notably car and consumer durables production. Only 1% are in high-technology areas. Figure 1.5 shows the recent evolution of the structure of employment across size groups, regions and sectors.

Micro and small firms account for a large proportion of the total number of manufacturing firms in many OECD countries, but the productivity gaps between size groups is particularly large in Turkey, as documented in the OECD *Entrepreneurship at a Glance* (OECD, 2015a). The information available in the Turkstat database confirms the high degree of heterogeneity across firms, with respect to both output per worker and productivity growth. These gaps persisted through 2003-13, even if the convergence reported between micro and small firms reduced them at the lower side of the spectrum (Figure 1.6 Panel A).

There are additional performance differences unrelated to size. The recent international literature distinguishes between the top 10% firms in sales per worker ("national frontier firms"), the bottom 20% ("laggards") and the remaining seven deciles ("intermediary" or "follower" firms). Using this typology for Turkey, sales per worker by frontier firms were four times higher in 2013 than for intermediary firms, and 10 times higher than for laggard firms. The laggards' low sales per worker and their disappointing productivity growth between 2003 and 2013 held back the aggregate performance of the

Figure 1.5. **Manufacturing employment according to firm size and technology level**



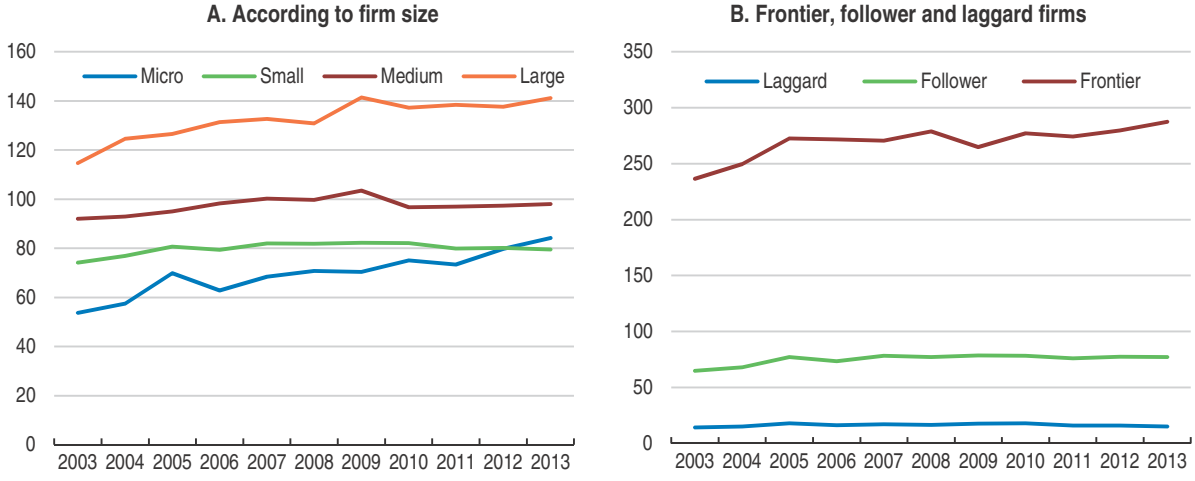
1. Micro firms employ less than 9 workers; small firms between 10-49 workers; medium firms 50-249 workers; large firms more than 250 workers.
2. Low technology: food, beverage and tobacco, textiles and clothing, wood, pulp, paper product, printing and publishing, other manufacturing. Medium-low technology: coke, refined petroleum products and nuclear fuel, rubber and plastic, non-metallic mineral products, shipbuilding, basic metals, fabricated metal products. Medium-high technology: chemicals, excluding pharmaceuticals, electrical machinery, motor vehicles, other transport equipment, non-electrical machinery. High technology: aerospace, pharmaceuticals, computers, office machinery, electronics-communications, scientific instruments.

Source: Turkish Statistical Institute.

StatLink http://dx.doi.org/10.1787/888933389052

Figure 1.6. **Productivity divergence within the manufacturing sector**

Sales per worker, thousand TRY, 2003 prices



Source: Turkish Statistical Institute.

StatLink http://dx.doi.org/10.1787/888933389067

economy (Figure 1.6, Panel B). Productivity growth between 2003 and 2013 was higher for frontier firms than for followers, and higher for the latter than for laggards. This has further widened divergences.

The surviving tail of micro businesses

International research points to two key factors explaining divergent performance between firms, irrespective of size, sector, region or factor intensity: i) managerial quality, and ii) the human capital of employees (Bloom et al., 2012; Pellegrino and Zingales, 2014). These drive firms' capacity to converge with best business practices and technologies and therefore shape the pace of productivity diffusion in the economy (OECD, 2015f). In Turkish manufacturing, there are important managerial quality gaps across firms, which are being surveyed in the ongoing *World Management Survey* (results to be published in Carpio and Taşkın, 2016). The education level of workers, measured by average school years, also varies a lot.

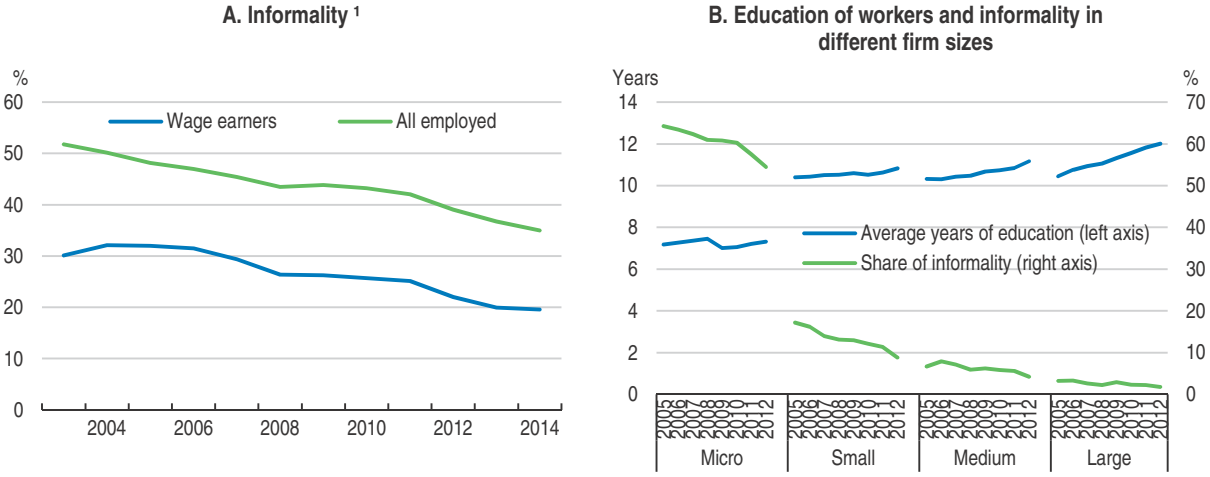
A "tail" of micro-size businesses run by low-skilled entrepreneurs, which informally employ a majority of low-skilled workers, cumulates handicaps in both areas. These firms are covered through sampling in the Turkstat database, so information on their performance is more limited. However, other Turkstat surveys help pin down some of their characteristics. They display lower sales per worker but bear fewer legal and regulatory costs than larger firms. Many would struggle to survive in a level-playing business environment (Figure 1.6).

The owners of these firms have weak human capital. They correspond to what was identified in recent cross-country research (not covering Turkey) as "informal entrepreneurs who are typically uneducated and unproductive, run small businesses producing low-quality products, and add little value" (La Porta and Shleifer, 2014). In 2013, one third of owners of all non-farm businesses in Turkey had only primary education, and an additional 15% only lower secondary education (Turkstat, 2015). This affects the quality of management practices, including cost accounting, financial record keeping, inventory management etc., as well as firms' access to internet-based information and business platforms, and their interaction with international counterparts. Cross-country studies find that micro firms differ very much along those dimensions, and that this significantly influences their productivity and profitability (McKenzie and Woodruff, 2015).

Available information confirms that there is a deep quality split within the micro sector in Turkey. There are micro firms legally employing highly educated workers, but many others informally employing a majority of low-educated workers. The information in the Turkstat database unfortunately does not permit to distinguish the two groups for detailed analysis. However, Figure 1.7, which encompasses the entire business sector, shows that average school years of employees in micro firms fall significantly behind other size groups. It also reveals that, despite the fall of the share of informal wage earners to 20% in 2013 in the economy as a whole, their share in micro firms is still above 50%. This suggests that the majority of micro firms have poor human capital and a low degree of institutionalisation. A large share of the population of "laggard" firms with low productivity growth can be expected to be formed of such firms.

Figure 1.8 confirms that both men's and women's employment places vary starkly according to their education level (Figure 1.8, Panel B). Practically all well-educated are formally employed, many of them in high-quality micro businesses. In contrast, a large part of the low-educated, notably among women, are employed in low-quality informal micro businesses. This asymmetric distribution of human capital perpetuates the segmentation of firms.

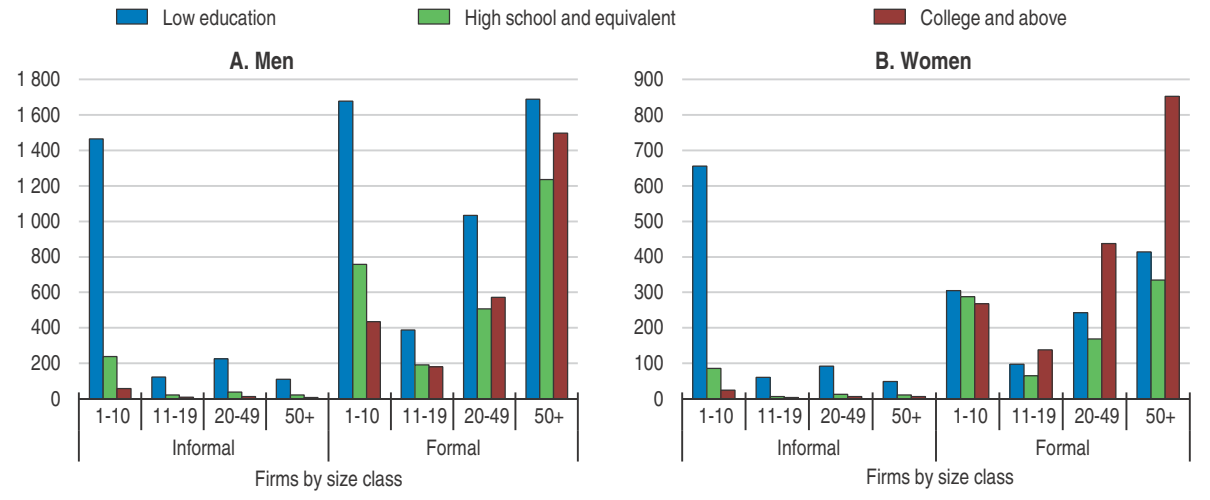
Figure 1.7. **Skills in informal firms**



1. Share of workers not registered with social security institutions as a proportion of all workers.
Source: Turkish Statistical Institute.

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Figure 1.8. **Allocation of wage earners according to their education level**
2014, thousand workers



Source: Turkish Statistical Institute.

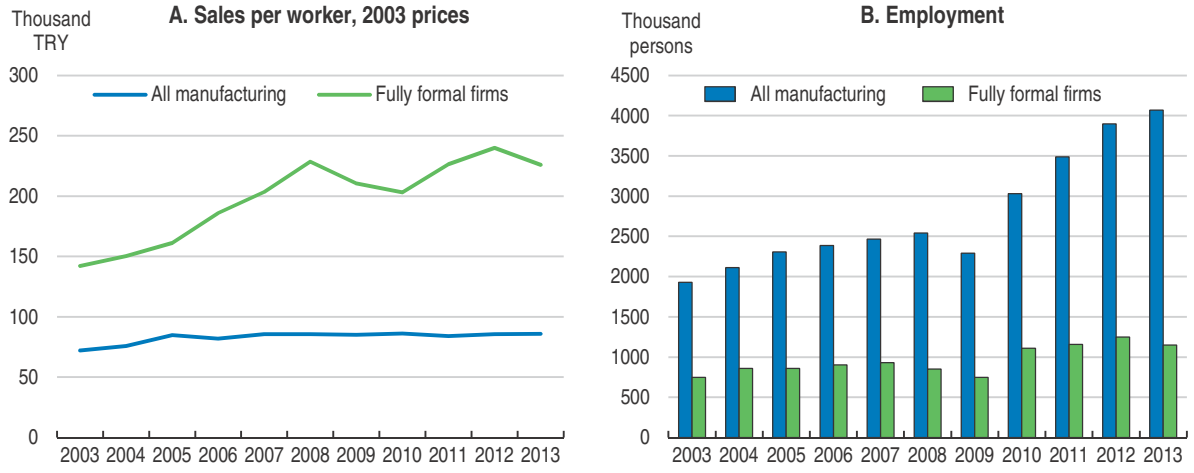
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Fully formal firms tend to perform better

Sales per worker levels and productivity growth rates of the firms included in the CBRT database are significantly higher than in the broader population of firms. As a result, the productivity gap between the more and the less formalised parts of the manufacturing sector has widened over the past decade (Figure 1.9).

Fully formal firms are larger in size and operate more frequently in medium-technology activities than less formal firms. Labour-intensive activity in these enterprises accounts for half of their total employment (a share similar to the proportion of labour-intensive activity in total manufacturing) but is carried out by more professionally

Figure 1.9. **Fully formal firms achieve higher productivity growth but create fewer jobs**



Note: All manufacturing refers to firms in the Turkstat database; fully formal firms refer to firms in the CBRT database.
Source: Turkish Statistical Institute; Central Bank of the Republic of Turkey.

StatLink http://dx.doi.org/10.1787/888933389095

managed and more capital-intensive firms. Overall, the fully formal enterprises in the CBRT database employ only one quarter of the workforce of the broader manufacturing population covered in the Turkstat database, but produce 60% of its total output. Average sales per worker in fully formal firms are three times higher than in total manufacturing and their productivity is growing more rapidly (Figure 1.9, Panel A).

One key difference between the fully formal and the broader population of firms is that the former's sales per worker levels and productivity growth rates are much more homogenous across firm sizes. However, when sorted into frontier, follower and laggard firms, fully formal firms' performance also diverges markedly, as in broader manufacturing (Figure 1.10). This suggests that productivity diffusion does not function well in the fully formal sector either. As a group, frontier firms achieve higher productivity gains than followers, which in turn outperform laggards in this respect. This deepens further the performance gaps inside the fully formal sector (Figure 1.10).

Frontier firms in the fully formal sector are very diverse: many operate in labour-intensive activities and half of them are in allegedly "low-technology" sectors, and their size varies. The presence of high-performance small fully formal enterprises would deserve further scrutiny. Information on the owners, skills, workers and other characteristics of these high performers is not available. However, the international literature documents their presence in other OECD countries too, and shows that they are generally highly human capital intensive, are internationalised, and are able to adjust to the global frontier in information technologies. These capabilities help them surmount the productivity handicaps of small size (Bayo-Moriones and Lera-Lopez, 2007; Goode and Stevens, 2000). Some small-sample reviews of such Turkish firms suggest that they share the same performance drivers as their international counterparts (TOBB-TEPAV, 2015; Webrazzi, 2015).

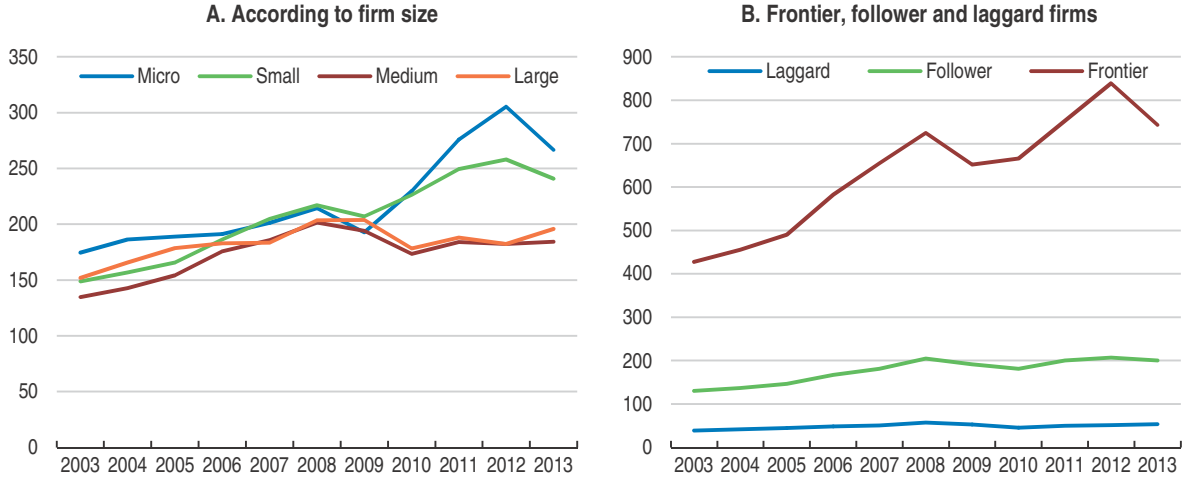
The emergence of "gazelles" and other well-performing firms

The so-called "gazelle" firms are particularly powerful conducts of productivity diffusion in the economy (Nightingale and Coad, 2013; Altomonte, 2011). Defined as the top

third of all firms in terms of both productivity growth and job creation in any single year, they have been identified separately both in the Turkstat and CBRT populations (Figure 1.11). Like in other OECD economies, they contribute disproportionately to compositional shifts of employment towards higher productivity areas and therefore to total productivity growth. The comparison of the performance of gazelles in broader and fully formal manufacturing shows that fully formal gazelles reach significantly higher levels of sales per worker, and increase their productivity faster than in total manufacturing. However, they provide no more than one tenth of all jobs in the fully formal sector.

Figure 1.10. **Productivity divergence within fully formal manufacturing**

Sales per worker, thousand TRY, 2003 prices

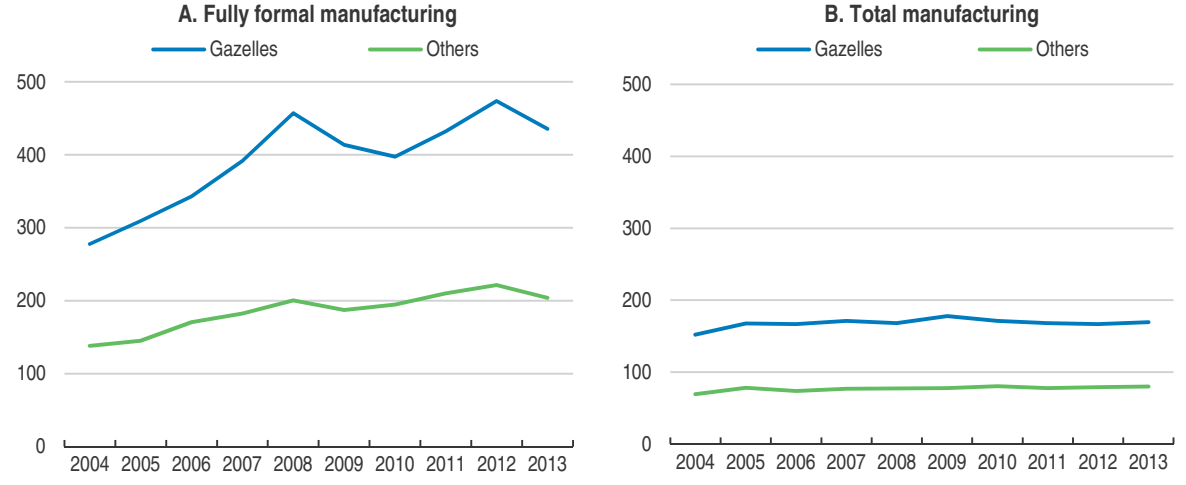


Source: Central Bank of the Republic of Turkey.

StatLink http://dx.doi.org/10.1787/888933389100

Figure 1.11. **Gazelle firms in fully formal versus total manufacturing**

Sales per worker, thousand TRY, 2003 prices



Source: Turkish Statistical Institute; Central Bank of the Republic of Turkey.

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Foreign direct investment (FDI) firms are another well-performing group, but cannot be identified separately in the data sets of this survey. Even when defined traditionally (firms with at least 10% of foreign voting share) they have a relatively limited weight in Turkish manufacturing (OECD, 2014a). Nonetheless, they have knitted thorough relations with the local industry, including via small shareholdings and technological partnerships, and generate substantial productivity spillovers for local partners (Atiyas and Bakış, 2015).

The fully formal sector is not developing at full potential

Fully formal enterprises do not appear to expand at full potential in Turkey. Three types of obstacles dent their growth: they face particularly penalising labour regulatory restrictions; family firms among them are too slow in becoming financially transparent and modernising their corporate governance arrangements; and FDI and large domestic firms face a number of basic shortcomings in their business environment.

Constraints arising from labour regulations

Between 2003 and 2013, employment has grown at 3% per annum on average in the CBRT database's fully formal firms, as against a pace of over 7% in the broader Turkstat database. Improvements in firm coverage in both databases partly explain these growth rates, but fully formal firms indeed seem to create fewer jobs, while the broader manufacturing sector achieves slower productivity growth and seems to create the bulk of new net jobs outside the fully formal segment. Considering that larger-size firms in the Turkstat database are formalised in a higher proportion than small and medium-sized firms, the decline of the employment share of large firms in this database from 35% in 2003 to 28% in 2013 supports this assumption.

Comparatively slower job creation by formal firms may result from the regulatory framework they are subject to. As discussed in detail in the *2014 OECD Economic Survey*, Turkey has some of the most rigid labour market regulations in the OECD, which curb market entry and investment incentives of law-abiding firms (OECD, 2014a). Impacts seem to be more strongly felt in labour-intensive activities, as can be seen in a quantitative assessment of labour allocation efficiency in Turkey's labour-intensive and non-labour intensive sectors (see Atabek *et al.*, 2016): this difference is larger in Turkey than in OECD economies with less rigid labour regulations. It is estimated that if Turkey's labour market regulations converged to OECD best practices, the level of labour productivity in labour-intensive manufacturing may increase by roughly 30%, lifting aggregate labour productivity in the manufacturing sector by up to 15%.

The extension of this analysis to product market regulations reveals similar – but narrower – negative effects on fully formal manufacturing (Atabek *et al.*, 2016). Restrictions to product market competition, discussed in the previous *Economic Survey* (OECD, 2014a), are found to be detrimental to labour allocation efficiency in activities characterised by high entry and exit rates. Better convergence of product market rules with OECD best practices would generate productivity gains in these sectors, and as a result in total manufacturing.

Family firms do not formalise swiftly

Family firms throughout Turkey have contributed to the broad-based growth of manufacturing in the 2000s. Enterprises employing less than 250 workers have expanded fastest. The large majority of these firms are family-owned. The more successful ones are

relatively more formalised than others, but even they face hurdles when modernising their governance arrangements and accessing the capital market, i.e. the stock exchange. Their challenges become evident in intergenerational transmissions. According to the Corporate Governance Association of Turkey, the average life expectancy of family firms is 34 years and only 30% of them continue to operate successfully after a generational change (Girişim Haber, 2016). A survey of the board composition in the Istanbul Chamber of Industry's "2nd 500" list of firms, which are representative of successful medium-sized family enterprises in Turkey, revealed that, as of 2014, 42% of them had not a single board member from outside the family (Sak, 2014). This is in tune with international research findings suggesting that "delegation costs" (lack of trust and judicial inefficiency) hinder the professionalisation and upscaling of family-owned firms in other emerging countries (Bloom *et al.*, 2011).

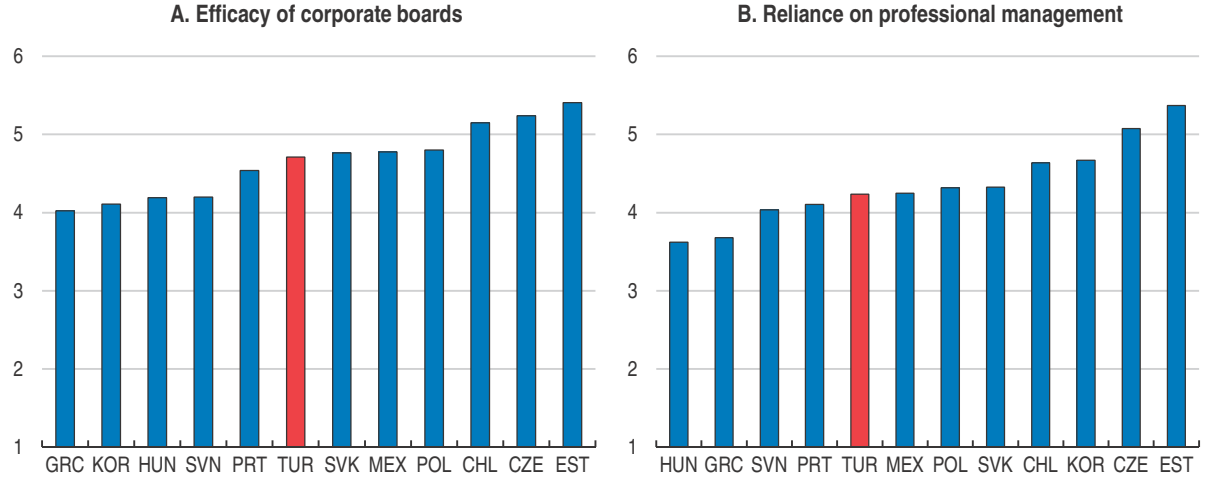
The need for formal boards and professional managers increases as family businesses expand. The average Turkish firm is behind compared to other OECD countries (Figure 1.12). Absent progress, closed governance practices may deter productivity diffusion through two channels: "within enterprise" gains slow down if family firms lack incentives from boards to maximise efficiency, and "between enterprise" gains are hindered if successful firms refrain from growing in order to preserve family control.

Delays in the formalisation of governance arrangements and the professionalisation of management slow down progress in financial transparency. Currently, financial statements according to international standards are only available for the minority of stock market-listed firms, and for the firms of regulated sectors (which are compelled to produce audited accounts). As of early 2016, only 80 out of the top 500 and 120 out of the top 1 000 firms were listed on the stock exchange. A new Commercial Code prescribes the issuance of such accounts by all firms under formal external auditing, but the enterprise size at which this rule will apply is not yet settled.

Closely-held firms' reluctance to enhance their transparency may also be related to tax considerations (OECD, 2014a). Turkey's corporate income tax revenues, reached only 1.8% of GDP in 2014, against an OECD average of about 3%, despite a statutory corporate

Figure 1.12. **Room for progress in corporate governance**

2014, score from 1 (worst) to 7 (best)



Source: World Economic Forum, Executive Opinion Survey

StatLink http://dx.doi.org/10.1787/888933389125

income tax rate of 20% in Turkey compared to an average of about 25% in the OECD (OECD, 2016b), pointing to low tax compliance. Other possible reasons are below-average corporate profits and a narrow corporate income tax base as a result of above-average tax deductions. Many non-listed enterprises may be averse to financial transparency in order to minimise tax liabilities.

Transparency is essential to improve access to capital and so is better corporate governance (Dünya, 2016c). Overall, previously less formal firms start to become more transparent and gain better access to bank credits. The stock of outstanding SME loans increased from TRY 204 billion in 2012 (15% of GDP) to TRY 338 billion in 2015 (17% of GDP) (BRSA, 2016). Non-debt financing channels also started to expand, although from low levels, through private equity networks and the listing of firms in the newly created "emerging firm" and "special investment" markets of the Istanbul Stock Exchange. Public policies seek to stimulate these developments through tax incentives to equity issuance (from 2015, a deduction from taxable corporate profits, calculated by imputing a notional rate of return on newly issued equity, has aimed at reducing the tax bias between debt and newly issued equity, see OECD, 2016b), a business angel support scheme, and, most recently, a Turkish Growth and Innovation Fund. This is a "fund of funds" backed by the European Investment Fund, which will place at least EUR 400 million in mostly foreign but also domestic funds investing in venture businesses in Turkey. Additional resources are also being made available, including via Treasury participation in a Turkish Investment Fund with a planned investment capacity of EUR 48 million. The effectiveness of public support schemes for risk capital is debatable (Andrews and Criscuolo, 2013), but the advent of these instruments implies that small and medium sized firms with high potential will have wider access to additional funding sources and management support in the future, provided that they improve governance structures, enhance financial transparency, and upgrade from semi-formal to formal status.

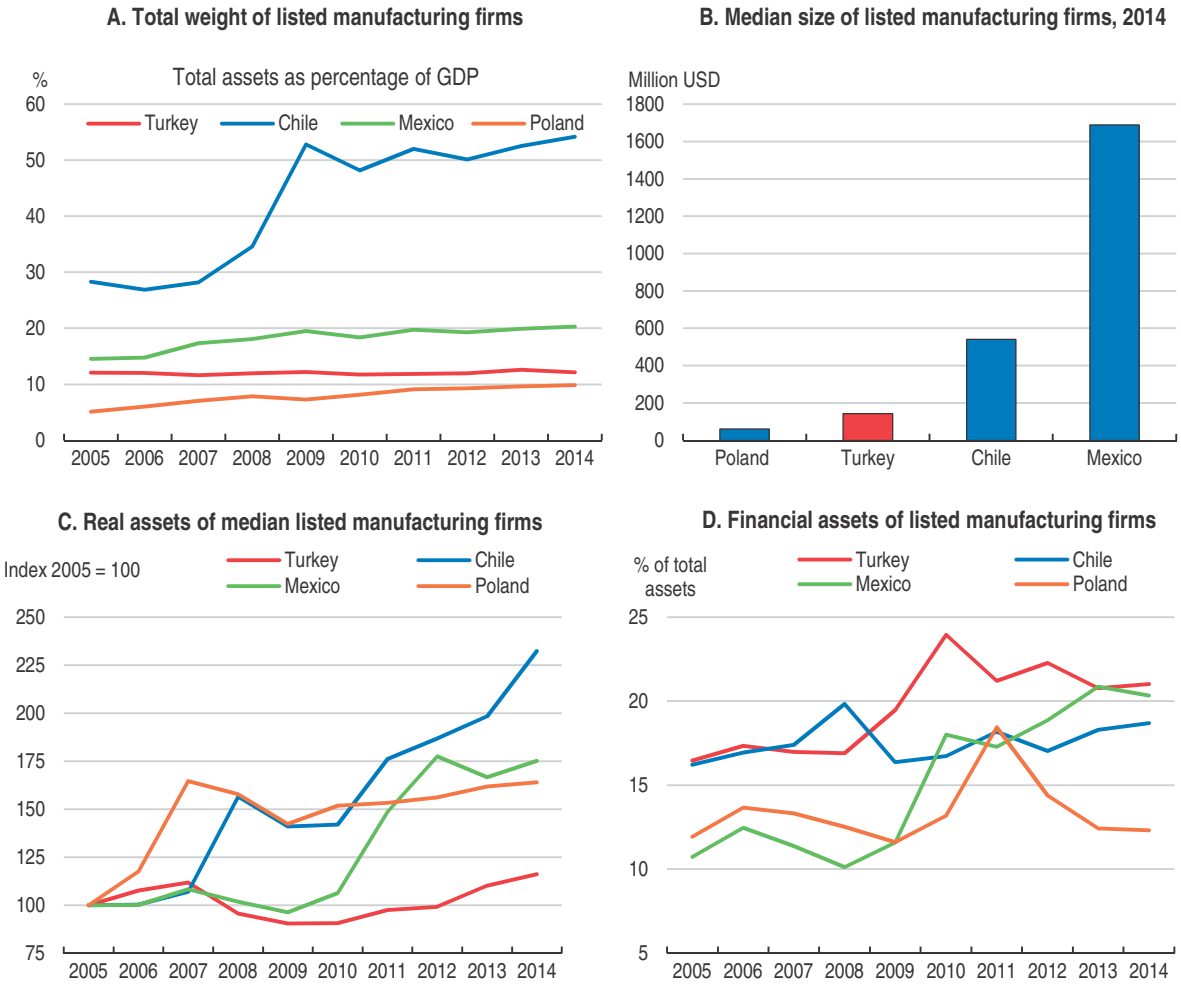
Very large firms and FDI are undersized in international comparison

The most formal part of the manufacturing sector, i.e. stock market-listed and FDI firms, is smaller in Turkey than in other catch-up OECD economies (Figures 1.7 and 1.14). The *2014 OECD Economic Survey* had highlighted their high productivity performance (OECD, 2014a). The individual size of stock market-listed firms is small in international comparison, and has increased more slowly than in other countries since the mid-2000s (Figure 1.13, Panel B). The aggregate share of listed manufacturing firms is also smaller, and has tended to contract slightly over the past decade, while it increased in other countries (Figure 1.13, Panel A).

Listed manufacturing firms have invested more in financial assets over the past decade than their international counterparts, rather than expanding productive capital (Figure 1.14 Panel D). Combined with the low stock of manufacturing FDI, such underinvestment by more advanced firms slows down the reallocation of resources to the higher productivity side of the economy.

Surveys suggest that the fully formal firms are particularly sensitive to the integrity of basic governance in their business environment. Excessive prevalence of informality, corruption and political instability are systematically reported in surveys in Turkey as being particularly discouraging for this type of firms (Figure 1.14, Panel A).

Figure 1.13. **Room for more growth by fully formal firms**

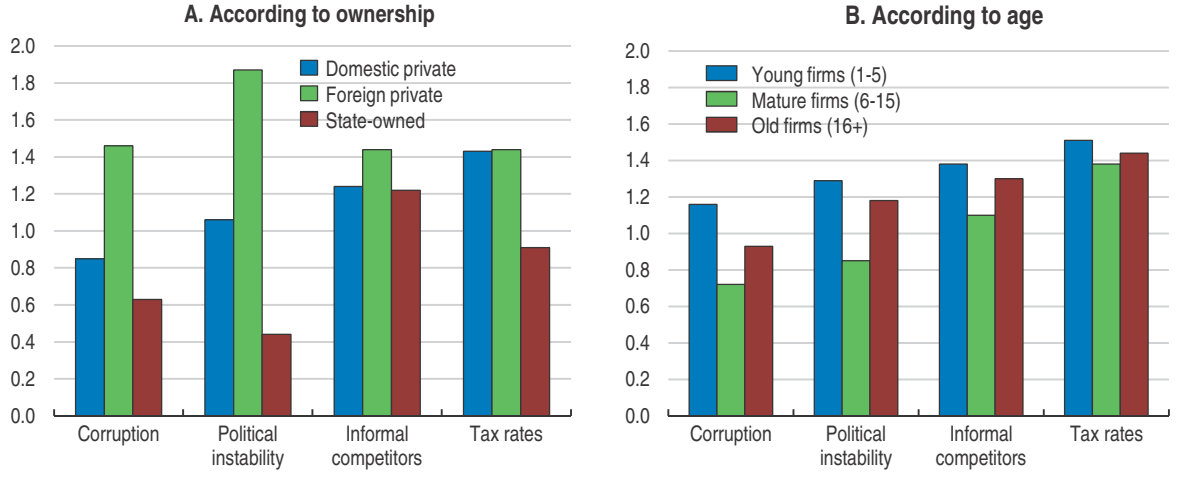


Source: Thomson Reuters Datastream; OECD calculations.

StatLink http://dx.doi.org/10.1787/888933389131

Figure 1.14. **Investment obstacles reported by fully formal firms**

Index scale 0 (no obstacle) to 4 (very severe obstacle)



Source: World Bank (2013), Enterprise Survey; and OECD calculations.

StatLink http://dx.doi.org/10.1787/888933388938

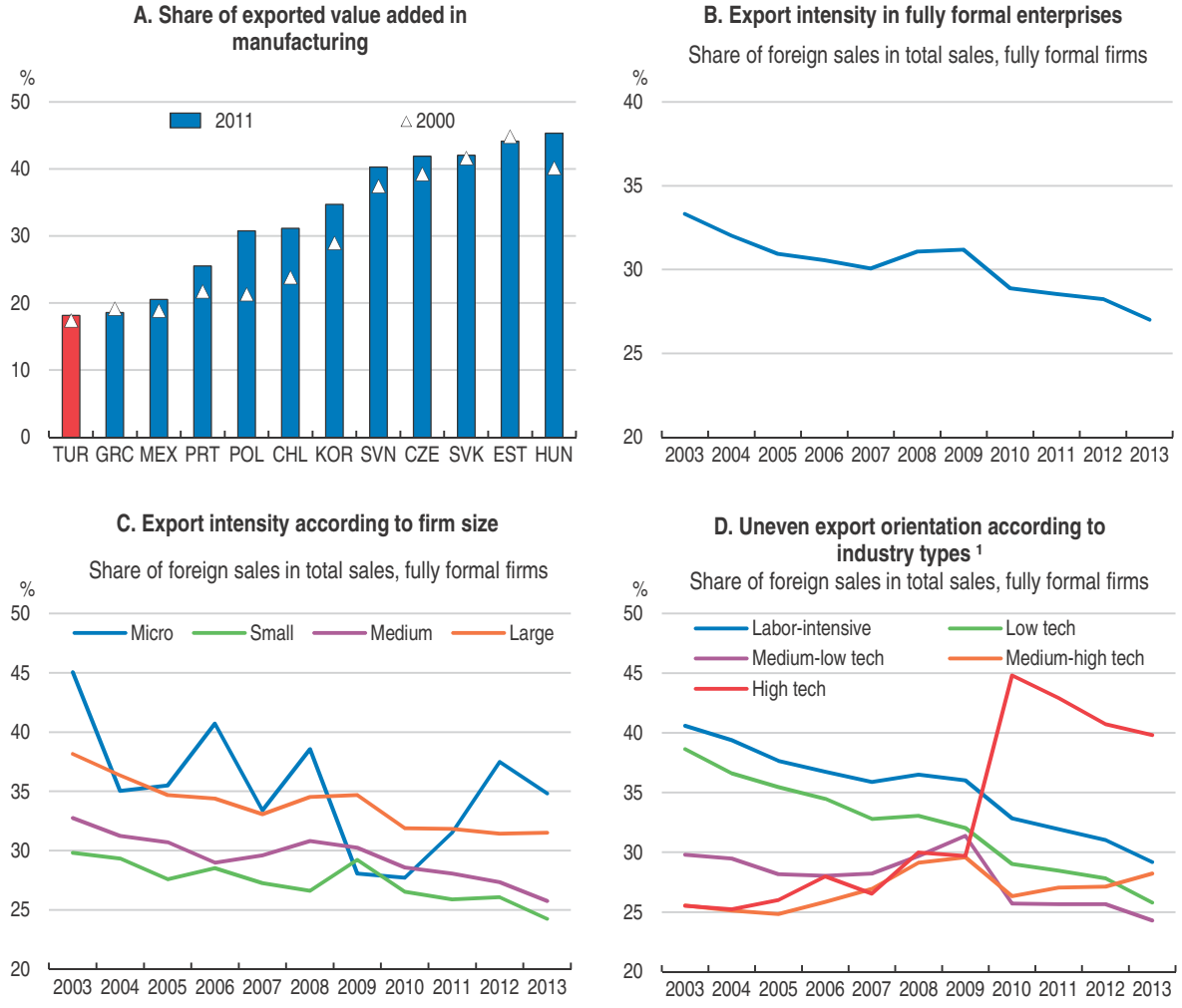
Sophisticated start-ups are also penalised by shortcomings in the business environment

Small, human capital-intensive formal businesses are also very sensitive to the integrity of their basic governance environment. As newcomers and outsiders in the market, they are less able than incumbents to remedy to the pressures arising from illicit practices, non-level playing competition and political unpredictability. Their aversion to informality, corruption and political uncertainties comes through in surveys (Figure 1.14 Panel B). More recently, trade associations of traditional small businesses also started to voice grievances about unfair competition from entities flouting the law (Dünya, 2016b).

Export performance has weakened

The exported share of Turkey's total added value, at 18%, is the lowest among comparable countries and increased by only one percentage point between 2000 and 2011, lagging behind comparable OECD countries (Figure 1.15, Panel A). Data for fully formal

Figure 1.15. **Export intensity has weakened overall, but improved in dynamic areas**



1. For the definition of industry types, see Figure 1.5.

Source: OECD/WTO (2016), "Trade in value added", OECD-WTO: Statistics on Trade in Value Added (database), DOI: http://dx.doi.org/10.1787/data-00648-en; Central Bank of the Republic of Turkey; and OECD calculations.

StatLink http://dx.doi.org/10.1787/888933389140

enterprises in the CBRT database confirm this weakness in their exporting activity, except in the highest technology segment (Figure 1.15, Panels C and D).

Weak export intensity hampers macroeconomic rebalancing and signals that firms fail to reap the productivity benefits associated with export orientation. These benefits arise from "learning from exporting", higher economies of scale and acceleration of technological change (Yang and Mallick, 2010; Isgut and Fernandes, 2007). Firm-level data show that exporting firms achieve a higher level and growth rate of productivity in Turkey. Recent research has confirmed, after controlling for reverse causality, that Turkish exporters are financially more robust, more productive and more R&D intensive than non-exporters (Atabek Demirhan, 2015). Among fully formal firms and from a sectoral perspective, export-intensity declined for low-technology and labour-intensive firms but has been on the rise for medium and high-technology firms (Figure 1.15, Panel D).

Quality enhancement increases value added and is an important dimension of productivity gains. The quality of Turkish manufactured goods has not caught up with comparable countries. Their relative quality, measured by the share of high-value products (i.e. goods with prices at least 15% above world reference prices) progressed in the first half of the 2000s, but subsequently declined. It was lower than in comparable countries in 2013, at around 10% in most export sectors. Textiles and clothing is an exception, with about 60% of high-value products exported, as producers succeeded to position themselves in higher market segments than low-cost countries (Chapter 2, Figure 2.6).

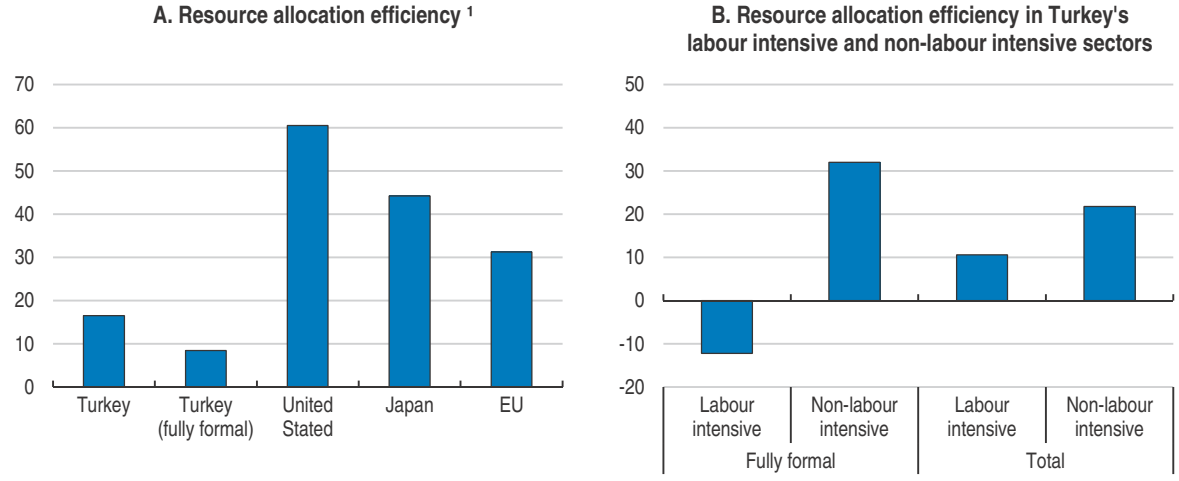
Labour allocation is particularly poor in labour-intensive industries

The contribution of the allocation of employment between firms to the level of productivity results from two effects: i) the productivity distribution of firms (i.e. the fraction of high-productivity relative to low-productivity firms); and ii) the extent to which, all else equal, high-productivity firms command a larger share of aggregate employment. This decomposition was applied in OECD work on the basis of "sales per worker" information (Andrews and Cingano, 2014). Its extension to Turkey suggests that labour is not allocated as well in Turkey as in other OECD countries. The actual allocation of labour across firms boosts manufacturing labour productivity by around 15%, relative to a baseline in which labour would be allocated randomly across firms. These allocative gains exceed 60% in the United States and 40% in Japan (Figure 1.16, Panel A).

Labour allocation is particularly poor in labour-intensive activities, especially in the fully formal sector. As discussed above, this may be related to rigid labour regulations being more binding for rule-abiding firms. Once labour-intensive activities are removed from the calculations, estimated labour allocation efficiency improves both among fully formal firms and in total manufacturing. It comes close to EU averages, but stays below estimated allocative efficiency in the United States and Japan (Figure 1.16, Panel B).

Figure 1.16. **Resource allocation efficiency in total and fully formal manufacturing**

Productivity gains, percentage



1. Increase in productivity, compared to unweighted average productivity. 2013 for Turkey, latest available year for others.

Source: Andrews and Cigano (2014), "Public Policy and Resource Allocation: Evidence from Firms in OECD Countries", Economic Policy, No. 78; OECD calculations based on 2013 data from Turkish Statistical Institute and Central Bank of the Republic of Turkey.

StatLink http://dx.doi.org/10.1787/888933389153

Formalisation requires a coherent policy framework

Improved productivity performance requires low-productivity firms to be better equipped to catch up with higher-productivity ones, and higher-productivity firms to be better incentivised to grow at their full potential. This section reviews some of the policy areas that influence these outcomes. A coherent strategy to make progress in these areas would help upgrade the business environment for all firms, be they fully formal or not. Firms of all types, sizes, sectors and regions can then achieve stronger productivity gains and the best performing firms can grow more freely and rapidly.

The section starts with the industry-relevant measures of the 2016 Action Plan of the previous government. Table 1.2 lists measures which were envisaged in education, labour markets, R&D and other regulatory areas, and which carried a potential to stimulate productivity and employment growth in the manufacturing sector.

Public policies in five areas have a particularly important impact on the capacity of existing firms to catch up with higher productivity firms, and for the capacity of higher-productivity firms to absorb a higher share of the labour force. These areas concern: i) worker skills and the flexibility of the labour force; ii) financial transparency and corporate governance; iii) availability of a "diffusion-oriented" R&D infrastructure; iv) the quality of service inputs; and v) a supportive macroeconomic and rule-of-law framework. Recent developments and further reform requirements in these areas are discussed below.

Table 1.2. **Industry-relevant measures of the 2016 Action Plan**
(Numbers in brackets refer to the reference number of each measure in the Plan

EDUCATION
A National Education Quality Framework and an Education Quality Index to be introduced for all levels of education (Measure 131). The curricula at all levels of education to be updated (Measure 130).
Foreign language education to be strengthened (Measure 132).
The administration of vocational and technical schools to be reformed (Measure 134). Vocational and technical schools to be restructured and upgraded for stronger links with the labour market (Measure 135).
The compatibility between curricula in vocational schools and job specifications in labour markets to be improved (Measure 40). The infrastructure for apprenticeship training to be strengthened (Measure 136). Additional support to be granted to private vocational schools established outside Organised Industrial Zones (Measure 45).
LABOUR MARKETS
The severance pay regime to be reformed (Measure 12).
Regulations concerning temporary work agencies to be reformed (along EU norms) (Measure 11).
All active labour market programmes to be re-evaluated (Measure 54).
Skilled foreigners to be encouraged to work in Turkey (Measure 89), with the "Turquoise Card System" (Measure 88).
Wages of each youth hired for the first time on an on-the-job training position to be borne by the government for a period of one year (Measure 204).
A young entrepreneur starting a new business to be exempt from income tax for three years (Measure 209). Young entrepreneurs to be provided with a grant of up to TRY 50 000 on a project basis (Measure 202). Loan support amounting to TRY 100 000 to be provided to young entrepreneurs, and a 85% of guarantee to be provided for these loans via the Credit Guarantee Fund (Measure 203).
Women to be entitled to part-time work with full-time pay for two months for the first child, four months for the second and six months for the third and above (Measure 187). Until children start school, women to be entitled to work part-time if they wish (Measure 188).
Seasonally working women and home-based working women to be covered by social security (Measure 189).
The obligations of municipalities to open nurseries to be activated (Measure 48).
The functioning of labour courts to be modernised (Measure 26). Alternative dispute resolution mechanisms to be introduced in labour law (Measure 122).
RESEARCH & DEVELOPMENT
A "Digital Turkey Roadmap" to be prepared (Measure 32).
Tax incentives to be provided for expenditures for patent applications (Measure 84).
A fund to be created for early stage R&D and design efforts (Measure 86). A credit guarantee to be established for the commercialisation of innovative projects (Measure 87).
The co-ordination of R&D and innovation incentive schemes to be reinforced (Measure 85). The employment of foreign R&D experts to be facilitated (Measure 90)
A public procurement model to be developed to support the domestic supply of medium-high and high-technology products (Measure 159). Development banking to be restructured in order to increase long-term financing for medium- and high-technology projects (Measure 160).
OTHER REGULATIONS
Caps, maturity and coverage rate of credit guarantees for manufacturing SMEs to be increased (Measure 197).
SMEs to be entitled to use movable properties as bank collateral (Measure 147).
Procedures for starting a new business to be simplified (Measure 76). Procedures for exit to be simplified (Measure 78).
Additional measures to be taken to attract foreign direct investment (Measure 71).
A mechanism to be established to reduce land costs in Organised Industrial Zones (Measure 73). A model to be developed for the construction of low-cost turnkey factory facilities for labour-intensive sectors (Measure 200).
The Law on Public Procurement will be updated in line with EU norms (Measure 141).

Upgrading skills and reallocating labour

The Public Employment Service (Iskur) and the SME Agency (KOSGEB) have already expanded their upskilling programmes. KOSGEB's total budget is tripling in 2016, to TRY 990 million. Iskur offers wage and social security subsidies for on-the-job training of new recruits and 370 000 participants attended these programmes in 2015. Given the low education level of the bulk of the working age population and extensive needs for requalification (as will be shown in the OECD/PIAAC Survey of adult skills to be published

in 2016), special attention ought to be paid, in the process of productivity-enhancing structural changes, to the basic managerial skills of small entrepreneurs and to the re-employment prospects of low-skilled employees exiting low-productivity firms.

Raising the management know-how of hundreds of thousands of low-educated small entrepreneurs may bring about significant "within" productivity gains. International experience suggests that well-designed programmes can yield high returns (McKenzie and Woodruff, 2015). Successful international precedents should be screened, the impact of existing programmes should be appraised, and resources concentrated on the most effective schemes. Basic English training may be part of this agenda, to enable small entrepreneurs to access the international knowledge and market platforms via internet (Koru and Akesson, 2011). According to the 2015 EF Proficiency Index, average English proficiency is very low in Turkey, which ranks 43rd among 44 countries. A recent study found that, around the world, 70% of external communications of an average firm with export activities is carried out in English, and, in globalised firms, 65% of internal communications take place in English (Karaboğa, 2016). Turkish firms, except the largest and the most internationalised ones, are thus at a disadvantage.

The transfer of low-skilled workers from lower to higher-productivity firms is also key. This can be facilitated by upskilling workers. Additional support was expected from the 2016 Action Plan for the on-the-job training of new recruits. However, policy support in this area may also be mis-used as a generous employment subsidy, rather than for effective retraining. All related programmes, old and new, should be evaluated on a longitudinal (medium term) basis.

Excessive restrictions in Turkey's employment rules and overly high labour compensation costs have hindered the institutionalisation of SMEs and the growth of formal firms (OECD, 2014a). A far-reaching labour market reform to bring employment rules closer to OECD good practices has always been a top priority (OECD, 2006a; OECD, 2010a). In this area, the 2016 Action Plan envisaged to build on the sensible *National Employment Strategy* which was elaborated (but not implemented) in 2014. The 2016 Plan targeted rapid progress in the implementation of the strategy and as of May 2016 a law starting to liberalise temporary work agency services was adopted. Current efforts in reforming the severance pay system require broad support across stakeholders including unions and business organisations.

The full range of modern employment forms in use in OECD countries should be made available in Turkey. These include renewable fixed-term contracts, temporary work agency contracts, outsourcing, part-time work, and working from home. So far such flexible forms were merely accessible to informal and semi-formal firms, and they should become available to institutionalised firms. The new law adopted in May is a welcome first step. The severance payment regime (practically available only to a minority of workers in the formal sector) should also be replaced with "portable" severance saving accounts along the lines of the system in place in Austria (Hofer, 2006).

New employment forms would enable firms to create new jobs according to cyclical and market demands, rather than expanding the work hours of existing workers. This well-being reducing feature of the Turkish labour market is due to regulatory rigidities. With reforms, part-time work would also become easier and would help better mobilise low-activity groups (Akdemir, 2016).

Employment costs of low-skilled workers should be reduced in the formal sector. Official minimum wages were already above those in comparable OECD countries before the 30% increase granted in January 2016. Turkey had the OECD's highest minimum/median wage ratio at about 70%, and this ratio is projected to increase in 2016 despite the expected increase in the general wage level. Combined with high employer social contribution rates, total labour costs for low-skilled workers are too high to sustain sufficient demand for their services in the formal sector, as confirmed by recent simulations (World Bank, 2014). Reducing labour costs on a large scale may significantly increase employment.

The temporary government subsidy of TRY 100 per worker per month granted to the employers of minimum wage earners offsets up to 40% of the latest increase in their costs (IMF, 2016) during the first year. Going forward, the government and the social partners in the Minimum Wage Commission should moderate across-the-board increases in the official minimum wage, and take into account regional and enterprise circumstances. The large productivity gaps and divergences between firms, including within the fully formal sector, call for a decentralised approach.

At the same time, the security leg of the flexicurity strategy should be reinforced. The scope and eligibility for unemployment insurance should be broadened to better move protection from jobs to individuals. According to a recent OECD assessment (Andrews and Saia, 2016) achieving this by upgrading active labour market policies rather than passive income support would make a large difference for labour supply. Recent increases in social transfers appear to have weakened work incentives in some labour market segments. For able working age individuals, these transfers should be made conditional on labour force participation and supported by effective upskilling schemes.

Financial transparency and corporate governance

It is important to preserve the financial incentives of new business start-ups throughout the country, which helped stimulate the broad-based development of export-oriented manufacturing in the 2000s. However, the moderation of tax pressure on entrepreneurs should not be obtained through weak tax administration and widespread tax evasion (which benefit informal and low-productivity businesses) but through properly designed tax rules that encourage investment, innovation and job creation by all firms (OECD, 2015b; OECD, 2010b). Installing a tax system that includes both "carrots" and "sticks", and incentivising informal businesses to enter the formal economy will be essential. The government submitted a draft tax law to Parliament in mid-2013 to unify and streamline the Personal Tax Law and the Corporate Tax Law into a simpler income tax legislation (Vergi Portalı, 2016). An in-depth review of the current design of the tax system would be welcome with a view to, for instance:

- Minimise the tax cost of firms shifting from the so-called "simplified" to the normal tax regime. This would remove one obstacle to the formalisation of SMEs.
- Maintain strong incentives for all firms to undertake productivity-enhancing investments and create high-quality jobs. The extension, in 2015, of R&D tax incentives to design activities at large, and the introduction, in 2016, of a multi-year tax exemption for young entrepreneurs had this objective. The effectiveness of these schemes should be evaluated.

The ongoing introduction of compulsory external audits for all firms should be carefully managed. Size thresholds at which higher degrees of transparency will kick in have not yet been finalised. These thresholds should be high enough not to discourage the formalisation of smaller firms, or be combined with measures reducing their compliance costs.

Stepping up the formalisation of medium-sized family firms would also accelerate productivity gains. Expected governance improvements from outside equity injections, via private and angel capital placements and stock-market listing are large (OECD, 2015c, Price Waterhouse Coopers Turkey, 2013). Tax measures were taken in 2015 to stimulate external equity rather than debt funding, via tax exemptions for dividend payments and the introduction of an allowance for newly issued corporate equity. The ongoing Istanbul Financial Center Project will include other plans to promote market-based financing.

Incentives for qualified outside partners to take part in the governance of closely-held firms may help boost productivity. The "business angel" scheme adopted in 2012 (exempting 75 to 100% of investment by personal investors in private company stock that they hold for at least two years from their taxable income) appears to have stimulated such investments in the past three years (Dünya, 2016c). Angel investments grew reportedly from EUR 14 million to EUR 30 million between 2013-15. The long-term tax costs and actual investment outcomes of this generous incentive should be monitored. Effective competition policy in innovation-intensive areas would enhance the survival probabilities and the growth prospects of start-ups, helping attract more private capital to them, and would reduce the need for direct public support.

A "diffusion-oriented" R&D infrastructure

"Mission-oriented" innovation policies aim at promoting R&D projects of national significance, whereas "diffusion-oriented" programmes aim at upgrading the capacity of firms to absorb frontier technologies. Turkey's R&D policies which expanded in the 2000s focused initially on national missions (in the areas of defence, space observation, health technologies, etc.). More recently, R&D incentives have been re-oriented to diffusion objectives. A higher share of the public R&D budget is allocated through tax incentives, and less through direct subsidies. In early 2016, an additional R&D support package provided tax incentives to joint projects between firms and university researchers (offering secondment opportunities and tax exemptions to researchers temporarily joining enterprises). The results of these initiatives should be monitored and the "diffusion" leg of the R&D system should continue to be reinforced.

The instruments of R&D support should be reassessed in the light of domestic and international experience. According to recent OECD research, both tax incentives and direct subsidies, if poorly designed, may favour incumbents and discourage new entrants (Andrews and Criscuolo, 2013). Design features are crucial to minimise the fiscal cost and to maximise the social benefits of these policies. In Turkey, the establishment, by the Ministry of Science, Industry and Technology, of an impact assessment department was a welcome initiative. Together with the planned implementation of the state aid monitoring system from end-2016, it is expected to enhance the understanding of the impact of R&D and innovation policies. These evaluation studies should be regularly published.

Potential gains from diffusion-oriented R&D and associated technical extension services are important in the area of "Industry 4.0". There is wide scope in Turkey to reap

productivity gains from broad-based digitalisation (World Bank, 2016). Surveys on the early diffusion of these techniques in Turkey reveal that firms with sophisticated human capital have taken an edge (Fındık and Tansel, 2015). If this gap between different categories of firms were to become a lasting divide, it would deprive the economy from broad-based productivity convergence and worsen the already large productivity divergences between firms.

Many commercial operators (suppliers, consultants, banks etc.) market related techniques and services in Turkey. Public services helping disseminate relevant knowledge for various users (small businesses, agriculture, etc.) could support this process. The SME Agency KOSGEB, in co-operation with universities and international partners, could lead this technical extension function.

Synergies between firm-level digitalisation (Industry 4.0), digitalisation of interactions with the public sector (e-government) and digitalisation of transactions with business partners (suppliers, customers, banks, investors) should be more actively exploited. For example, Turkish exporters see room for the integration of their information and management systems with the trade recording systems of the Ministry of Finance and of the Ministry of Customs (Dünya, 2016a). An application planned by the Ministry of Finance is an electronic register for individual firms' movable assets, which should permit their utilisation as collateral by banks (Şimşek, 2016b). The diffusion of these techniques, however, requires that entrepreneurs and firms be confident that the greater transparency implied by integrated digitalisation will not in practice amplify their tax liabilities.

The quality of service inputs

Services provide important inputs to manufacturing in all OECD countries (Nordas and Kim, 2013). Efficiency gains in existing firms, as well as the growth of successful firms rely on services in the areas of finance, engineering, consulting, marketing, logistics, etc. The interaction between service suppliers and their manufacturing customers seems to fall short of international standards in Turkey in three areas, calling for remedial measures:

- Network services provided by state-owned and recently privatised monopolies are generally more expensive and/or of lower quality than in other OECD countries. This is the case in electricity supply and railway transportation. More proactive competition reforms and more efficient regulations would help upgrade performance in these areas.
- Several professional services are closed to international trade and investment. OECD service trade restrictiveness indicators (STRIs) show this to be the case in accounting, legal and various logistics services (OECD, 2015d). These areas should be liberalised in order to give Turkish manufacturers access to world quality services. An *OECD Competition Assessment Review* could help with the prioritisation of such reforms.
- Transport infrastructures are crucial for the timely and low-cost delivery of Turkish goods to domestic and foreign markets. This is important in particular for the suppliers integrated in global value chains (Chapter 2). A severe challenge stems from the restrictions and quotas applied to Turkish road freight transporters in international, and in particular European, markets. This was recognised as a major issue in a recent study on the smooth operation of the EU/Turkey Customs Union (World Bank, 2014) and ought to be addressed in the forthcoming round of negotiations on the updating of this agreement.

A particularly important source of services for manufacturing firms are organised industrial zones (OIZ). OIZs have been expanding in Turkey since the 1980s. They received large in-kind subsidies from the government, which may have diverted investment away from other locations. Still, they considerably facilitated infrastructure and other service provision, and stimulated knowledge diffusion (Bozkurt, 2016). In 2015, 284 OIZs were in operation, hosting over 40 000 industrial establishments and 1.53 million workers (more than 30% of total manufacturing employment in Turkey) (Işık, 2015). According to one calculation, 70% of the new manufacturing jobs created between 2009 and 2014 were created in OIZs (calculated as the difference between manufacturing employment reported in OIZs by two official sources in 2009 and 2014 – Sahbaz, 2011 and Işık, 2015).

OIZs stem from local private sector initiatives, usually led by local associations of entrepreneurs that have been granted public land. They offer member firms physical infrastructure, as well as logistics and transportation, communication and energy, environmental management, vocational training and other technical services. Participants are in general formal enterprises which pay substantial membership fees. They comply with common rules, and informal employment is generally limited.

OIZs leverage the productivity of participating firms. In the past decade, sectoral OIZs started to be developed, in areas such as leather processing, shipbuilding, car components, agro-food production, etc. They provide sector-specific services to their members, including vocational facilities, measurement and test infrastructures, etc. and nurture the emergence of specialised clusters. The government seeks to further spur the growth of OIZs. The Minister of Science, Technology and Industry declared recently the goal of raising the share of manufacturing employment in OIZs to above 40% (Işık, 2015). The 2016 Action Plan implied that OIZs would be granted additional public land, and possibly additional subsidies for their construction costs. One goal was to facilitate the upgrading of the so-called "small industry sites" which were supporting small and micro businesses with less advanced infrastructure (457 small industry sites were in activity in 2015, hosting more than 90 000 small businesses and nearly 500 000 workers) into fully-fledged OIZs.

The effectiveness of OIZs depends on how supportive their own business environment is. There is evidence that successful OIZs may become vulnerable to predatory taxation and service over-pricing by local authorities (Tuncay, 2016; Yıldırım, 2016). They should be subject to clear and transparent tax rules, and dependable service provision contracts by municipalities. As well, government support to OIZs, including land allocations, should be provided transparently, to nurture level-playing competition between them. Public support can be made proportional to the productivity-enhancing services that they provide, such as vocational schools, life-long learning facilities, and technical extension services.

A supportive macroeconomic and rule-of-law framework

The successful growth of the export sector calls for a sufficient degree of predictability and stability in price competitiveness. Turkey has a flexible exchange rate regime, but overly volatile and, at times, substantially over- or under-valued exchange rates. This volatility increases business risks for investors in the tradable sector. Maintaining the real exchange rate on a sustainable path requires: i) overcoming inflation inertia and achieving lower single-digit inflation, in accordance with the official inflation target; ii) reducing the volatility of the nominal exchange rate by improving and stabilising the risk perceptions of international investors; and iii) implementing supply-side reforms and active competition

policies in market areas where prices are excessively sticky and undermine the competitiveness of the manufacturing sector.

There is ample potential in Turkey for further growth of high-productivity large-size firms, and additional FDI by global manufacturing players. These actors engage in long-term and indivisible investments and are particularly sensitive to the stability, quality and predictability of their business environment. According to several surveys, they have perceived improvements in the quality of Turkey's business environment in the early to mid-2000s, but a deterioration since in international comparison. Some key priorities include:

- The judiciary system should operate more dependably and efficiently, with an assurance of full independence.
- An active anti-corruption strategy is needed. This strategy can draw on the recommendations made by the OECD Working Group on Bribery in its monitoring of Turkey under the Anti-Bribery Convention (OECD, 2014b).
- Competition policy and state aid transparency should be improved.
- Public procurement rules should be reformed to improve openness to competition. EU rules may serve as blueprints. Reforms should cover all types of public procurement, including public-private partnerships.

Policy recommendations

The main policy recommendations of this chapter are summarised in this Box:

Recommendations to rebalance the economy by strengthening the manufacturing sector

Key recommendations

- Fully implement the reforms of the 2016 Action Plan and enact systematic monitoring and reporting on actual implementation.
- Strengthen the rule of law, judiciary independence and the fight against corruption.
- Reduce barriers to foreign direct investment.
- Encourage minimum wage moderation and reduce labour tax wedges and employment costs for the low-skilled.
- Enhance the flexibility of employment rules for all firms. Avoid tax thresholds for larger and higher-productivity firms.
- Focus upskilling programmes for small entrepreneurs on basic management, foreign languages and digitalisation.
- Improve the social safety net for displaced workers by upgrading active labour market programmes, including those adapted to refugees.

Recommendations to rebalance the economy by strengthening the manufacturing sector *(cont.)*

Other recommendations

- Continue to improve the regulatory framework for doing business, using OECD product and labour market and competition policy indicators as benchmarks.
- Consider an *OECD Competition Assessment Review* to help in this process.
- Consider a "zero cost licencing" initiative for start-ups.
- Undertake an in-depth review of the tax system to reduce the cost of formalisation and rationalise the tax incentives to R&D, innovation, business angels, industry-university co-operation and other productivity-enhancing investments.
- Publish regularly the impact assessment studies of publicly funded R&D and innovation support programmes.
- Consider creating A Productivity Council with a broad mandate to assess all relevant structural and policy drivers of productivity growth in Turkey and to issue policy recommendations.

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Chapter 2

Reaping the benefits of global value chains

Despite major progress, Turkey still lags behind most comparable countries in terms of exported value added per capita. Its remarkable economic performance over the past 15 years has not been sufficiently backed by gains in export market shares, in particular when measured in value added terms. While Turkey incorporates an increasing share of foreign value added in its own exports, its capacity to provide intermediate inputs to other countries' exports is still limited. This chapter argues that Turkey's participation in global value chains remains below potential owing to institutional features that hamper efficient allocation of capital and labour, obstacles inherent in bilateral trade agreements and entry regulations, underdeveloped human capital and insufficient investment in innovation, R&D and knowledge-based capital. Progress along these dimensions would strengthen Turkey's backward and forward trade linkages and contribute to rebalancing its growth model. The adjustment process towards a more export-oriented economy operating on a level playing field needs to be flanked by dedicated industrial, social and environmental policies to alleviate adverse consequences on displaced firms and workers and the ecosystem.

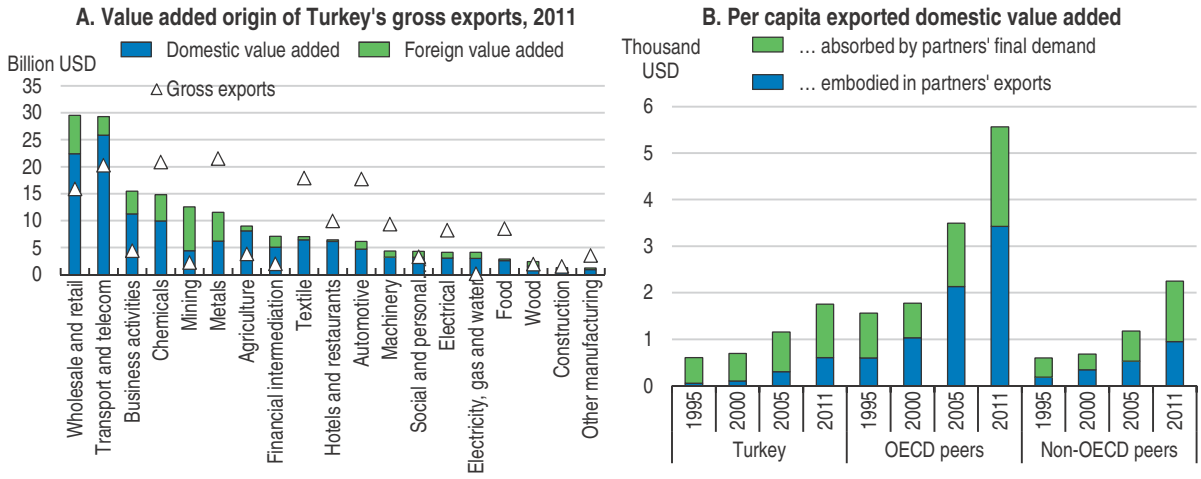
Turkey's participation in GVCs

The growing role of global value chains (GVCs) in international production processes is of critical importance for Turkey's development. Participation in GVCs is one of the key drivers of successful productivity diffusion in a globalised world (OECD, 2015a). Greater trade openness enhances exposure to international competition and forces domestic firms, frontier as well as non-frontier ones, to comply with best practices of global frontier firms and raise productivity levels accordingly. Backward integration, that is the use of foreign inputs to produce final and intermediate goods exported by Turkish firms, often entails import competition, in particular in manufacturing and services, and accelerates the reallocation of domestic resources towards the most competitive firms. Backward integration also facilitates the diffusion of knowledge either indirectly through learning from suppliers or directly via knowledge spillovers from foreign direct investment (FDI). Forward integration, that is the production of intermediate inputs used in other countries' exports, increases the potential market, leverages the use of Turkey's human, capital and natural resources, and, as a result, contributes to rebalancing the Turkish economy. Increased production for foreign markets requires convergence of product standards toward international best practices and triggers virtuous feedback loops between productivity, innovation, human capital endowment and living standards.

However, cross-border fragmentation of manufacturing supply chains also generates externalities some of which deserve policy attention. For instance, countries with less stringent environmental regulations may absorb more polluting production processes than on a level playing field, with adverse consequences for the environment and well-being. Transition countries may also face an increase in inequality during early stages of GVC integration, as only the best firms are able to compete with international best practice. Deepening integration in GVCs exposes countries to a greater number of shocks although a better regional and product-range diversification can offset the adverse effects on stability. Against this backdrop, policy needs to take into account the trade-offs between enhanced growth prospects and potential negative spillovers on other relevant policy dimensions arising from GVC integration. Metrics such as the OECD's Better Life index or the United Nations' Sustainable Development Goals can help to identify and quantify the effects of these trade-offs and calibrate policy accordingly.

While the concept of GVCs is not new, their quantitative assessment became possible only recently owing to the development of inter-country input-output tables pioneered, among others, by the OECD. A major spinoff of these tables is the joint OECD-WTO Trade in Value-Added (TiVA) database that allows value-added flows to be distinguished from gross export flows. Two dimensions are worth mentioning in the GVC context. First, the TiVA data allows analysts to determine the source of value added embodied in gross exports. Among other things, the focus on the origin of value added emphasises the importance of services as inputs to gross exports and sheds light on the sectoral heterogeneity with respect to foreign and domestic origin of value added (Figure 2.1, Panel A).

Figure 2.1. **Value added origin of exports and its destination**



Note: OECD peers are the 10 countries, other than Turkey, with the lowest per capita GDP in the OECD: Czech Republic, Slovenia, Portugal, Slovak Republic, Estonia, Greece, Hungary, Poland, Chile and Mexico. Non-OECD peers include Argentina, Bulgaria, Brazil, China, Croatia, India, Malaysia, Romania, Russia, Thailand and Vietnam.

Source: OECD/WTO (2016), "Trade in value added", OECD-WTO: Statistics on Trade in Value Added (database). DOI: http://dx.doi.org/10.1787/data-00648-en.

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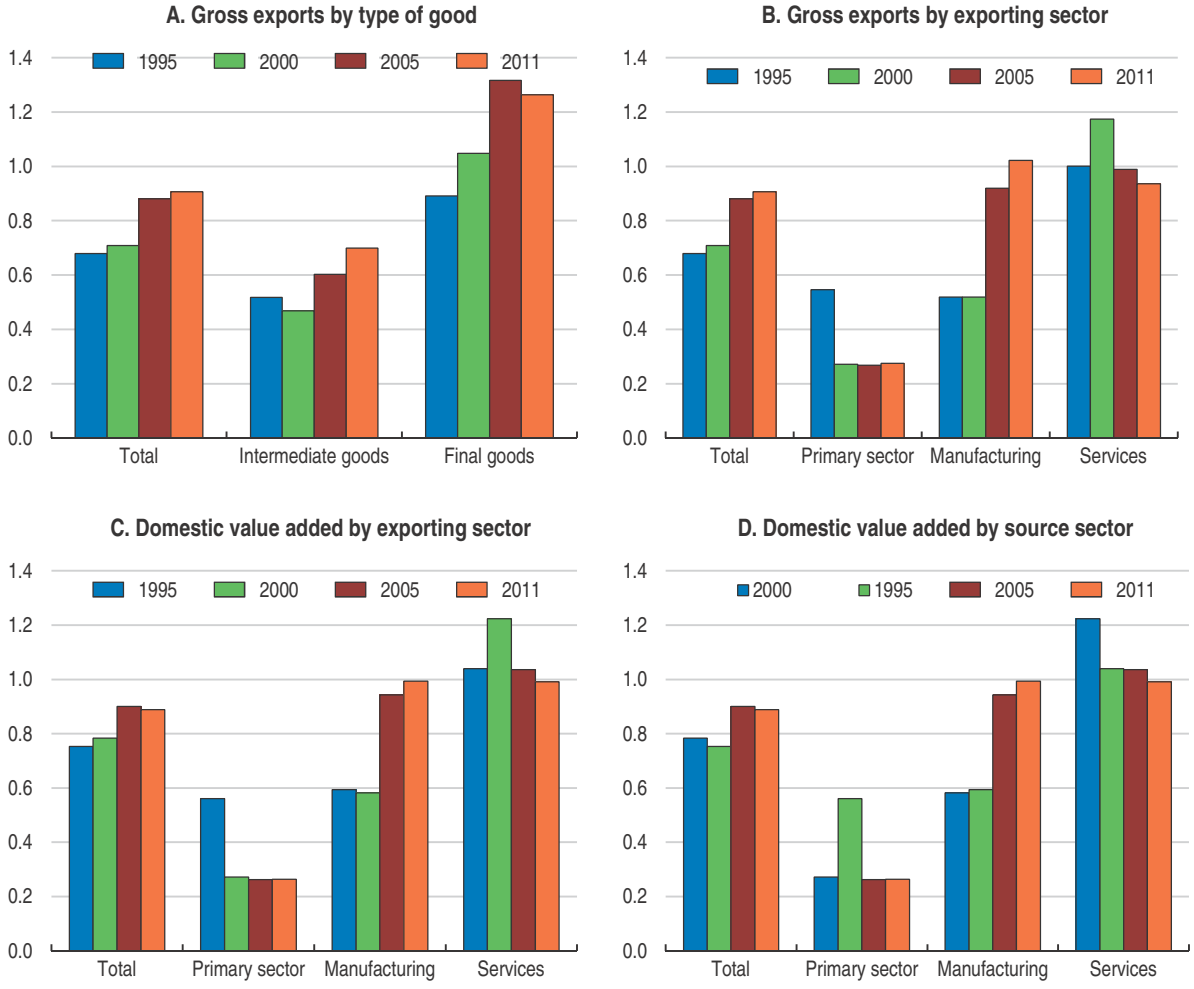
Second, the TiVA data sheds light on the downstream path of exported goods and services by distinguishing the share of exported value-added that is directly absorbed by partners' domestic demand and the share that is further exported to third countries. The latter serves as a measure of successful integration in global supply chains, which has become a major driver of export performance. Although Turkey has a medium ranking in terms of the level of exports in value added, Turkey still lags behind most peer countries in terms of per capita exports of domestically produced value added (Figure 2.1, Panel B) and the gap that is much larger than the gap in per capita GDP. In particular the share of exports that serve as inputs to partners' exports is substantially lower than in other countries. While more than 30% of the exported domestic value added of OECD peers is further exported to third countries, this share is only about 20% in Turkey which suggests that Turkish firms are either less well integrated into global supply chains or they occupy predominantly downstream parts in them.

World export market shares confirm that Turkey's export business is concentrated on final rather than intermediate goods (Figure 2.2, Panel A). Turkey's strong export performance since 2000 is predominantly backed by manufacturing exports while exports of services and primary products exhibit declining world market shares both in terms of gross exports and domestic value added embodied in service exports (Figure 2.2, Panel B and C). However, when considering the source of value added in world exports, Turkey achieved sustained gains in market shares in both manufacturing and services (Figure 2.2, Panel D). This suggests a relatively high service content in Turkish manufacturing exports. Indeed, more than 35% of value added exported as manufacturing products originates from domestic services while this share is below 30% for OECD countries on average and only 25% for non-OECD peer countries.

Progress in export performance since 2000 is slightly less pronounced when measured in value added (Figure 2.2, Panel C) rather than gross terms (Panel B). Indeed, Turkey's backward participation index, which measures the share of foreign value-added contained

Figure 2.2. **Turkey's export market shares**

In percentage points of world exports



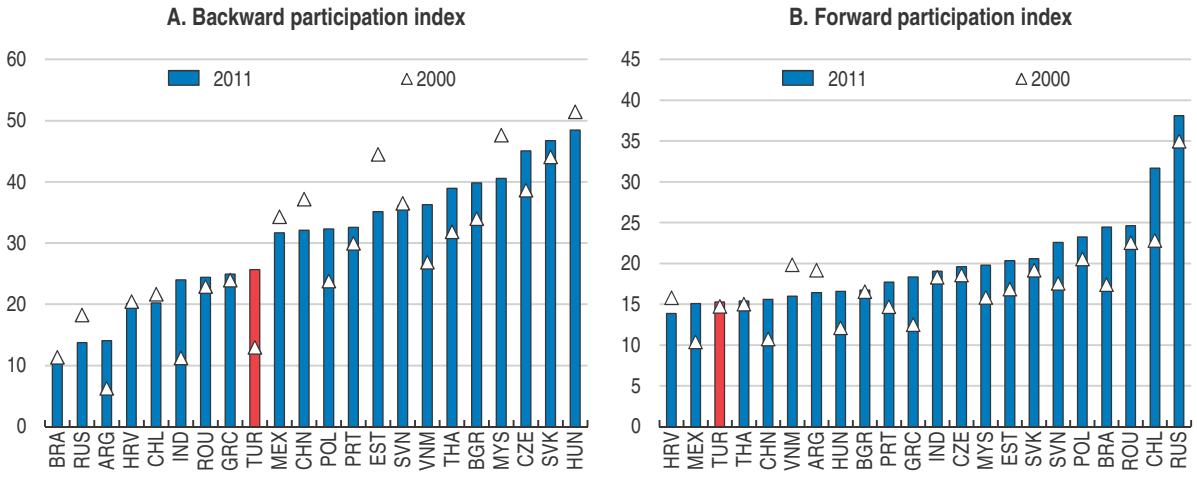
Source: OECD/WTO (2016), "Trade in value added", OECD-WTO: Statistics on Trade in Value Added (database). DOI: http://dx.doi.org/10.1787/data-00648-en.

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in Turkey's gross exports, nearly doubled between 2000 and 2011, the largest increase alongside India (Figure 2.3). In contrast, Turkey's forward participation index, defined as Turkish value added embodied in partner countries' exports as a share of Turkey's gross exports, remained broadly stable between 2000 and 2011. In other words, the capacity of the Turkish firms to play a role in upstream parts of value chains has remained very limited compared to other countries. Forward participation is low in manufacturing in particular, where it decreased more than in any other peer country between 2000 and 2011.

One major caveat associated with GVC participation indicators is that they solely focus on global supply chains that include at least two border-crossing events (the import of the intermediate input and the export of the assembled product). In fact, backward participation indices do not capture the extent to which foreign intermediates enter supply chains for products eventually absorbed by own domestic demand. Similarly, forward participation does not capture the extent to which an economy is able to export intermediates that are further processed in the partner country and then absorbed by the

Figure 2.3. **Participation in global value chains**



Note: The backward participation index is defined as the share of foreign value added in a country's gross exports. Forward participation is defined as the ratio of domestic value added embodied in foreign countries' exports over gross exports.
Source: OECD/WTO (2016), "Trade in value added", OECD-WTO: Statistics on Trade in Value Added (database). DOI: http://dx.doi.org/10.1787/data-00648-en.

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same partner's domestic demand rather than exported further. GVC indicators thus fail to capture some downstream and upstream parts of global supply chains.

The TiVA data are subject to several other caveats. They implicitly assume that all firms operating in the same industry use the same technology and inputs. They also assume that the import content of exported goods in a given industry is the same as the import content of total demand in that industry. Finally, Turkey-specific issues arise stemming from the use of outdated input-output tables and very aggregate national accounts tables. Against this background, Turkey should continue to improve the statistical infrastructure and the integration into global databases designed for cross-country measurement of GVC integration.

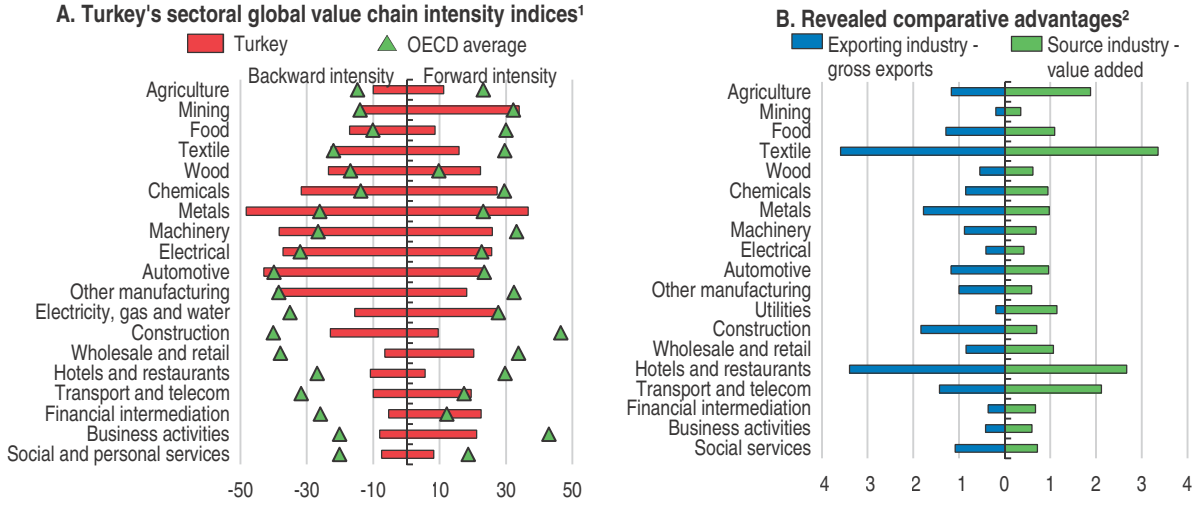
GVC participation by sector

A sector's backward intensity index measures the share of foreign value added in the sector's gross exports. A sector's forward intensity index is the share of the sector's value added in exports that is subsequently embodied in foreign countries' exports (Figure 2.4, Panel A). Exports of services, agricultural and mining products typically contain less foreign value added than manufactured products. Mining and metal products, because they are generally intermediate rather than final goods, enter foreign exports more than textile, food and agricultural products. Compared to OECD averages, backward intensity is generally stronger in manufacturing and weaker in services. As for forward participation, nearly all sectors are less forward intense in Turkey: only textile, automotive and machinery reach levels in line with OECD averages. This hints at generalised rather than sector-specific impediments to forward integration for Turkish firms.

Cross-country differences in export industry composition suggest that differences in GVC participation are to a great extent reflected in the industry composition of exports (Figure 2.4, Panel B). For instance, Turkey's weakness in forward linkages correlates with

Figure 2.4. **Revealed comparative advantages**

2011



1. Turkey's sector intensity indices are displayed.
2. Each sector's revealed comparative advantage is defined as the sector's relative contribution to Turkey's gross exports (value added in exports) divided by the sector's share in world gross exports (value added in exports).

Source: OECD/WTO (2016), "Trade in value added", OECD-WTO: Statistics on Trade in Value Added (database). DOI: http://dx.doi.org/10.1787/data-00648-en.

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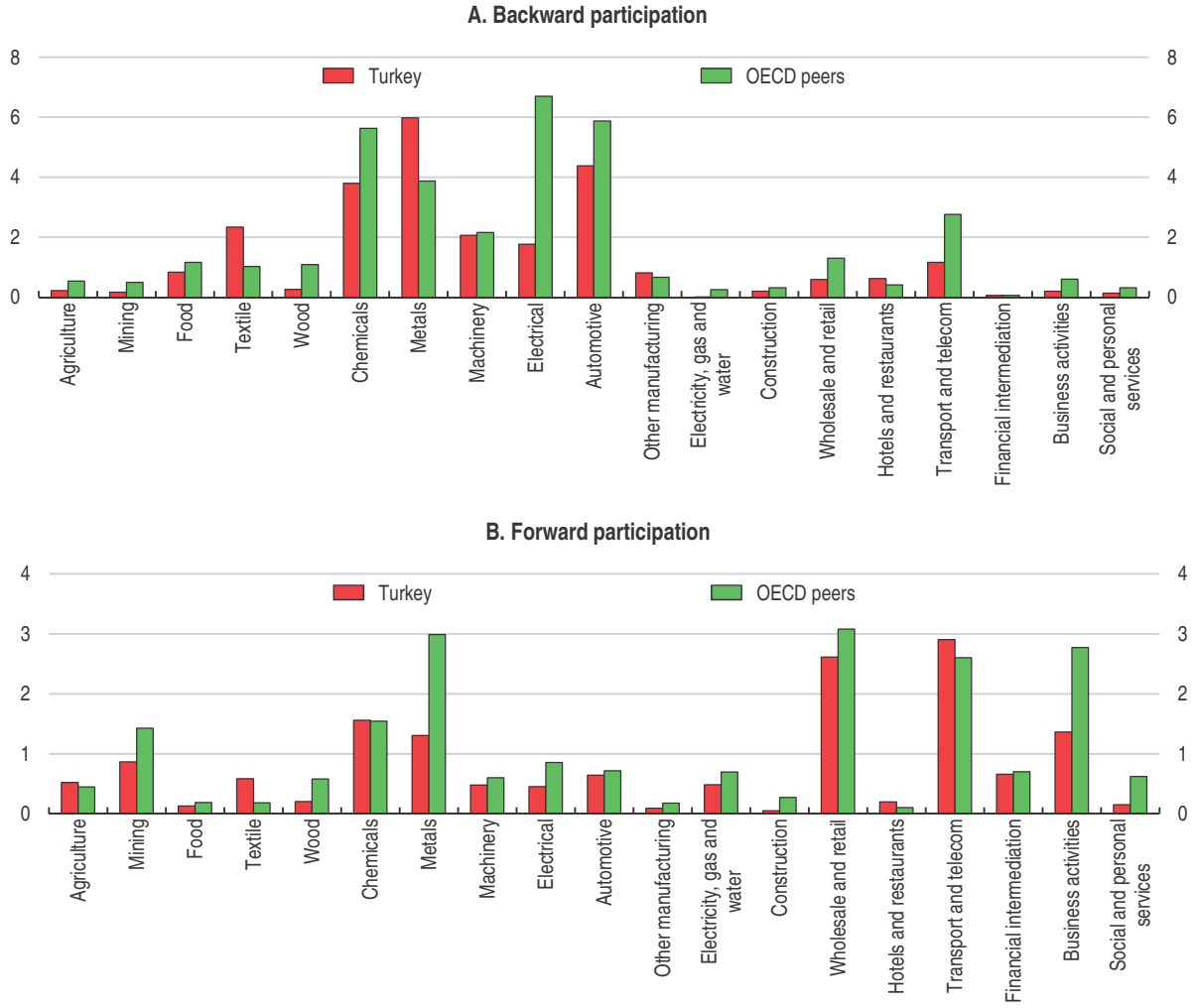
the predominance of textiles (manufacturing) and hotels and restaurants (services) sectors with rather low forward intensity. Similarly, some manufactured products with typically very strong backward linkages, such as chemicals or electrical products, are relatively underrepresented in the basket of Turkey's gross exports. Among the sectors with a comparative advantage, only metal products display high backward intensity.

Sectoral contributions to GVC participation (Figure 2.5) shows that the metal sector exports a much higher share of total foreign value added than in other countries owing to a high sector-specific backward participation index (Figure 2.4, Panel A) in combination with a higher share in gross exports (Figure 2.4, Panel B). Similarly, the automotive sector accounts for a disproportionately high share of backward participation in Turkey, but also, and even more so, in OECD peer countries. The textile sector also contributes more than in other countries but the sector's GVC-intensity is generally low. Conversely, chemical and electrical products account for less of backward integration when compared to other countries mainly due to their low shares in Turkey's gross exports (Figure 2.4, Panel B).

Forward participation is concentrated in the services sector that typically explains more than half of domestic value added contained in foreign countries' exports (55% in the case of Turkey). The relatively low level of Turkey's forward participation largely reflects the low contribution of mining and business activities (real estate, renting, consulting, etc.) (Figure 2.5, Panel B). Mining contributes less due to low exports in this sector (Figure 2.4, Panel B) while business activities suffer from low forward intensity in Turkey compared to other countries. Over time, as a result of higher export growth and faster increases in backward intensity in manufacturing, backward participation has become more concentrated in manufacturing exports (87% of exported foreign value in 2011 against 66% in 2000, see Annex A3). The division of value added contained in other countries' exports between services and manufacturing has remained broadly stable (see Annex A4).

Figure 2.5. **Sectoral contributions to global value chain participation indices**

2011



Note: OECD peers are the 10 countries, other than Turkey, with the lowest per capita GDP in the OECD: Czech Republic, Slovenia, Portugal, Slovak Republic, Estonia, Greece, Hungary, Poland, Chile and Mexico.

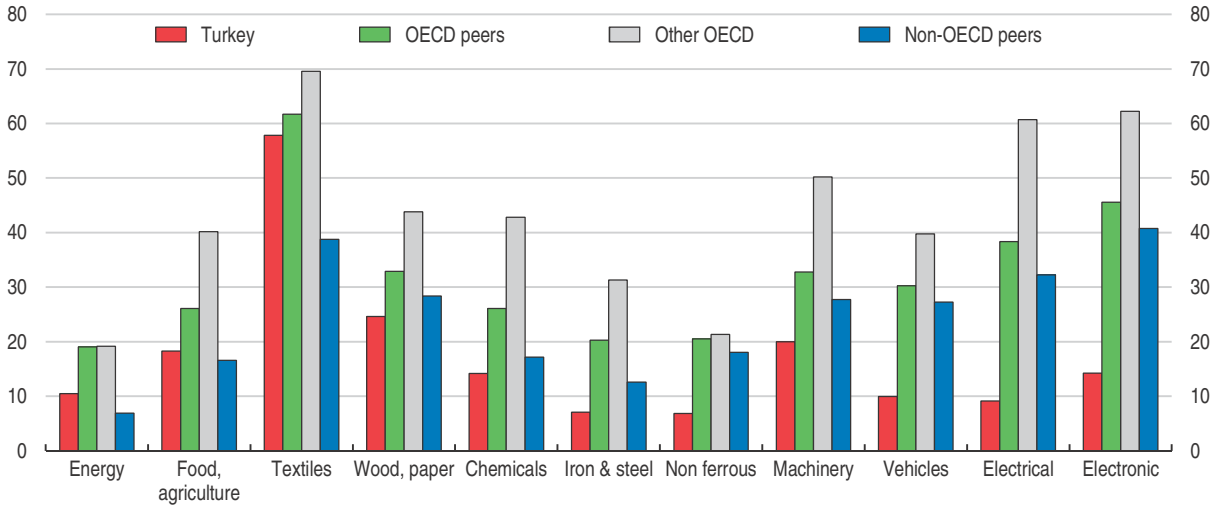
Source: OECD/WTO (2016), "Trade in value added", OECD-WTO: Statistics on Trade in Value Added (database). DOI: http://dx.doi.org/10.1787/data-00648-en.

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Beyond the sectoral composition of exports, the price of products within each sector can also explain external imbalances. Recent evidence from CEPII's trade unit values database suggests that for each manufacturing sector, the share of high-value products in the sector's exports is consistently lower in Turkey than in other country groupings except for primary, food and textile good exports where the share of high-price-range products slightly exceeds the one observed on average in non-OECD peer countries (Figure 2.6). Over time, the share of high-value products mostly stagnated in Turkey, with the notable exception of the textile sector where the share of high-value products doubled between 2000 and 2005 but stagnated thereafter. In sharp contrast, OECD peer countries have managed to increase the share of high-value exports in most sectors over time. This weighs on Turkey's forward participation while it potentially increases foreign value added in Turkish exports.

Figure 2.6. **Share of high-value exports by sector**

Per cent, 2013



Note: A high-value product's unit value exceeds the world reference by at least 15%. The world reference is the world median of all unit values weighted by the value of their trade flow for a given year. OECD peers are the 10 countries, other than Turkey, with the lowest per capita GDP in the OECD: Czech Republic, Slovenia, Portugal, Slovak Republic, Estonia, Greece, Hungary, Poland, Chile and Mexico. Non-OECD peers include Argentina, Bulgaria, Brazil, China, Croatia, India, Malaysia, Romania, Russia, Thailand and Vietnam.

Source: CEPII Trade Unit Value database, see Emlinger and Piton (2014), "World trade flows characterisation: Unit values, trade types and price ranges", CEPII Working Papers, No 2014-26.

StatLink http://dx.doi.org/10.1787/888933389215

As a complementary analysis to forward (downstream) and backward (upstream) integration indices, network metrics have been computed based on bilateral value added trade flows in the OECD TiVA database for the total manufacturing sector as well as for the textile and the automotive sector. The resulting network maps (Annex A5) illustrate the ongoing deepening of Turkey's integration in international trade. Progress since 2000 is most significant in the textile and the automotive sector while Turkey remains at the periphery of the European manufacturing hub when overall manufacturing trade flows are considered. Turkey's position in the automotive value added trade network highlights its pivotal location between the three major automotive hubs (Europe, North America, East Asia) and underscores the global reach of Turkish car component manufactures.

GVC participation by partner country

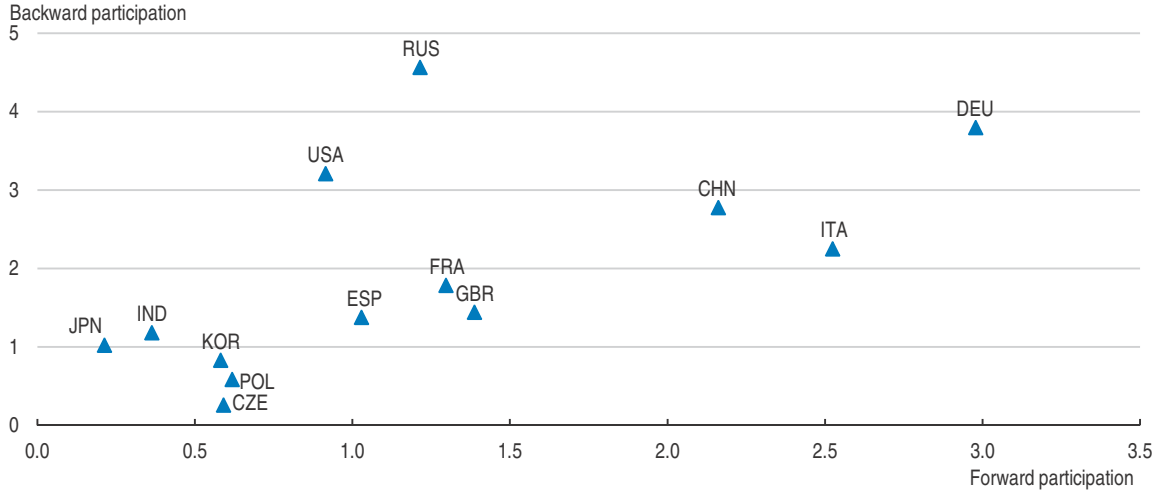
In absolute terms, encompassing both forward and backward linkages, Germany is Turkey's main GVC trading partner (Figure 2.7). USD 3 billion of Turkish value added is exported further by Germany and close to USD 4 billion of German value added is contained in Turkish exports. This corresponds roughly to one tenth of Turkey's backward and forward linkages. The only country, from which Turkey was sourcing even more value added for its exports in 2011, merely consisting of primary products, was Russia. Italy and China were respectively the second and third most important countries in terms of forward linkages.

Participation indices can also be defined for each trading partner. Forward participation with respect to a partner country indicates the share of domestic value added contained in the bilateral exports that is later embodied in the partner's exports to third countries. Backward participation with respect to a country is defined as the share of

foreign value added embodied in exports to this country. Turkish trade with Korea and China is the most GVC-intense as bilateral forward and backward participation indices by far exceed the indices observed for other countries and the economy as the whole (Figure 2.8, Panel A). Indeed, gross exports to China contain 40% of Turkish value added that is re-exported by China and 51% of foreign value added. In comparison, exports to Germany only contain 15% of Turkish value added that is re-exported by Germany and only 19% of foreign value added. The twofold increase in backward participation between 2000 and 2011 (Figure 2.3, Panel A) was mainly driven by trade with China, Brazil and India on

Figure 2.7. **Turkey's main global value chain partner countries**

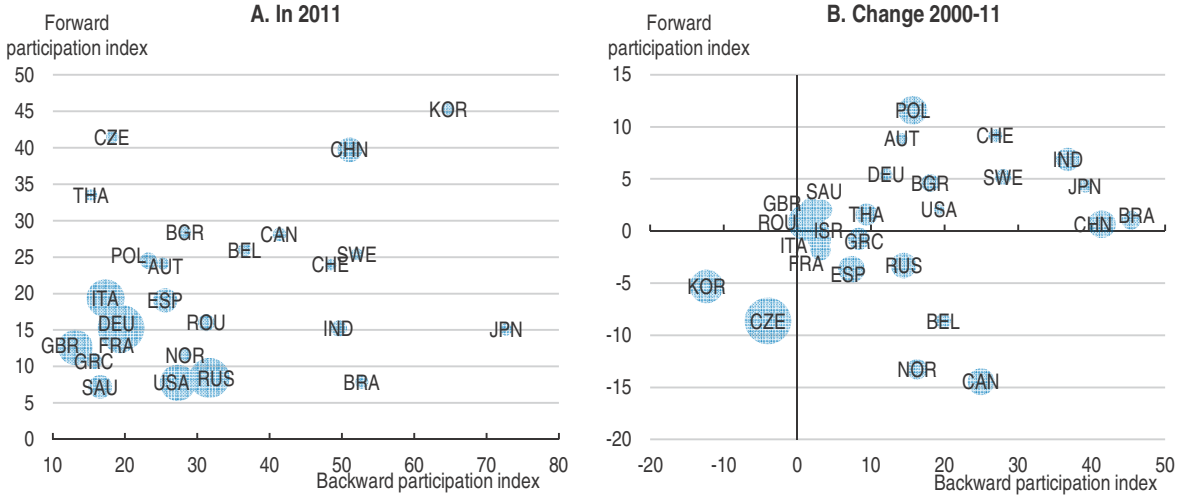
In billion USD, 2011



Note: Turkish value added embodied in foreign country's exports (forward participation) and foreign country's value added contained in Turkey's exports (backward participation) are shown for Turkey's main GVC partner countries.
Source: OECD/WTO (2016), "Trade in value added", OECD-WTO: Statistics on Trade in Value Added (database). DOI: http://dx.doi.org/10.1787/data-00648-en.

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Figure 2.8. **Global value chain participation by export destination**



Note: Bubble size reflects partner shares in gross exports (Panel A) or growth in bilateral trade between 2000 and 2011 (Panel B).
Source: OECD/WTO (2016), "Trade in value added", OECD-WTO: Statistics on Trade in Value Added (database). DOI: http://dx.doi.org/10.1787/data-00648-en.

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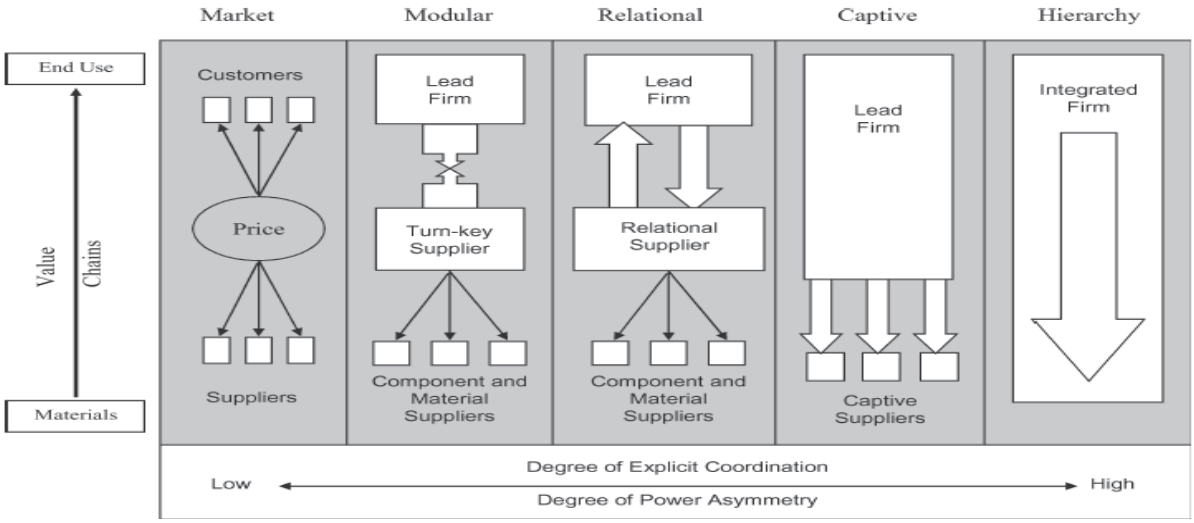
the back of more dynamic and more foreign-value intense trade (Figure 2.8, panel B). The increase in forward participation mainly came from trade with Poland but was offset by less forward-intense trade with other countries like the Czech Republic or Korea.

Bilateral value added trade balances can differ substantially from gross trade balances. A classic example is the assembly of the IPhone in China (Gereffi, 2014). Several parts of the IPhone are imported by China, notably from Korea. Indeed, China's value added embodied in the IPhone is very small compared to the total value of the IPhone that is exported. As a result, if a country imports IPhones from China, the deterioration in the bilateral gross trade balance exceeds by far the deterioration in the value-added trade balance. Conversely, bilateral gross trade balances with China can underestimate the actual balance of value added contained in the countries' final demand as exported and imported value added of third countries are ignored. For trade between China and Turkey, the former prevails as the bilateral gross trade balance is considerably more negative than the value added trade balance. The aggregate effect is offset by trade with the rest of the world, which suggests that Turkey may play role akin to China's in the middle East (Iran, Iraq and Syria are important export markets for Turkey but not covered in the OECD TiVA database).

Drivers of participation in global value chains

Integration in GVCs may take place via arm's-length trade or through FDI by multinational enterprises (MNEs). Arm's-length relationships within international production chains typically occur for standard products with low coordination, codification and transaction costs. More customised products entail more complex transactions, codifications and supplier capability requirements. This increases costs for the lead firm due to necessary transfers of ownership to suppliers, which favours the integrated firm approach in organising the international production process. Beyond these two extreme cases, three intermediate governance types of GVCs can be defined according to the complexity of transactions, the ability to codify transactions and the capabilities of the supplier base (see Figure 2.9).

Figure 2.9. **Governance types of global value chains**



Source: Gereffi et al. (2005), " The governance of global value chains ", Review of International Political Economy, Vol 12, No. 1, p. 89.

The prevalence and distribution of these types of governance structures within a given country depend inter alia on the type of GVCs in which the country is integrated. Low-technology product chains are more likely to be organised by arm's-length relationships while more high-technology products may favour MNEs and FDI. As different governance types call for different policies, the understanding of a country's comparative advantages and the assessment of its factor endowments is key in defining the appropriate policy mix. Two comments are in order. First, the industry structure of an economy is endogenous to the policy framework put in place. Second, the type of governance chosen can itself be an endogenous response to the policy framework.

Non-policy drivers

Like trade openness, GVC participation partly depends on factors that are not directly related to economic policies such as the size of the country or remoteness. Indeed, the larger the domestic market, the higher the chance that exporting firms can source intermediate inputs from home rather than seeking them from abroad. Similarly, the distance to global economic activity, measured as average geographical distance weighted by GDP, is expected to increase trade costs and reduce the likelihood of trade linkages. However, distance may affect both the numerator and denominator of backward and forward participation indices, and its impact is thus less certain. Legal origins or common language indicators are also often found to be significant in explaining bilateral trade linkages in gravity-type models (Kowalski et al., 2015a).

Natural capital endowments also play a central role in backward and forward linkages. Absence of raw material and other primary products increases backward linkages while their abundance increases forward linkages. The state of development determines an economy's capacity to produce valuable intermediates to be used by both domestic and foreign countries' exporters. As such, the relative quality of productive and human capital is expected to be negatively (positively) correlated with backward (forward) participation. Alternatively, GDP per capita can be used as a proxy for the state of development. Finally, industry composition also affects GVC participation. For instance, services exports typically contain less foreign value added than manufacturing industries (Figure 2.4, Panel A). Table 2.1 illustrates the cross-country regression results that tend to confirm the aforementioned correlations.

Some of the weakness in forward participation is explained by Turkey's weak natural capital endowment and its level of GDP per capita (see Table 2.1). Progress with the latter is expected to come with an increase in forward participation. Regarding backward

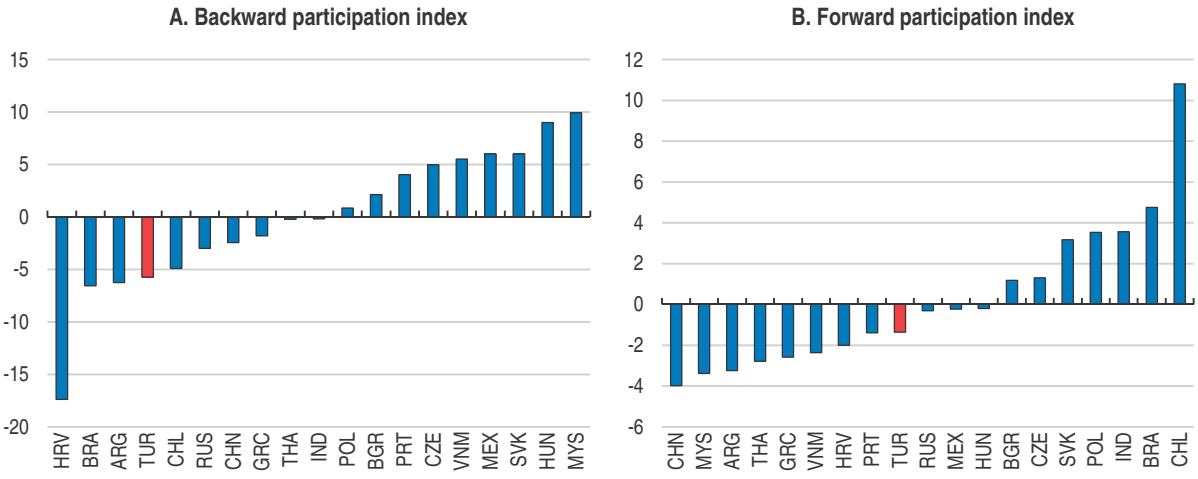
Table 2.1. **Non-policy drivers of GVC participation**

	Backward participation index	Forward participation index
log distance to activity	-0.363**	-0.070
log population (in millions)	-0.456***	0.229
log real GDP per capita	-0.470**	1.037***
Share of manufacturing in value added	0.534***	-0.146
Share of natural capital	-0.257	0.803***
Adj. R-Square	0.62	0.53
Observations	40	40

Note: * significant at 5%, ** significant at 1%, *** significant at 1‰. Standardised coefficients are shown. GVC participation indices refer to 2011, independent variables to 2010.
Source: OECD TiVA 2015 database, CEPII, Penn World Tables, External Wealth of Nations database. OECD calculations.

participation, Turkey's characteristics would suggest a high potential owing to its favourable geographical situation and its dependence on foreign primary inputs. Figure 2.10 illustrates the deviations of GVC participation indices from their expected value resulting from the set of non-policy drivers (Table 2.1). The results suggest that both backward and forward linkages are below their expected values in Turkey. Insofar as the five variables in Table 2.1 fully capture non-policy drivers, the residuals shown in Figure 2.10 reflect country-specific differences in policy settings. The quantitative assessment of policy drivers for GVC participation is described in Annex A6.

Figure 2.10. **Deviation from expected global value chain participation index**



Note: Residuals obtained from regressions in Table 2.1 are shown.
Source: OECD calculations based on OECD/WTO (2016), "Trade in value added", OECD-WTO: Statistics on Trade in Value Added (database).
DOI: http://dx.doi.org/10.1787/data-00648-en.

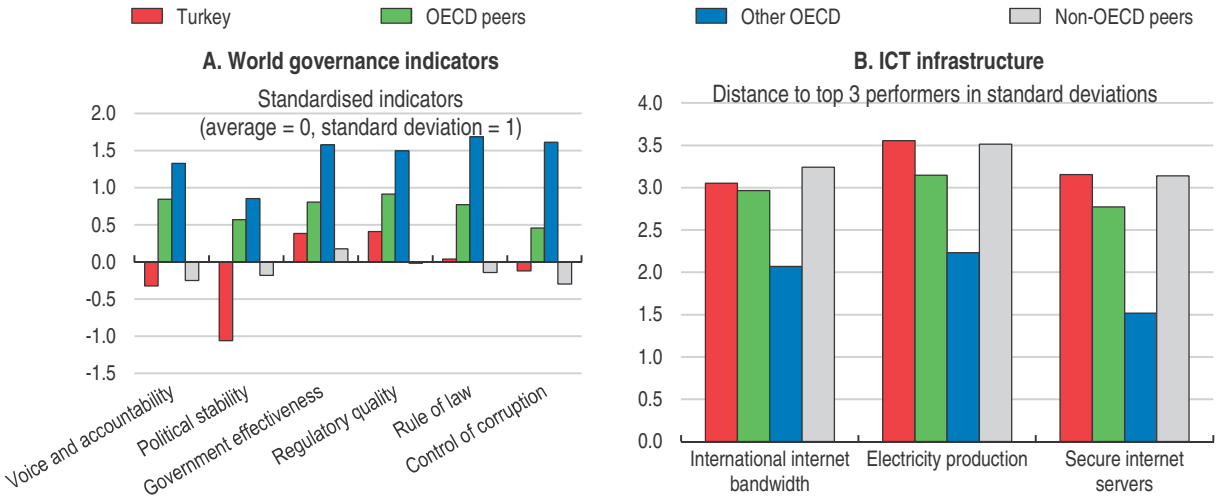
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Quality of institutions, infrastructure and business environment

The quality of basic institutions is found to be a key driver of participation in GVCs, particularly in developing countries (Kowalski et al., 2015). Poor governance, political instability and corruption are major obstacles for attracting MNE investment. Additional costs related to restrictions of foreign entry further affect foreign investor decisions and distort prices in favour of production for domestic markets. Contract enforcement is a key channel through which the quality of institutions affects a country's attractiveness for potential business partners abroad, in particular with regard to inward FDI. In particular young firms mention corruption, political instability and informality as their main obstacles to investment (Chapter 1). Against this backdrop, improvement of Turkey's performance in world governance indicators is likely to benefit GVC integration (Figure 2.11, Panel A). Participation in GVCs also heavily relies on efficient network infrastructure and other logistics-related services. While Turkey benefits from a rather well-developed transport infrastructure, ICT infrastructure is still underdeveloped compared to many peer countries (Figure 2.11, Panel B).

Regulatory burdens, in particular those impeding firm growth above certain employee thresholds (OECD, 2014a), make it harder for firms to reach the necessary scale to become competitive exporters. In addition, Turkey has the highest minimum-to-median wage ratio

Figure 2.11. **Network readiness indicators**



Source: World Bank (2015), World Governance indicators; World Economic Forum (2015), Network Readiness Index.

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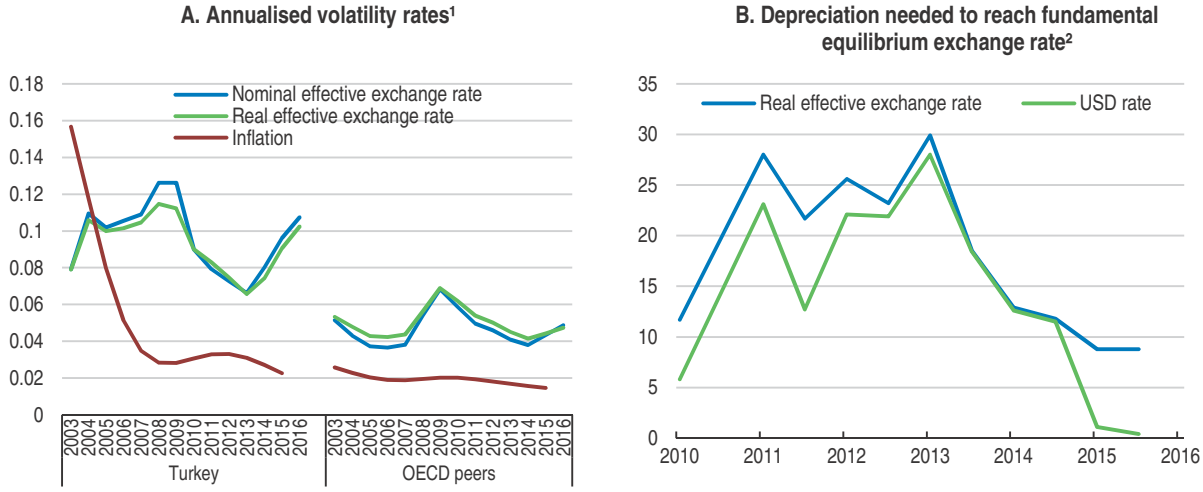
in the OECD, further exacerbated by the recent increase in the minimum wage. This damages international competitiveness, especially in labour-intensive sectors where Turkey has comparative advantages. The new hike in minimum wages at the beginning of 2016, although partly subsidised by reduced employer social security contributions for 2016, hurts exporters more than firms that produce for domestic markets as the latter can adjust prices unless import competition prevents them from doing so. The distortive impact of the high minimum-to-median wage ratio is magnified by large productivity heterogeneity among SMEs in Turkey (see Chapter 1). The squeezed margins drive exporting firms out of the market or reduce their investment capacity and competitiveness. Worse, the minimum wage increase is likely to drive firms back into the grey economy or make it harder for firms to escape from it. Informal firms are significantly less likely to integrate into GVCs or to become exporters.

Shortcomings in institutions can increase financial vulnerabilities and volatility. Notwithstanding recent progress on the back of macro-prudential measures and declining current account deficits, effective exchange rate volatility has started to increase again since 2013, from an already elevated level when compared to other countries (Figure 2.12). Excessive exchange rate volatility affects the predictability of cash flows related to trade activities and deteriorates confidence. Besides curbing inflation, limiting the volatility of capital flows and exchange rates is the major challenge for Turkey's monetary policy.

Trade and investment policies

In the early 1980s, Turkey embarked on the transition from an import-substituting to an export-oriented industrialisation strategy. Turkey first replaced non-tariff barriers such as import lists or quotas by tariff barriers, and then engaged in a process of cutting tariffs. However, since 2005, tariffs on primary products started to rise again, albeit from low levels (Figure 2.13, Panel A). A key aspect of Turkey's trade liberalisation is the customs union with the EU, which came into force at the end of 1995 and eliminated all duties, quantitative restrictions and charges having an equivalent effect on bilateral trade of industrial and processed agricultural goods. The agreement further stipulated the

Figure 2.12. **Financial volatilities and exchange rate evaluation**

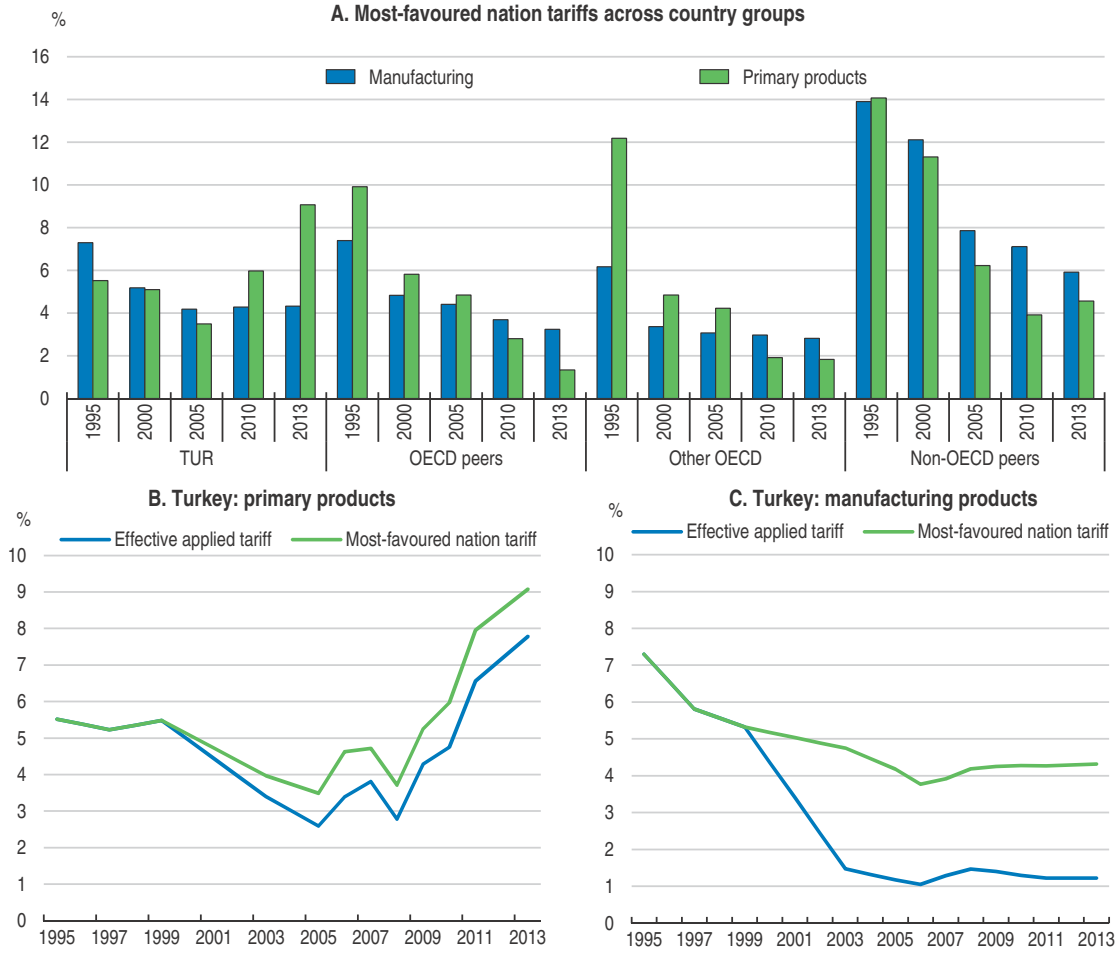


1. Time-varying volatilities obtained from GARCH(1,1) models of monthly changes in nominal and real effective exchange rates (through to Feb. 2016) as well as year-on-year growth of quarterly consumer price indices (through to 2015Q4).
2. Methodology of the Peterson Institute for International Economics (*www.piie.com*).

Source: OECD Economic Outlook database; Biannual reports of the Peterson Institute for International Economics (*www.piie.com*).

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Figure 2.13. **Tariffs applied on primary and manufactured products**



Source: World Bank, World Integrated Trade Solution (WITS).

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adoption of the EU's common external tariff for most industrial products and a convergence of industry standards.

Subsequently, Turkey has concluded several further bilateral preferential trade agreements. As a result, the gap between the most-favoured-nation (MFN) tariff and the effectively applied tariffs (AHS) has widened for manufactured products (Figure 2.13, Panel B) but less so for primary products (Figure 2.13, Panel C). Empirical results suggest that the decline in tariffs applied on manufactured products has significantly contributed to the increase in forward linkages (Annex A6). Against this backdrop, recent developments reflected by increasing tariffs on primary products and emissions of trade-defensive measure (see below) signal a halt in trade liberalisation. The renewed dialogue with the European Union with the aim to resume the convergence process should be flanked by a renewed commitment towards trade liberalisation.

Besides lowering or abolishing tariffs, preferential trade agreements (PTAs) typically include other dimensions of trade-related policies. However, none of Turkey's PTAs includes more than three out of the seven possible dimensions codified by the Design of Trade Agreements (Desta) database (Box 2.1). As accession negotiations with the EU resume, there is room for progress along the remaining PTA dimensions. Compliance with EU standards and convergence towards the EU policy framework would not only benefit trade with the EU but also enhance Turkey's attractiveness in the eyes of investors worldwide.

A major problem arising from the customs union with the EU relates to the asymmetry it implies for trade with third countries. Turkey's negotiations of free trade agreements with third countries are undermined by attempts at trade deflection as these countries ship their exports to Turkey through Europe. Trade deflection has been identified particularly in the imports of Mexican cars coming to Turkey through Europe and forced Turkey to introduce measure at the importation stage in the form of additional financial obligation of 10%, which is the rate of EU's Common External Tariff in cars. The estimated effects of finalising the ratification process or commencing the negotiations on free trade agreements with third countries such as Mexico, South Africa and Columbia are sizable (World Bank, 2014).

International trade in goods is further affected by non-tariff-measures (NTMs) such as sanitary and phytosanitary measures (SPS), technical barriers to trade (TBT) or pre-shipment inspection and other custom formalities (PSI) that hinder or limit trade of certain goods. Further NTMs include contingent trade-defensive measures (TDM) such as anti-dumping, countervailing and safeguard measures, as well as other NTMs such as non-automatic licensing, quotas and prohibitions and quantity controls other than those related to SPS and TBT. 2014 data from CEPII's NTM-map suggests that Turkey has implemented more import restrictions in the area of customs formalities than its peers (Figure 2.15). According to the WTO (2016), Turkey has been the third biggest user of safeguard measures since the WTO's inception, initiating 21 safeguard investigations over the period 1 January 1995 to 30 April 2015 and taking 14 safeguard actions over the same period. Trade-defensive and safeguard measures are on the rise in Turkey, against the background of the risk of a renewed cycle of protectionism.

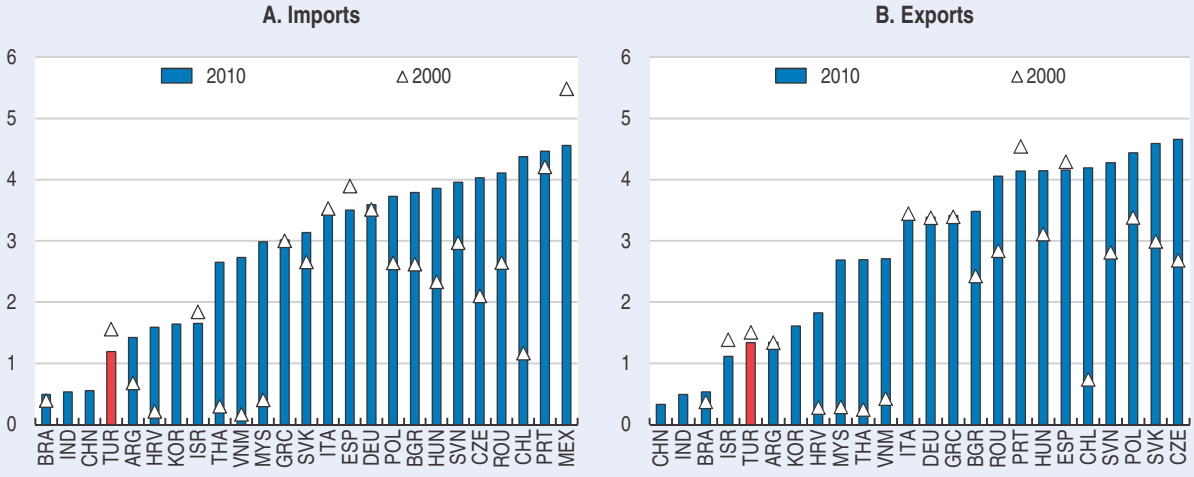
Evidence from the Global Trade Alert project confirms this trend. The number of NTMs that potentially harm foreign trade has increased worldwide over recent years (Evenett and Fritz, 2015). Turkey is most affected by measures implemented by India and Russia,

Box 2.1. **Depth of Turkey's preferential trade agreements**

The depth index of preferential trade agreements (PTAs) is based on the Design of Trade Agreements (DESTA) database and combines seven dimensions potentially included in PTAs to liberalise trade between the parties (Dür et al., 2014). The first sub-index focuses on tariffs and is equal to 1 if all tariffs (with limited exceptions) are to be reduced to zero. The remaining six sub-indices capture areas other than tariffs that contribute to trade liberalisation between the parties: service trade, investment, standards, intellectual property rights, public procurement and competition. The respective sub-indices take the value of 1 if a substantive provision for the respective dimension is contained in the agreement and 0 otherwise. These dimensions underline the importance of PTAs that goes well beyond the simple reduction of tariffs, in particular for emerging countries such as Turkey. The customs union with the EU, for instance, has forced Turkey to accelerate the alignment process with the EU's acquis and the reform process with benefits for FDI, exporting enterprises' productivity and Turkish consumers (World Bank, 2014).

The depth-index of PTAs is obtained as the sum over these seven dimensions and ranges accordingly from 0 to 7 for each country pair. According to the DESTA database, Turkey has negotiated 24 PTAs in addition to the customs union with the EU. However, none of the agreements includes more than three dimensions according to DESTA definitions. Most protocols include provisions for a free trade zone and for product standards. As a result, the trade-weighted average depth of PTAs is considerably lower for Turkey than for most other developing countries (Figure 2.14). The recently concluded preferential trade agreement with the Republic of Korea, which is not part of the DESTA database and entered into force in 2013, is an encouraging step towards deeper commitments and may path the way towards more comprehensive PTAs in the future. It already includes provisions for intellectual property and competition and agreements on investment and trade in services are under ratification as of December 2015 (WTO, 2016). Other recently concluded PTAs include Malaysia (2015) and Singapore (2015). These two agreements include broader provisions similar to the one with Korea. In addition, the Turkey-Singapore agreement includes a chapter on public procurement. Going forward, Turkey seeks to include services and investment in current FTA negotiations with Ukraine, Peru, Japan, Mexico and other countries.

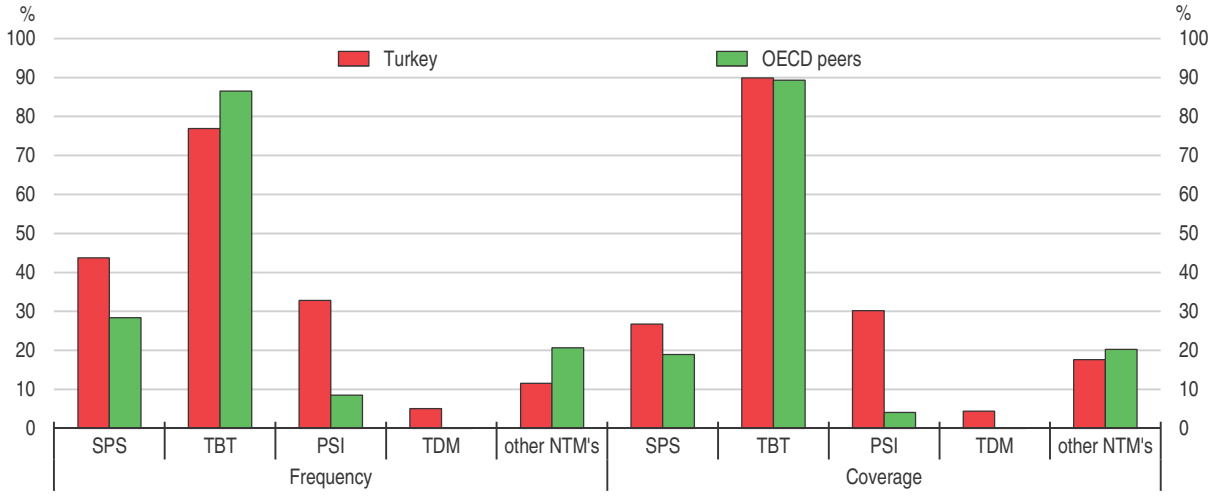
Figure 2.14. **Trade-weighted depth of preferential trade agreements**



Note: Average depth of free-trade agreements weighted by bilateral trade flows is shown. Depth of an agreement ranges from 0 to 7 and is defined by the number of dimensions covered: zero tariffs, services trade, investments, standards, public procurement, competition and intellectual property rights.
Source: Design of Trade Agreements (DESTA); OECD calculations.

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Figure 2.15. **Non-tariff-measures by type**



Note: Frequency refers to the share of imported products affected by the respective type of NTM. Coverage denotes the share of imported value affected by NTMs. OECD peers are the 10 countries, other than Turkey, with the lowest per capita GDP: Czech Republic, Slovenia, Portugal, Slovak Republic, Estonia, Greece, Hungary, Poland, Chile and Mexico.
Source: Gourdon (2014), "CEPII NTM-MAP: A tool for assessing the economic impact of non-tariff measures", CEPII Working Papers, No.2014-24.

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Turkey's main supplier of imports in 2014. Escalating geopolitical tensions have further exacerbated the adverse impacts on trade between Russia and Turkey towards the end of 2015. The country most harmed by Turkey's measures is China followed by the United States and India.

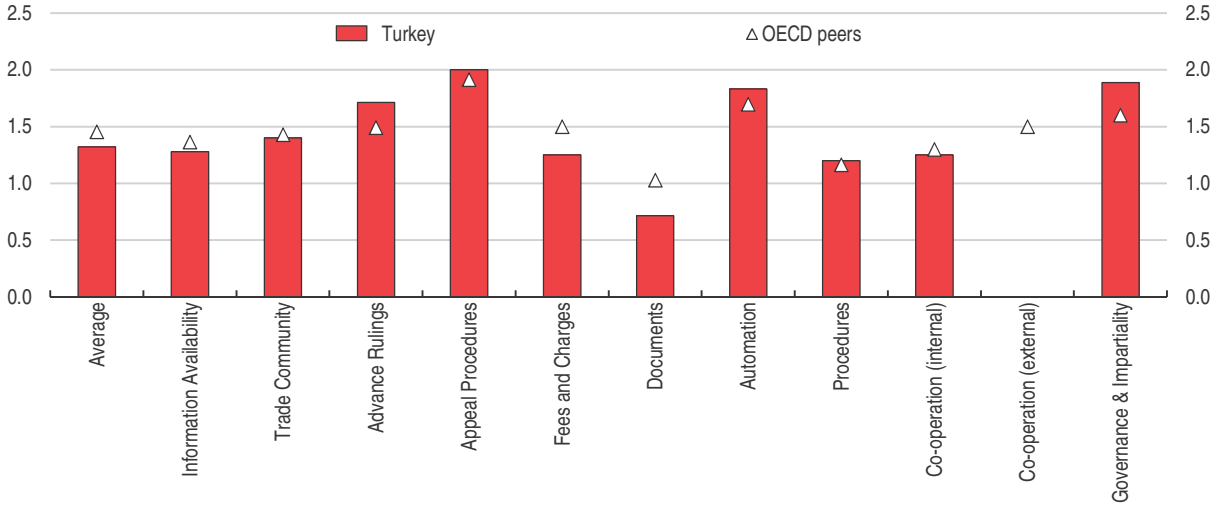
Barriers to trade facilitation are found to reduce significantly the volume of GVC trade flows (Annex A6). This calls for progress along several trade facilitation dimensions where Turkey performs poorly compared to OECD best practices and peer countries, in particular in terms of external border agency cooperation, the simplification of documents and making trade-relevant information available to the trade community (Figure 2.16). Recent initiatives to reduce customs processing delays such as the one-stop-shops at the Bulgarian and Georgian border are promising. They should be evaluated and, if judged successful, extended to other borders in due time. In addition, Turkey has launched the Authorised Economic Operators certificate that permits firms which fulfil the Authorised Economic Operator requirements regarding documentation, financial solvency and safety to clear goods locally and facilitates the shipping of goods through a reduction of documentation.

Visa restrictions are frequently highlighted by Turkish entrepreneurs as a major impediment to doing business across borders, in particular with Europe. In addition, visa restrictions hinder cross-country mobility of scientists, and hence, the diffusion and appropriation of technologies and innovation (Appelt et al., 2015). In conjunction with the insufficient depth of trade agreements, especially with the EU, visa restrictions put Turkey at a disadvantage compared to other emerging countries, in particular in Eastern Europe (Figure 2.17).

To the extent that foreign-owned firms are better integrated in GVCs, in particular as the import content of their exports is higher, attracting FDI raises backward integration in GVCs. In addition, MNEs export more than domestic firms and they also invest more in

Figure 2.16. **OECD trade facilitation indicators**

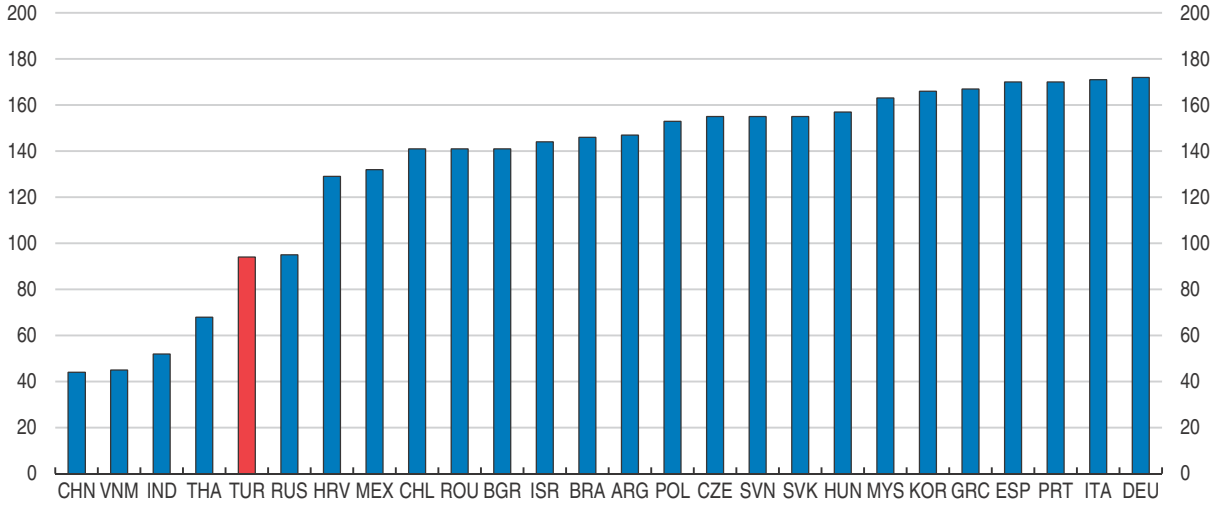
Index scale 0 to 2 (best performance)



Source: OECD (2015), Trade facilitation indicators *www.oecd.org/trade/facilitation/indicators.htm.*

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Figure 2.17. **Visa restriction index**



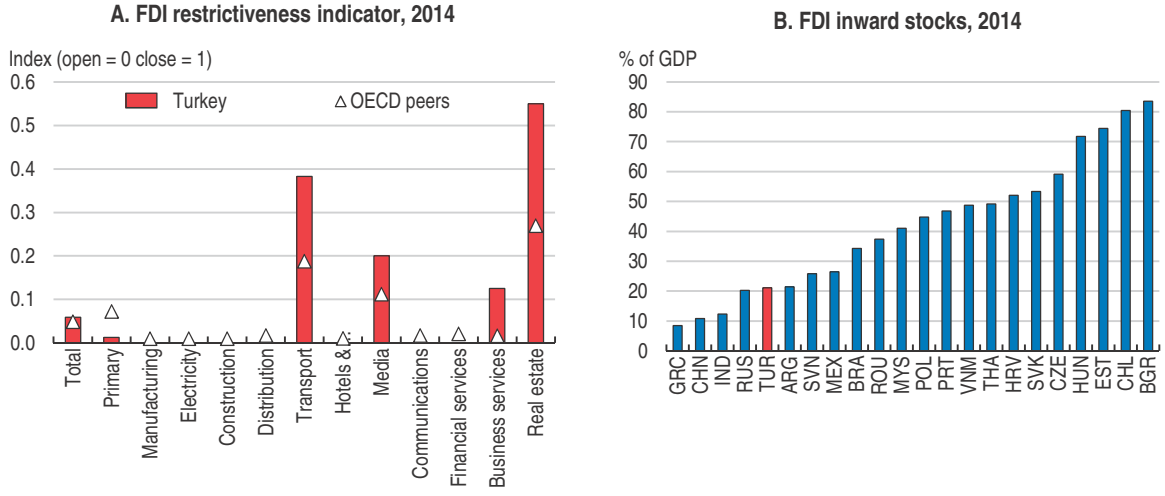
Source: Henley & Partners (2015), Visa Restrictions Index.

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research and development (R&D), which extends the scope for upstream value added production of intermediates used in third countries' exports, hence, raises forward participation. At the same time, foreign affiliates of MNEs are also found to integrate less domestic intermediates in their exports, which reduces the spillover of such firms on the domestic economy and forward participation. In fine, the aggregate impact on forward participation depends on the balance between the extensive marginal effect (more exports of intermediates) and the intensive marginal effect (lower domestic value added embodied per export unit). Empirical evidence at least suggests that differential treatment of foreign suppliers reduces the scope of GVC linkages, in particular forward participation (Annex A6).

FDI can also benefit the domestic economy indirectly through transfer and diffusion of new technologies. Many factors affect the attractiveness of an economy for foreign investors. The quality and quantity of natural, human and productive capital certainly plays a major role, as does the quality of institutions. But there are also direct barriers for FDI. The OECD FDI regulatory restrictiveness index measures four dimensions of restrictions: i) foreign equity, ii) screening and approval, iii) key foreign personnel and iv) other restrictions. The sectoral breakdown (Figure 2.18, Panel A) shows that, in addition to media, Turkey is most FDI-restrictive in transport, real estate and business services, notably accounting and audit, all of which are arguably key service providing sectors for export-oriented foreign firms. Restrictions almost entirely stem from foreign equity restrictions in Turkey. FDI inward stocks are significantly lower in Turkey than in other countries (Figure 2.18, Panel B). Empirical evidence suggests that facilitating FDI inflows has the potential to boost Turkey's integration in GVCs (Annex A6).

Figure 2.18. **Foreign direct investment**



Source: OECD FDI Regulatory Restrictiveness Index (FDI Index); UNCTAD.

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Barriers to competition, insufficient regulatory transparency and restrictions to the movement of people hinder foreign entry and hamper cross-border trade. The OECD service trade restrictiveness index shows that the most restricted business services in Turkey are accounting and legal services. Removing overly stringent regulations in these areas would improve resource allocation, productivity and competitiveness, not only in the services sector but also in downstream industries that use these services as inputs. Providing cost-efficient services not only helps improve the competitiveness of Turkish exporters, it also raises the attractiveness of the Turkish economy for foreign investors.

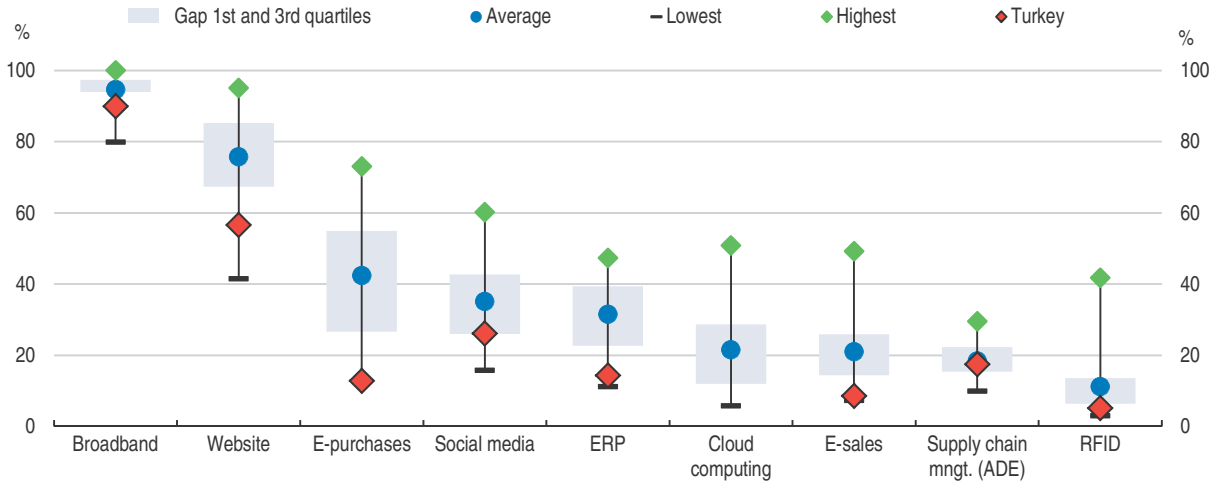
Innovation, R&D and knowledge-based capital

Further integration into GVCs crucially depends on Turkey's ability to improve forward linkages. The production of competitive intermediate products requires constant upgrading to keep up with international best practices. Upgrading can occur along various dimensions that can be classified into intensive and extensive upgrading. The former

comprises process upgrading, product upgrading and functional upgrading. The latter refers to integrating or originating new production chains (OECD, 2013a).

Process upgrading increases the efficiency of existing production by reducing defect rates and increasing worker productivity. It can involve a novel production process, investments in new technologies or innovation in management and organisational practices. One example is the monitoring of daily production results by displaying key numbers inside production plants to increase motivation and competition between shifts and identify inefficiencies. Other examples include the use of ICT tools in enterprise resource planning or the use of E-sales and E-purchases solutions. On average, Turkey performs poorly along a number of such efficiency-enhancing dimensions (Figure 2.19), although substantial disparities exist across firms (see Chapter 1).

Figure 2.19. **Diffusion of selected ICT tools and activities in enterprises, 2014**



Note: Enterprise resource planning (ERP) systems are software-based tools that can integrate the management of internal and external information flows. Supply chain management refers to the use of automated data exchange (ADE) applications. Radio Frequency Identification (RFID) is a technology that enables contactless transmission of information via radio waves. Reported as a percentage of enterprises with ten or more persons employed.

Source: OECD (2015), OECD Science, Technology and Industry Scoreboard 2015: Innovation for growth and society, OECD Publishing, Paris, DOI: http://dx.doi.org/10.1787/sti_scoreboard-2015-en.

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Process upgrading designates the processing of an increasing number of tasks or parts of the product chain, in particular incorporating higher value added slices. In addition, the increase in productivity lifts the firm's non-price competitiveness and its likelihood of becoming an exporter. The rise of GVCs has increased the interconnectedness of countries and the number of potential competitors. To keep up with international best practice, continuous process upgrading is key and a prerequisite for product upgrading.

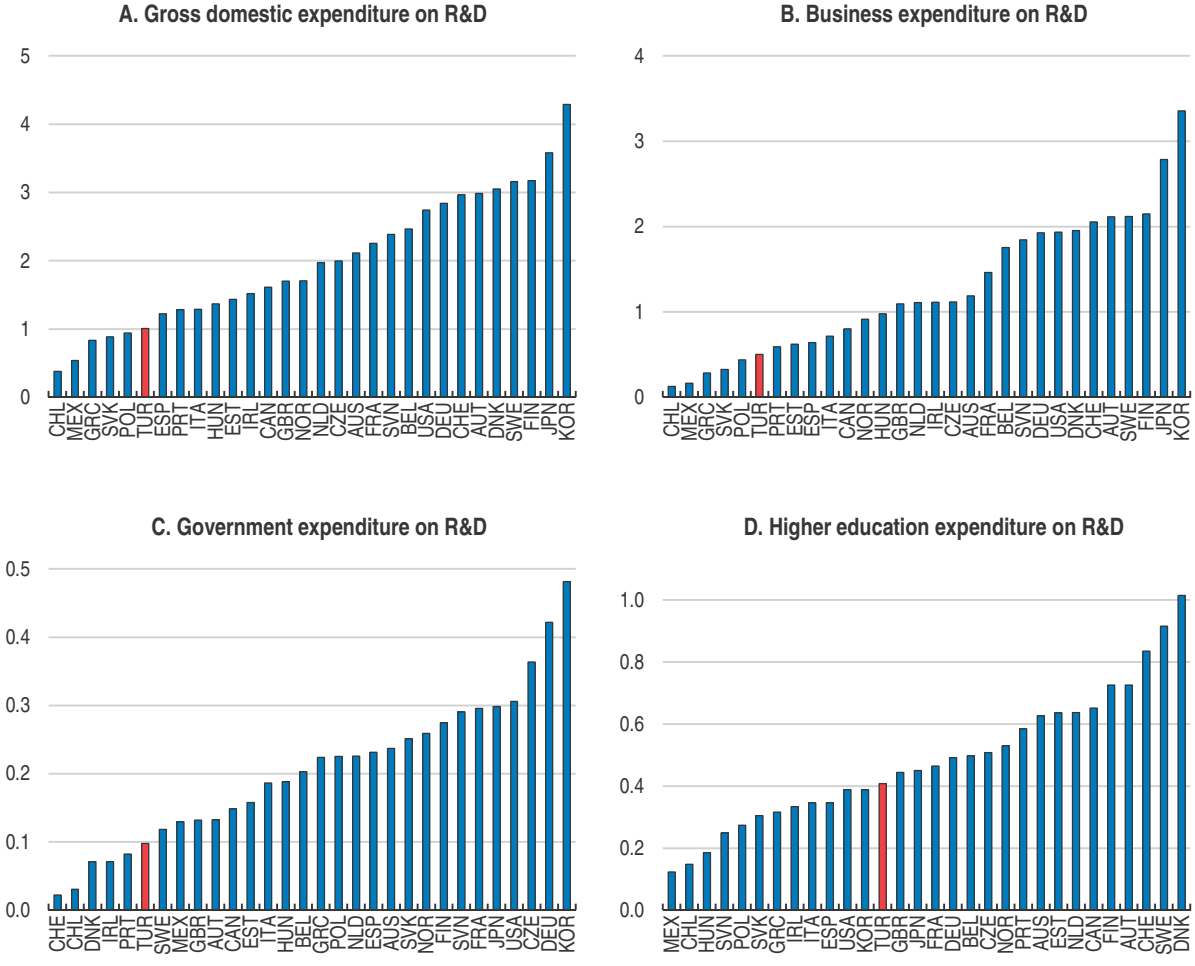
Product upgrading encompasses the design and creation of new products but also enhancing the company's ability to improve existing products. Doing this faster than rivals is key in the competition for participation in GVCs. The intensity of innovation and R&D activities is a good indicator for a country's product design and product improvement ability. Spending on R&D and the number of R&D personnel is found to significantly increase per capita exports of domestically produced value added (Annex A6).

Despite significant progress in recent years, the share of R&D expenditures in GDP is still low in Turkey (Figure 2.20, Panel A). Overall, expenditures on R&D reached 1% of GDP in 2014, still well below the target of 1.8% set out in the 10th Development Plan for 2018. The share of business enterprise expenditures on R&D in the country's gross domestic expenditures on R&D has risen from 24% in 2003 to 49.8% in 2014 but remains below the 10th Development Plan's target of 60% in 2018. The plan further sets out the target of 176 000 researchers in 2018 which would roughly require a doubling from the 89 657 researchers in 2014. With currently 3.1 researchers per 1 000 persons in the labour force Turkey has one of the lowest concentrations of researchers in the OECD.

The Scientific and Technological Research Council of Turkey (TÜBITAK) has launched the Support Programme for Research, Technological Development and Innovation Projects in Priority Areas (TÜBİTAK-1003) which seeks to stimulate target-oriented, concrete R&D projects of academics and research centres that can be easily monitored and are conducted in specific areas with strong R&D capacity, namely health, energy, automotive, machine-manufacturing, ICT, food, water, defence and aerospace. Publicising regular impact

Figure 2.20. **Research and development (R&D) expenditures**

As percentage of GDP, 2014 or latest available



Source: OECD (2016), "Main Science and Technology Indicators", OECD Science, Technology and R&D Statistics (database). DOI: http://dx.doi.org/10.1787/data-00182-en.

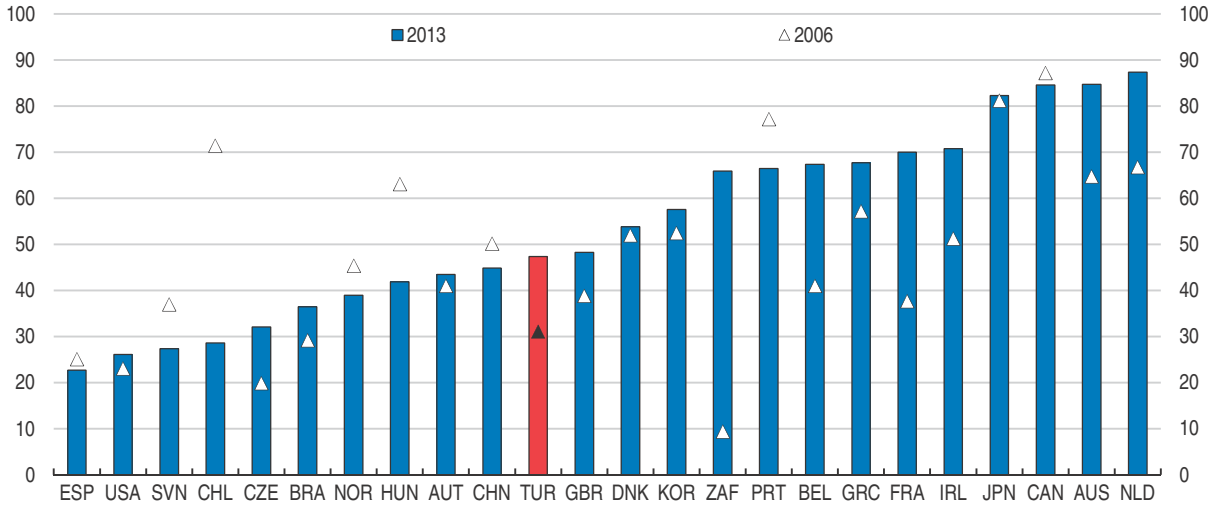
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assessments and monitoring of allocated expenses and projects would help ensure that the programme does not crowd out private investments and that it leads to the expected outputs.

Like in other countries, government support for business R&D has increasingly relied on tax incentives rather than direct support. Turkey grants three types of R&D tax incentives: i) immediate expensing of eligible R&D expenditure and additional tax allowances for qualifying R&D expenditure in the corporate income tax, ii) reductions in employer social security contributions and iii) partial personal income tax exemption for R&D staff up to certain limits. Tax incentive support has risen on average by close to 25% per year between 2006 and 2013, one of the fastest rates in the OECD, and the share of tax incentives in overall government support for business R&D reached 47.4% in 2013, close to the OECD average of around 50% (Figure 2.21). The design of Turkey's R&D tax incentive system would benefit from an impact assessment of existing provisions. This could also help to determine the optimal mix between direct and tax support with the aim of reducing deadweight losses and ensuring that incentives do not unduly favour large firms and incumbents.

Figure 2.21. **Government support for business research and development (R&D)**

Tax incentive share of government funds for R&D, in %



Source: OECD (2015), OECD Science, Technology and Industry Scoreboard 2015: Innovation for growth and society, OECD Publishing, Paris, DOI: http://dx.doi.org/10.1787/sti_scoreboard-2015-en.

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As part of the previous government's 2016 Economic Reform Agenda, an innovation and R&D reform package aimed at boosting R&D, especially in small firms, by softening the eligibility criteria for R&D support. The package also included additional reductions of personal income tax rates for PhD or Masters students. The government was to further grant up to TRY 100 000 (around USD 34 000) to young graduates in order to help kick-start their businesses, with the possibility of extending the funding to TRY 500 000 depending on the quality and progress of the project. Finally, the scope of the Technology Development Zones (Box 2.1) was to be broadened with the creation of design centres in thematic zones specialised in strategic sectors such as IT, health, biotechnology, nanotechnology, defence, aerospace and aviation.

Functional upgrading involves producing higher valued added parts of value added chains. One success story is the Turkish car manufacturing industry that rather than merely assembling cars increasingly produces car components which are exported to the entire world. This is a prime example of deepening GVC integration over time. First, foreign direct investors (e.g. international car brands) engage in a vertical production process by mainly exploiting lower labour costs and delegating labour-intensive, low value added parts of the production chain to the host country (assembly of the car). These activities increase the exports of the host country but reduce the share of domestic valued added as the import content is typically very high. In this early stage of integrating into GVCs, backward participation increases while forward participation either stagnates or even declines as was the case in Turkey until 2011. In the second stage, technological spillovers enable domestic companies to replicate parts of the production process (e.g. car components) and lead to international vertical production linkages at arm's length. In this stage, forward linkages are strengthened. The above aggregate and sectoral evidence suggests that Turkey went through the first stage between 2000 and 2011 (Figure 2.3, appendices 3 and 4). Recent success stories in the car component and shipbuilding sectors illustrate progress in the second phase.

Box 2.2. **Special investment zones in Turkey**

There are three types of special investment zones in Turkey: i) technology development zones (TDZs) or techno-parks, ii) organised industrial zones (OIZs) and iii) free-trade zones (FTZs).

TDZs are designed to attract investments in technology sectors and support R&D activities. The aim of such zones is to accompany firms in developing technologies and software, to help converting innovations into a commercial product, to attract FDI and to bring together academics and professionals in the area. To this end, a number of tax exemptions have been legislated for the first five years of operational activity (which may be extended to 10 years for some activities) and up to end-2023: a) revenues resulting from R&D activities are exempt from personal and corporate income taxes, b) sales directly related to derived products are exempt from VAT, and c) R&D and support personnel do not pay income taxes. In addition, 50% of employer social security contributions are paid by the government during the first five years of activity, up to end-2024. There are currently 59 TDZs of which 44 are operational.

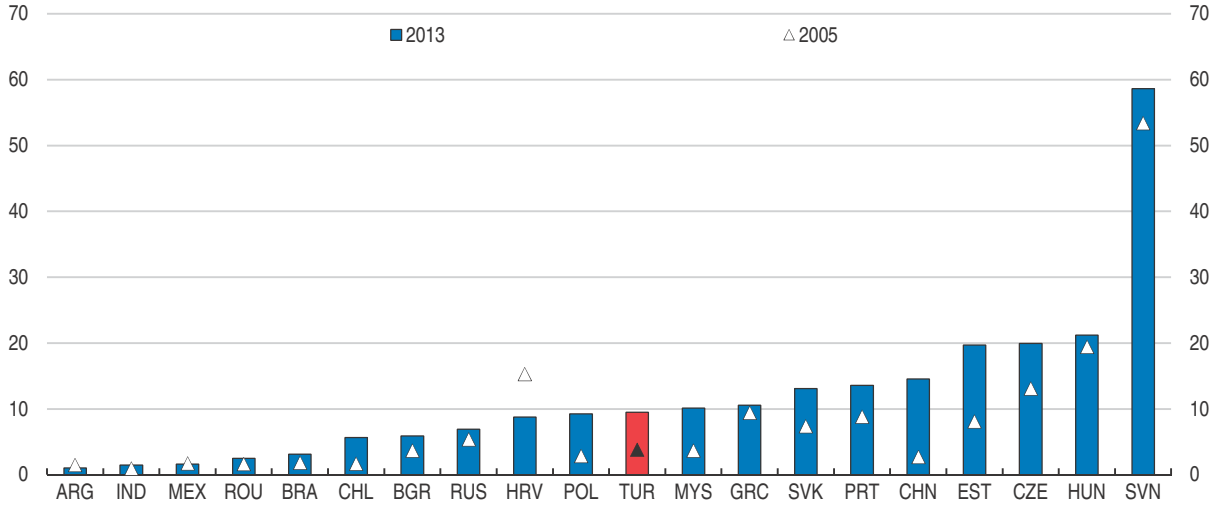
OIZs provide infrastructure and services to allow companies to produce in an investor- and employee-friendly environment. Firms inside such zones benefit from lower water, gas and telecommunication costs and are exempt from a number of municipal taxes. Provided services range from integrated bank branches to shopping centers, security, cleaning, permit and licensing services, catering services and schools. The geographical concentration of firms facilitates knowledge transfers, creates economies of scale and limits adverse externalities on the environment. There are currently 290 OIZs of which 211 are operational (for more detail, see Chapter 1).

FTZs are tax free zones mainly located near major Turkish ports. They are designed to facilitate export activities through minimising transport costs, reducing legal and administrative burdens, subsidising land and providing a number of tax incentives: a) production inside the FTZ is exempted from personal and corporate income tax, b) imported goods are exempt from customs duty, c) all goods purchased by companies operating in an FTZ are exempt from VAT, d) energy, water and telecommunication services are exempt from consumption taxes (special consumption taxes and VAT), and e) employees working for a company that operates in an FTZ and exports at least 85% of the FOB value of goods produced inside the FTZ are exempt from personal income tax.

A key driver for the development and diffusion of productivity-enhancing new technologies and innovations is experimentation by firms (OECD, 2015a). An enabling policy environment allows successful firms to thrive and reduces the costs for those who fail. In particular, an efficient patent system can help firms protect their innovation and leverage the benefits through rapid scaling-up. In its 2016 Economic Reform Agenda, the government has announced a new patent law, which stipulates that the costs for SMEs related to patenting and the compliance with the requirements of the Turkish Standards Institute will be covered by the government. Indeed, while Turkey has made considerable progress in terms of patent applications filed under the Patent Cooperation Treaty (PCT) over the past decade (9.5 patents filed per million population in 2013 against 3.5 in 2005), it still lags significantly behind its best-performing peers (Figure 2.22).

Figure 2.22. **Patent applications**

Number of patent applications per million population



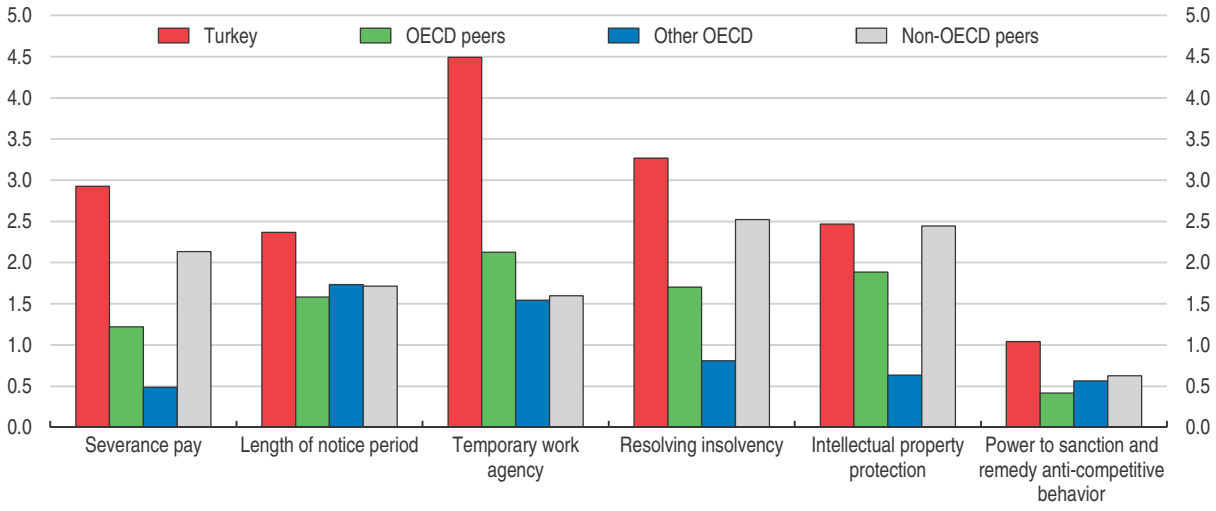
Source: OECD Patent Statistics database.

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Effective intellectual property protection needs to be coupled with the power to sanction and remedy behaviour and mergers that restrict and distort competition in order to limit rent seeking (OECD, 2013c). Another key driver for the growth of innovative firms are labour and product market regulations. Stringent regulations impede the efficient allocation of capital and labour and thereby reduce the return to innovation. This is even more relevant for firm entry and, more generally, young firms that typically are more innovative (OECD, 2015a). The second leg of an experimentation-enabling policy framework concerns the costs associated with innovation failure. Turkey performs poorly with respect to some policies that determine the cost of failure for firms, with very strong employment protection, stringent regulation of flexible work agency assignments which is often circumvented by informal or semi-formal subcontracting, and costly and lengthy insolvency resolution procedures (Figure 2.23).

To the extent that returns to innovation and the cost of failure determine the net present value of a potential innovation, the mentioned policies also affect access to finance for innovative firms and the depth of risk capital markets. Global private equity penetration is underdeveloped in Turkey. In 2014, private equity investment as a share of

Figure 2.23. **Experimentation-enabling policy gaps**



Note: Distance to top three performers is shown in units of standard deviation.
Source: OECD Indicators of Employment Protection); World Bank, Doing Business 2016; Alemani, E. et al. (2013), "New indicators of competition law and policy in 2013 for OECD and non-OECD countries", OECD Economics Department Working Papers, No. 1104, OECD Publishing.

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GDP fell to 0.02% (from 0.05% in 2013) against 0.20% in India, 0.15% in China or 0.12% in Brazil and 1.64% in Israel (EMPEA, 2015). Even in absolute terms, private equity investments fell to a five-year low in 2014. Recent initiatives to kick-start venture capital and business angel activities are welcome but the major impediment to the development of private equity and venture capital markets remains the poor business environment and notably the costly exits in case of failure.

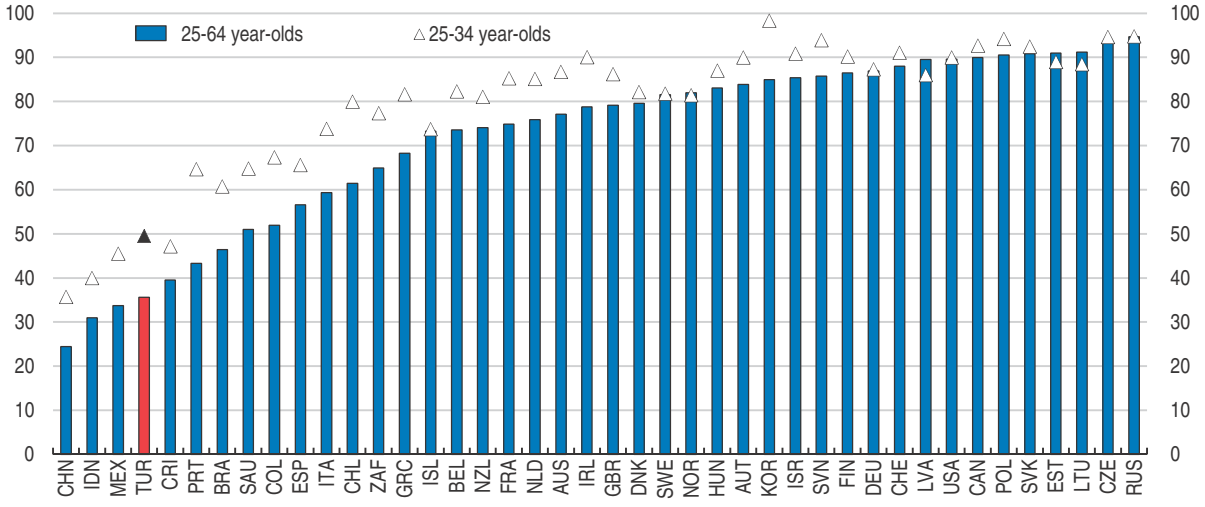
Education and skills

Participating in international production chains also means competing with other countries' human capital. In Turkey, a very low share of adults has attained at least upper secondary education, notwithstanding progress for younger cohorts (Figure 2.24). As of 2014, around two thirds of the working age population had not reached the upper secondary level of education, against an OECD average of 24%. Even among the 25-34 year-olds, this share stands at 50% against 17% on average in the OECD. Based on current patterns, 64% (47%) of today's youth are estimated to complete upper secondary education (tertiary education) in the course of their lives (OECD, 2015b). While the expected tertiary graduation rates are close to the 50% OECD average, there is still room for improvement for expected graduation rates in upper secondary education, for which the OECD average stands at 85%.

A growing body of the literature recognises the benefits of early childhood education and care for cognitive and non-cognitive skills of children as well as for educational outcomes (OECD, 2011 and OECD, 2015c). As of 2013, only 7% of the three-year-olds attended pre-school institutions against 74% on average across the OECD. Increasing enrolment rates in early childhood education would not only benefit the young but also help increase labour participation, in particular of young mothers and the elderly who often take care of their grand-children.

Figure 2.24. **Percentage of adults who have attained at least upper secondary education**

Per cent, 2014



Note: For Brazil, Chile, France, the Russian Federation and Saudi Arabia, the year of reference is 2013, for China, 2010, for Indonesia, 2011 and for South Africa, 2012.

Source: OECD (2015), Education at a Glance 2015: OECD Indicators, OECD Publishing, Paris. DOI: http://dx.doi.org/10.1787/eag-2015-en.

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Spending on education is comparatively low in Turkey. Measured in US dollars at purchasing parity, total expenditures per student in 2012 was less than a third of the OECD average in primary and secondary education and roughly half of the OECD average in tertiary education. As a percentage of GDP, total public education expenditures are 3.8% against 4.7% on average in the OECD. While this is up substantially from 2.9% of GDP in 2008, it is still one of the lowest in the OECD. One of the related outcomes is that class sizes are much larger in Turkey than in the OECD on average, both in primary and secondary education, which tends to undermine the quality of the received education.

Beyond school, vocational education and training (VET) plays a big role in matching qualifications with labour market needs, in particular for the manufacturing sector that requires very specific skills. VET programmes are still underdeveloped in Turkey. Only 9% of the current working age population state an upper secondary or post-secondary non-tertiary vocational education as their highest educational degree compared with 26% on average in the OECD. The increasing demand for highly skilled technicians and professionals, in particular in the highly fragmented international productions chains, is a key policy challenge for Turkey.

The weak role of VET in Turkey reflects a more general disconnect between secondary and tertiary curricula and the actual needs of the labour market. More than half of the managers in Turkey report having difficulties to fill job openings (OECD, 2016a). Qualification and skill mismatches in the labour market have become a major concern for policymakers around the world. Unlike most other OECD countries, Turkey reports a higher incidence of under-qualification than over-qualification (OECD, 2016b). Job mismatches are more related to mismatched fields of study than to mismatched skills. Compared to other OECD countries, Turkish employees make significantly less use of skills at work, be it problem-solving, ICT skills, reading, writing or numeracy, even after adjusting for the low

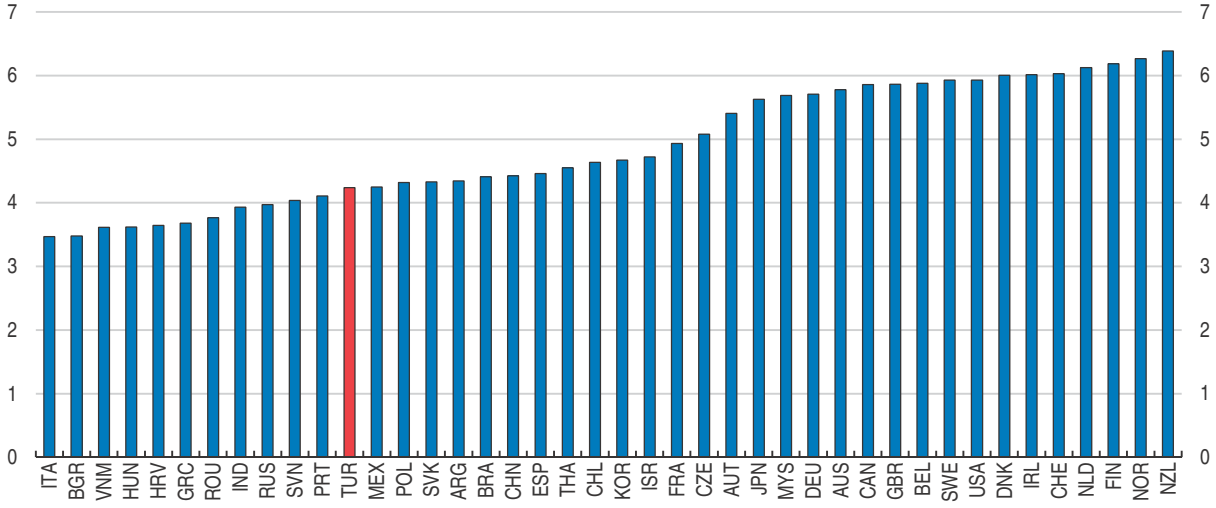
level of proficiency. The average use of reading skills at work is found to be correlated with average productivity (OECD, 2016b).

Efforts to bridge this gap include the integration in organised industrial zones (see Box 2.2) of schools and training premises. For instance, the Gebze Organised Industrial Zone (GOSB) close to Istanbul hosts a vocational high school that provides classrooms, workshops and a gym for around 720 students. To support upskilling and on-site vocational training for unemployed the National Employment Agency (İŞKUR) covers training programme expenses provided that a certain number of the trainees are employed by the company after the programme. In addition, the 2016 Action Plan stipulates that, during the first year of employment, İŞKUR pays TRY 50 per day and covers the related employers' social security contributions of first-time employed on condition that their recruitment includes on-the-job training. The authorities expect 250 000 young people to benefit from these subsidies in 2016 which would correspond to annual fiscal costs of around TRY 4 billion (0.3% of GDP) if used at full scale over an entire year.

In addition to low average productivity reflected by or rooted in low average use of skills, micro-evidence from Chapter 1 suggests that labour allocation is weak in some parts of the economy, in particular in the labour-intensive sector. On the one hand, this reflects poor labour allocation within some industries, such as textiles, due to overly stringent labour regulations and excessive labour costs amplified by marked size thresholds that have been documented in the 2014 *OECD Economic Survey of Turkey* (OECD, 2014a). On the other hand, it may suggest that more productive firms are held back from growing further by skill shortages. As these firms are more likely to export, the sectoral distribution of skill shortages could shed light on impediments to further progress in participating in GVCs.

Besides basic, academic, technical and generic skills, soft skills play an increasingly important role in explaining the performance of enterprises, in particular in the context of international competition. Multicultural openness and leadership are key ingredients for the success of export-oriented firms. The extent to which firms rely on professional

Figure 2.25. **Reliance on professional management**



Note: Survey average to the question: "In your country, who holds senior management positions?" [1 = usually relatives or friends without regard to merit; 7 = mostly professional managers chosen for merit and qualifications].
Source: World Economic Forum (2015), Executive Opinion Survey.

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managers rather than relatives or friends of firm owners increases management's ability to adopt international best practice. While Turkey has made progress with respect to many peer countries, it still ranges relatively low in terms of reliance on professional management (Figure 2.27, and a more detailed discussion in Chapter 1). A related indicator shows that management's accountability to investors and boards is limited in Turkey, despite progress over the past decade. The willingness to delegate authority is also relatively underdeveloped.

Implications of participation in GVCs

Growth and external imbalances

GVC participation boosts trade openness, which is consistently found to have a significant positive impact on real income growth (Barro, 2015). GVC participation extends and diversifies the potential export market, fosters investment and entails technological, skill and managerial spillovers. Backward linkages also increase competitive pressures and reduce the costs for intermediates input (OECD, 2015b). International competition is also likely to support the efficient reallocation of resources toward more productive firms.

But, more intense and more globalised trade linkages expose economies to a greater number of shocks and reinforce the propagation mechanisms of these shocks within and across regions. Consequently, domestic output depends increasingly on business cycles in other countries which may increase volatility and vulnerabilities. Synchronisation is further reinforced by the increasing extent of service inputs in tradable goods and growing international substitution of non-tradable goods and services through offshoring. Against this background, progress towards a more diversified integration into GVCs, both regional and product-wise, would contribute to reduce potential vulnerabilities.

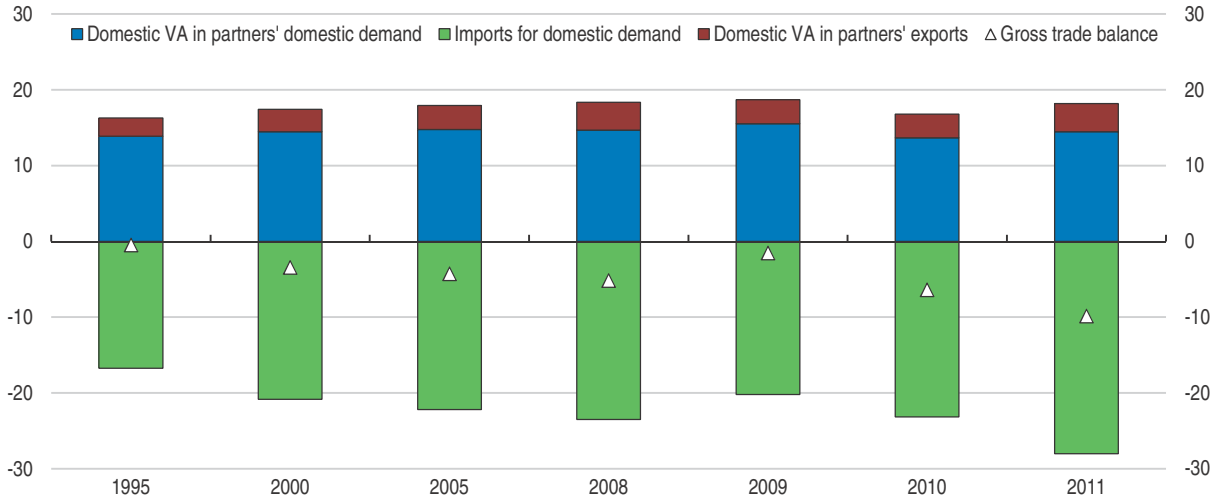
Backward participation, at least for its direct impact, is neutral for the value added trade balance as the foreign value added enters both imports and exports and therefore cancels out. In contrast, forward participation, that is, domestic value added contained in foreign countries' exports improves the trade balance. The indirect effects of backward linkages are less clear. On the one hand, foreign inputs can crowd out domestic intermediates of already existing exported goods which deteriorates the trade balance. On the other hand, foreign inputs can crowd in further domestic inputs, notably services. In addition, technological and knowledge transfers boost the development of domestic value added production with the view of substituting or complementing imported goods and services.

Turkey's poor trade balance is reflected in high import content of domestic demand (Figure 2.26). Indeed, only 29% of imported intermediates are re-exported by Turkey, much less than in most other countries (54% on average in OECD peers, 43% on average across all countries). Consistent with the described bottlenecks in human capital and framework policies, the increase in backward linkages has not yet produced the expected beneficial effects on exports. Turkey's exported domestic value added, both for final demand and further exports to third countries, as a share of total value added, has broadly remained stable over time.

Employment and social inclusion

The emergence of GVCs is both a major opportunity and a challenge for social upgrading. Deeper integration into GVCs is likely to increase inequality at first as it reduces

Figure 2.26. **Turkey's trade balance**



Note: Value added trade balance is the difference between domestic value added in foreign final demand and foreign value added in domestic final demand. Numbers are expressed in percentage points of value added production.
Source: OECD/WTO (2016), "Trade in value added", OECD-WTO: Statistics on Trade in Value Added (database). DOI: http://dx.doi.org/10.1787/data-00648-en.

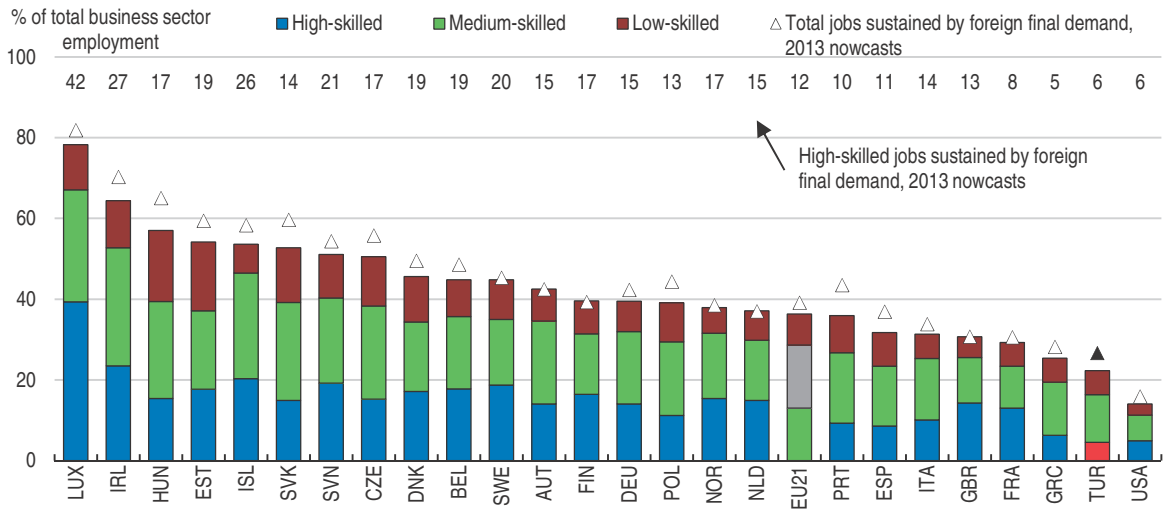
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the distance between the national frontier and the global frontier more than it does affect the position of national laggards. Firms and workers less well equipped for international competition risk a tough transition period. An adequate social safety net and specific active labour market policies can contribute to offsetting adverse effects and make GVC integration benefits more inclusive. To the extent that deeper integration in GVCs is spurred by an uptick in innovativeness, it is also likely to contribute to upward social mobility (Aghion et al., 2015). The authors find that, on the back of creative destruction mechanisms, higher innovation intensity increases the probability for a child to reach a higher quintile of the national income distribution than their parents.

Turkey exhibits one of the lowest shares of jobs that are sustained by foreign final demand (Figure 2.27). While the impulses for more successful GVC integration are expected from better skilled areas of the labour force, increasing GVC participation, in particular forward, would help absorb a big share of currently unemployed workers, including those with low skills, provided that the regulatory framework allows these firms to compete on a level-playing field. More than half of Turkish firms declare facing competition with unregistered firms, the highest ratio in the OECD after Mexico and Chile. The recent 30% hike in the minimum wage puts an additional burden on low-productive and labour-intensive firms and may further entrench the problem of informality, thwarting greater participation in GVCs.

A breakdown by capital and skill intensity of GVC-related production suggests that Turkey's inputs in manufacturing value chains are increasingly labour intensive, contrasting with most other OECD and BRIIC countries whose participation has become more capital intensive (Figure 2.28). This may partly reflect country-specific developments with respect to formality and semi-formality (e.g. under-reporting of wages). Indeed, for countries like Turkey and Mexico, Timmer et al. (2014) obtain surprisingly high capital

Figure 2.27. **Jobs sustained by foreign final demand**

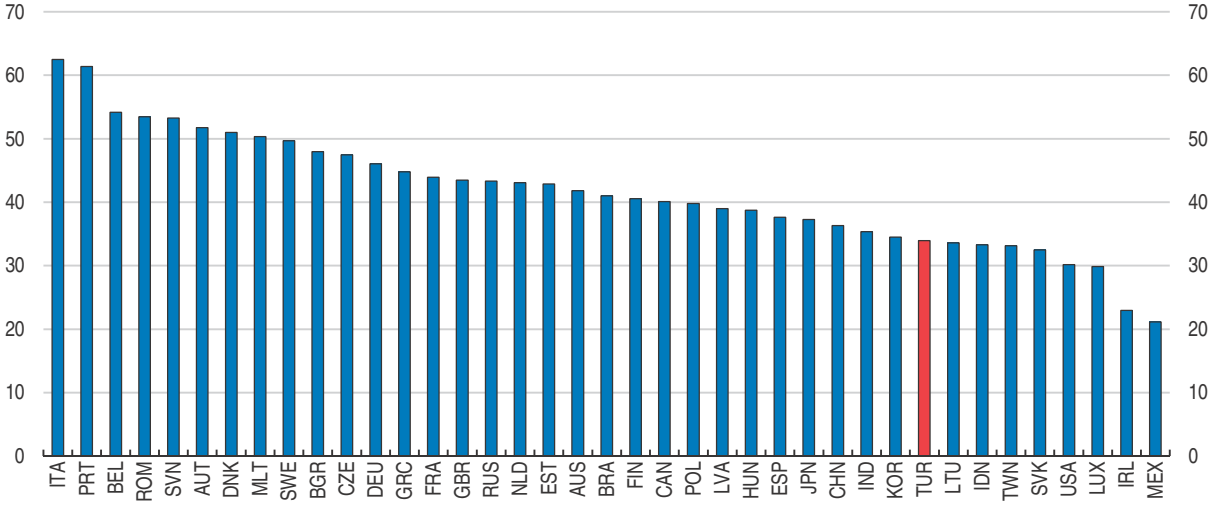


Source: OECD (2015), OECD Science, Technology and Industry Scoreboard 2015: Innovation for growth and society, OECD Publishing, Paris, DOI: http://dx.doi.org/10.1787/sti_scoreboard-2015-en.

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Figure 2.28. **Low- and medium-skilled labour share in manufacturing GVCs**

Per cent, 2009



Note: Manufacturing GVCs are defined by the value added of all activities that contribute to the production of a manufactured final good. Low-skilled labour refers to ISCED levels 0, 1 and 2, medium-skilled labour to levels 3 and 4, and high-skilled labour to levels 5 and 6
Source: Timmer et al. (2014), "Slicing up global value chains", Journal of Economic Perspectives, Vol. 28, No. 2, pp. 99-118.

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shares, defined as the difference of value added and labour compensation, which may indicate wage measurement biases.

The environment

Greater trade intensity increases CO_2-emissions due to transport and higher industrial output. At the same time, GVC integration comes in most cases with an alignment of environmental standards to international best practices. Compliance with product

standards and codifications is likely to attenuate the detrimental effects of production, in particular in countries such as Turkey where such standards are typically underdeveloped.

The emergence of GVCs is also likely to have affected cross-country comparative advantage in line with the pollution heaven hypothesis. Kozluk and Timiliotis (2016) find evidence that more stringent environmental policies raise the relative costs of producing energy-intense or polluting products rather than importing it from countries with less stringent environmental policies. Against this backdrop, lax environmental policies in Turkey, the least stringent across the OECD (Botta and Kozluk, 2014), may have contributed to the comparative advantage of the metal sector in Turkey which then would have amplified adverse effects of increased trade linkages due to the emergence of GVCs.

Recommendations to reap greater benefits from global value chains

Key recommendations

- Strengthen the rule of law, judiciary independence and the fight against corruption.
- Reduce barriers to foreign direct investment.
- 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.
- Invest more in vocational training and research-and-development.
- Improve the monitoring of polluting activities and enforcement of environmental regulations and use economic instruments such as pollution taxes, carbon taxes and emission permits.

Other recommendations

- Improve the ICT infrastructure.
- Reduce impediments to cost-efficient trade notably by improving cross-border cooperation, simplifying documents and making trade-relevant information available.
- Reduce the cost of failure by alleviating time and costs of resolving insolvencies and by easing employment protection.
- Raise awareness of poor managerial practices. Support reliance on professional management and multicultural openness. Use public campaigns to disseminate international best management practice.
- Continue to improve the statistical infrastructure to better measure Turkey's participation in GVCs.

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ANNEX A1

Methodology for the "overview" figures

The Survey includes a number of figures plotting Turkey's position with respect to a range of economic and social environment indicators, in comparison to the top three OECD performers, to other catching-up OECD economies, and to the best three performers among the latter. They highlight the room available for convergence with OECD best practices (Figures 18-21, and Panel B of Figure 3).

These figures encompass a wide range of indicators. Presenting indicators with different scales and units requires standardisation. Various approaches have been used in the literature, most of them building on affine transformations by subtracting the average and dividing by the standard deviation. This yields negative (below average) and positive (above average) numbers, with units corresponding to standard deviations of the underlying indicator. For graphical presentations of such findings, it may be useful to obtain strictly positive numbers or even numbers confined between 0 and 10 (0 for worst, 10 for best): this is often done in OECD well-being spider charts. The latter approach comes however with two major caveats: first, the lower and upper limits are sensitive to outliers and second, gaps between two observations, say countries, are difficult to interpret (a tenth of the min-max distance) which is amplified if the minimum or maximum are outliers.

This Survey proposes a graphical presentation based on a new method of standardisation. It combines the ideas of i) obtaining strictly positive numbers denoting the distance (room for convergence) with best performers; and ii) keeping the interpretability of the units as standard deviations akin to affine transformations. The obtained standardised number can be interpreted as the distance to best performers expressed in standard deviations:

$$Dist = \begin{cases} \dfrac{(X - \min)}{\sigma} & \text{if } X \text{ is to minimise} \\ \dfrac{(\max - X)}{\sigma} & \text{if } X \text{ is to maximise} \end{cases}$$

With σ the standard deviation. "min" respectively "max" correspond to the average value of the top three performers, to attenuate the influence of potential outliers. By default, if *X* is among the three top performers, *Dist* is set to 0.

The indicators and data sources utilised in various figures are listed below:

Human capital

Schooling

Variable short name	Source	Definition
Edu years – adult	UNESCO Institute for Statistics (UIS) website: *www.uis.unesco.org/*	Mean years of schooling (MYS) provides the average number of years of education (primary/ISCED 1 or higher) completed by a country's adult population (25 years and older), excluding years spent repeating grades (2012).
Secondary – adult	OECD Education at a Glance 2015, Table A1.2a.	Percentage of adults who have attained at least upper secondary education, 25-64 year-olds (2014).
Secondary – young		Percentage of adults who have attained at least upper secondary education, 25-34 year-olds (2014).
Tertiary – young	OECD Education at a Glance 2015, Table A1.3a.	Percentage of adults who have attained at least tertiary education, 25-34 year-olds (2014).
Vocational – young	OECD Education at a Glance 2015, Table A1.5b (web only)	Percentage of 25-34 year-olds that have attained an upper secondary VET qualification as highest level of education (2014).
Gender gap in years of schooling	UNESCO Institute for Statistics (UIS) website: *www.uis.unesco.org/*	Gender gap in mean years of schooling in favour of men.

Quality of education

Variable short name	Source	Definition
Math level	OECD (2013), PISA 2012 Results: What Students Know and Can Do (Volume I), Table I.A	Mean score performance in mathematics.
Top performers in math	OECD (2014), PISA 2012 Results: What Students Know and Can Do (Volume I, Revised edition, February 2014), Figure I.2.22	Share of top performers in mathematics (proficiency levels 5 and 6).
Low performers in science	OECD (2014), PISA 2012 Results: What Students Know and Can Do (Volume I, Revised edition, February 2014), Figure I.5.11	Share of low performers in science (below proficiency level 2)
Between school variation in math	OECD (2013), PISA 2012 Results: Excellence through Equity (Volume II): Giving Every Student the Chance to Succeed, Table II.2.8a.	Between schools variance as a percentage of the average total variation in mathematics performance across OECD countries. The total variation in student performance is calculated from the square of the standard deviation for all students.
Gender gap in math	OECD (2014), PISA 2012 Results: What Students Know and Can Do (Volume I, Revised edition, February 2014), Figure I.2.25	Gender difference in favour of girls in mathematic performance.
Education spending per student	OECD, Education at a Glance 2015, Chart B1.1	Annual expenditure by educational institutions per student, in equivalent USD converted using PPPs, based on full-time equivalents, for primary through tertiary education (2012)

Skill endowment and use

Variable short name	Source	Definition
Adult low skilled	OECD (2016, forthcoming), PIAAC Results: Synthesis Report of the Programme for the International Assessment of Adult Competencies.	Percentage of adults who score at or below Level 1 in literacy and/or numeracy
Low skilled employment	OECD Labour ministerial meeting January 2016, employment and unemployment figure, *https://www.oecd.org/employment/ministerial/employment-in-figures.htm*	Employment rate of low-skilled as a percentage of the low-skilled population aged 24 to 64, Q3 2015. Low skill corresponds to less than upper secondary educational attainment.
High-skilled employment		Employment rate of high-skilled as a percentage of the high-skilled population aged 24 to 64, Q3 2015. High skill corresponds to tertiary level educational attainment.
Young neither in education nor in employment		NEET rates of youth, 2014. Young people neither in education or training nor in employment, as a percentage of all young people aged 15 to 29
Earnings premium for tertiary	OECD, Education at a Glance 2015, Chart A6.1	Relative earnings of tertiary-educated workers (2013). 25-64 year-olds with income from employment; upper secondary education = 100. Tertiary education includes short cycle tertiary, bachelor's, master's, doctoral or equivalent degrees.
English proficiency	Education First, EF English Proficiency Index 2015, *www.ef.fr/epi/*	EF English proficiency index

Governance and rule of law

Rule of Law

Variable short name	Source	Definition
Rule of law	The World Justice Project, *www.worldjusticeproject.org*	The WJP rule of law index is a quantitative assessment tool designed by The World Justice Project to offer a detailed and comprehensive picture of the extent to which countries adhere to the rule of law in practice. The eight factors of the WJP rule of law index: 1. Constraints on government powers 2. Absence of corruption 3. Open government 4. Fundamental rights 5. Order and security 6. Regulatory enforcement 7. Civil justice 8. Criminal justice
Government power constraints		
Corruption	World Bank, Worldwide Governance Indicators, 2015 Update The Worldwide Governance Indicators project constructs aggregate indicators of six broad dimensions of governance: voice and accountability; political stability and absence of violence/terrorism; government effectiveness; regulatory quality; rule of law; control of corruption Estimate of governance (ranges from approximately -2.5 (weak) to 2.5 (strong) governance performance)	Reflects perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption, as well as "capture" of the state by elites and private interests.
Informality	World Bank, World Development Indicators	Share of firms competing against unregistered firms in % of all firms, 2014 or latest.
Political stability	World Bank, Worldwide Governance Indicators, 2015 Update	Political stability and absence of violence/terrorism measures perceptions of the likelihood of political instability and/or politically-motivated violence, including terrorism.
Trust	World Economic Forum, The Global Competitiveness Index Historical Dataset 2005-2015	Trustworthiness and confidence (B.08.02), 2015-2016 update.

Justice

Variable short name	Source	Definition
Judicial independence	World Economic Forum, The Global Competitiveness Index Historical Dataset 2005-2015	Judicial independence: score to the question "In your country, to what extent is the judiciary independent from influences of members of government, citizens, or firms? [1 = heavily influenced; 7 = entirely independent]" (1.06). 2014-2015 update.
Civil justice	The World Justice Project, *www.worldjusticeproject.org*	The WJP rule of law index is a quantitative assessment tool designed by The World Justice Project to offer a detailed and comprehensive picture of the extent to which countries adhere to the rule of law in practice. The eight factors of the WJP Rule of law index: 1. Constraints on government powers 2. Absence of corruption 3. Open government 4. Fundamental rights 5. Order and security 6. Regulatory enforcement 7. Civil justice 8. Criminal justice
Criminal justice		

Government effectiveness

Variable short name	Source	Definition
Government effectiveness	World Economic Forum, The Global Competitiveness Index Historical Dataset 2005-2015	Government efficiency (A.01.01.04), 2015-16 update.
Regulatory quality	World Bank, Worldwide Governance Indicators, 2015 Update	Reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
Regulatory enforcement	The World Justice Project, *www.worldjusticeproject.org*	Factor 6: Effective regulatory enforcement
Intellectual property protection	World Economic Forum, The Global Competitiveness Index Historical Dataset 2005-2015	Intellectual property protection: "In your country, how strong is the protection of intellectual property, including anti-counterfeiting measures? [1 = extremely weak; 7 = extremely strong]" (1.02). 2014-15 update.

Specific regulations

Product market regulations

Variable short name	Source	Definition
Licenses and permits system	OECD, Indicators of Product Market Regulation database	Barriers to entrepreneurship – Complexity of regulatory procedures – Licenses and permits system, 2013
Administrative burdens for corporations		Barriers to entrepreneurship – Administrative burdens on start-ups – Administrative burdens for corporations, 2013
Administrative burdens for sole proprietors		Barriers to entrepreneurship – Administrative burdens on start-ups – Administrative burdens for sole proprietors, 2013
Barriers in service sectors		Barriers to entrepreneurship – Administrative burdens on start-ups – Barriers in service sectors, 2013
Price controls		State control – Involvement in business operations – Price controls, 2013
Competition advocacy	OECD Competition Law and Policy Indicators *www.oecd.org/competition/reform/indicatorsofproductmarketregulationhomepage.htm #indicators*	For more details: Alemani, E., et al. (2013), "New Indicators of Competition Law and Policy in 2013 for OECD and non-OECD Countries", OECD Economics Department Working Papers, No. 1104, OECD Publishing, doi : 10.1787/5k3ttg4r657h-en
Transport infrastructure	World Economic Forum, The Global Competitiveness Index Historical Dataset 2005-2015	Transport infrastructure (A.02.01), 2015-16 update
Electricity and telecommunications infrastructure		Electricity and telephony infrastructure (B.), 2015-16 update.
Logistics performance index	World Bank, Logistics Performance Index, *http://lpi.worldbank.org/international*	LPI 2014 ranks 160 countries on six dimensions of trade -- including customs performance, infrastructure quality, and timeliness of shipments -- that have increasingly been recognised as important to development. The data used in the ranking comes from a survey of logistics professionals who are asked questions about the foreign countries in which they operate.

Trade regulation

Variable short name	Source	Definition
Most Favoured Nation tariffs	World Bank (to be completed)	Most Favoured Nation tariffs, 2013
Depth of preferential trade agreements	World Bank (to be completed)6	Depth of Preferential Trade Agreements`, 2011
Trading across borders	World Bank, Doing Business 2016	Time to import: Border compliance (hours), 2014
Visa restrictions index	The Henley & Partners visa restrictions index 2015, *https://www.henleyglobal.com/visa-index-form/?s=1*	The Henley & Partners visa restrictions index is a global ranking of countries according to the travel freedom that their citizens enjoy. The index is produced in cooperation with the International Air Transport Association (IATA), which maintains the world's largest database of travel information, and is published annually. How to read the index: Countries are ranked according to the total number of other countries which they can access visa-free access. Hence, Germany and the United Kingdom, who have the joint highest score with visa-free access to 173 countries, rank in first place.
Barriers to FDI	OECD, Indicators of Product Market Regulation database	Barriers to trade and investment – Explicit barriers to trade and investment – Barriers to FDI, 2013

Labour market regulation

Variable short name	Source	Definition
Severance pay	OECD Indicators of Employment protection legislation database *www.oecd.org/employment/emp/oecdindicatorsofemploymentprotection.htm* The OECD indicators of employment protection legislation measure the procedures and costs involved in dismissing individuals or groups of workers and the procedures involved in hiring workers on fixed-term or temporary work agency contracts.	Severance payment (at 9 months, 4 years and 20 years tenure), 2013
Standard fixed-term contracts		Regulations on standard fixed-term contracts, 2013
Work-agency contracts		Regulation on work-agency contracts, 2013
Minimum wage/median wage ratio	OECD Labour Force Statistics database	Minimum relative to median wages of full-time workers, 2014
Labour tax wedge	OECD Taxing Wages database	Labour tax wedge (labour taxes and social contributions/average employment cost per worker), 2014

Tax and incentive system

Corporate and environmental taxation

Variable short name	Source	Definition
Paying taxes	World Bank, Doing Business 2016	Paying Taxes, 2014
CIT rate	OECD Tax database	Corporate income tax rate, 2013
CIT revenue/GDP	OECD Revenue Statistics database	Taxes on income, profits and capital gains of corporates as % of GDP, 2014
Environmental taxes/total taxes	OECD, Instruments used for environmental policy database *www.oecd.org/env/policies/database*	Environmentally related taxes as % of total tax revenue, 2013

Spending on R&D

Variable short name	Source	Definition
Total RD	OECD, Main Science and Technology Indicators database	Gross domestic expenditure on R&D (GERD) as % of GDP, 2014
Business RD		Business enterprise expenditure on R&D (BERD) as % of GDP, 2014
Share of business RD in total RD		Percentage of GERD performed by business enterprise sector, 2014
Share of tax incentives in GERD	OECD Science, Technology and Industry Scoreboard 2015	Tax incentive share of government funds for R&D, 2013
Number of researchers	OECD, Main Science and Technology Indicators database	Total researchers per thousand labour force, 2014

Innovation and knowledge-based capital use

Variable short name	Source	Definition
Broadband	OECD, Science and Technology Outlook 2014 database	Fixed and wireless broadband subscriptions per 100 inhabitants, 2012
E-purchase	OECD Science, Technology and Industry Scoreboard 2015	Enterprises engaged in sales via e-commerce, 2013
Internet tariffs (fixed broadband)	World Economic Forum, The Networked Readiness Index Historical Dataset 2012-2015	Fixed broadband Internet tariffs, PPP USD/month: monthly subscription charge for fixed (wired) broadband Internet service (PPP USD), 2013 (4.02)

ANNEX A2

Sector definitions

ISIC Rev. 3 code	Sector description	Short description
C01T05	Agriculture, hunting, forestry and fishing	Agriculture
C10T14	Mining and quarrying	Mining
C15T16	Food products, beverages and tobacco	Food
C17T19	Textiles, textile products, leather and footwear	Textile
C20T22	Wood, paper, paper products, printing and publishing	Wood
C23T26	Chemicals and non-metallic mineral products	Chemicals
C27T28	Basic metals and fabricated metal products	Metals
C29	Machinery and equipment, not elsewhere classified	Machinery
C30T33	Electrical and optical equipment	Electrical
C34T35	Transport equipment	Automotive
C36T37	Manufacturing not elsewhere classified; recycling	Other manufacturing
C40T41	Electricity, gas and water supply	Electricity, gas and water
C45	Construction	Construction
C50T52	Wholesale and retail trade; repairs	Wholesale and retail
C55	Hotels and restaurants	Hotels and restaurants
C60T64	Transport and storage, post and telecommunication	Transport and telecom
C65T67	Financial intermediation	Financial intermediation
C70T74	Real estate, renting and business activities	Business activities
C75T95	Community, social and personal services	Social and personal services

Annex A3. Backward participation by source and exporting sector

Year: 2000	Agriculture	Mining	Food	Textile	Wood	Chemicals	Metals	Machinery	Electrical	Automotive	Other manufacturing	Electricity, gas and water	Construction	Wholesale and retail	Hotels and restaurants	Transport and telecom	Financial intermediation	Business activities	Social and personal services	TOTAL
Agriculture	0.1	0.0	0.4	0.4	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.5	0.1	0.0	0.0	0.0	2
Mining	0.2	0.2	0.3	1.8	0.1	3.3	2.9	0.6	0.5	0.8	0.4	0.2	0.8	1.1	0.9	2.6	0.2	0.1	0.2	17
Food	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1
Textile	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	2
Wood	0.0	0.0	0.1	0.4	0.1	0.2	0.2	0.1	0.2	0.2	0.1	0.0	0.1	0.3	0.2	0.3	0.1	0.0	0.1	3
Chemicals	0.2	0.1	0.4	2.6	0.1	2.0	0.8	0.4	0.7	0.9	0.3	0.0	0.4	0.6	0.7	1.4	0.1	0.1	0.2	12
Metals	0.0	0.0	0.1	0.3	0.0	0.3	2.5	0.8	0.6	1.1	0.5	0.0	0.5	0.3	0.2	0.4	0.0	0.0	0.1	8
Machinery	0.0	0.0	0.0	0.2	0.0	0.1	0.2	0.4	0.1	0.2	0.0	0.0	0.1	0.1	0.1	0.2	0.0	0.0	0.0	2
Electrical	0.0	0.0	0.0	0.2	0.0	0.1	0.2	0.2	2.0	0.3	0.0	0.0	0.1	0.3	0.1	0.4	0.0	0.0	0.1	4
Automotive	0.0	0.0	0.0	0.2	0.0	0.1	0.1	0.1	0.1	1.2	0.0	0.0	0.0	0.3	0.1	0.6	0.0	0.0	0.0	3
Other manufacturing	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Electricity, gas and water	0.0	0.0	0.0	0.3	0.0	0.2	0.4	0.1	0.2	0.2	0.1	0.0	0.1	0.1	0.1	0.2	0.0	0.0	0.0	2
Construction	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	1
Wholesale and retail	0.2	0.1	0.4	3.0	0.1	1.7	1.7	0.7	1.5	1.4	0.4	0.0	0.5	0.8	0.8	1.6	0.1	0.1	0.2	15
Hotels and restaurants	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	1
Transport and telecom	0.1	0.0	0.3	1.5	0.1	0.7	1.0	0.4	0.6	0.7	0.3	0.0	0.3	0.9	0.6	2.2	0.1	0.1	0.2	10
Financial intermediation	0.1	0.0	0.1	0.8	0.0	0.4	0.5	0.2	0.4	0.4	0.1	0.0	0.2	0.4	0.4	0.8	0.2	0.1	0.1	5
Business activities	0.1	0.1	0.3	1.8	0.1	1.0	0.9	0.5	1.1	1.0	0.3	0.0	0.3	0.7	0.6	1.1	0.1	0.1	0.2	10
Social and personal services	0.0	0.0	0.1	0.3	0.0	0.2	0.2	0.1	0.2	0.2	0.1	0.0	0.1	0.2	0.1	0.2	0.1	0.0	0.1	2
	1	1	3	16	1	11	12	5	8	9	3	0	3	6	5	13	1	1	2	100
Year: 2011																				
Agriculture	0.1	0.0	0.5	0.3	0.0	0.2	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.2	0.1	0.0	0.0	0.0	2
Mining	0.2	0.1	0.4	1.2	0.1	3.7	5.4	1.4	0.9	2.2	0.6	0.0	0.2	0.4	0.3	0.9	0.0	0.1	0.1	18
Food	0.0	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1
Textile	0.0	0.0	0.0	0.9	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Wood	0.0	0.0	0.1	0.2	0.1	0.3	0.3	0.1	0.1	0.2	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	2
Chemicals	0.1	0.1	0.4	1.3	0.2	2.9	1.5	0.6	0.7	1.5	0.3	0.0	0.1	0.3	0.3	0.6	0.0	0.1	0.1	11
Metals	0.0	0.1	0.1	0.3	0.0	0.6	5.1	1.4	0.8	2.3	0.5	0.0	0.1	0.1	0.1	0.2	0.0	0.1	0.0	12
Machinery	0.0	0.0	0.1	0.1	0.0	0.3	0.5	0.6	0.2	0.5	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	3
Electrical	0.0	0.0	0.0	0.1	0.0	0.2	0.3	0.3	0.8	0.4	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	2
Automotive	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.1	0.1	2.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0	3
Other manufacturing	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Electricity, gas and water	0.0	0.0	0.1	0.2	0.0	0.3	0.7	0.2	0.2	0.4	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	3
Construction	0.0	0.0	0.0	0.1	0.0	0.1	0.2	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Wholesale and retail	0.1	0.1	0.5	1.9	0.2	2.4	3.4	1.2	1.1	2.7	0.5	0.0	0.1	0.3	0.4	0.7	0.0	0.1	0.1	16
Hotels and restaurants	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Transport and telecom	0.1	0.1	0.3	0.8	0.1	1.0	1.6	0.5	0.5	1.1	0.2	0.0	0.1	0.3	0.2	0.7	0.0	0.1	0.1	8
Financial intermediation	0.1	0.0	0.2	0.5	0.0	0.7	0.9	0.3	0.3	0.7	0.1	0.0	0.0	0.1	0.1	0.3	0.0	0.1	0.0	5
Business activities	0.1	0.1	0.3	0.9	0.1	1.5	1.8	0.8	0.7	1.9	0.3	0.0	0.1	0.3	0.2	0.4	0.0	0.1	0.1	10
Social and personal services	0.0	0.0	0.1	0.2	0.0	0.3	0.7	0.2	0.2	0.5	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	3
TOTAL	1	1	3	9	1	15	23	8	7	17	3	0	1	2	2	5	0	1	1	100

Source: Input-Output table of foreign value added embodied in Turkey's exports (shares in %). Rows show foreign source sector, columns show Turkish exporting sector.

Annexe A4. Forward participation by source and exporting sector

	Agriculture	Mining	Food	Textile	Wood	Chemicals	Metals	Machinery	Electrical	Automotive	Other manufacturing	Electricity, gas and water	Construction	Wholesale and retail	Hotels and restaurants	Transport and telecom	Financial intermediation	Business activities	Social and personal services	TOTAL
Year: 2000																				
Agriculture	0.2	0.0	0.9	0.4	0.2	0.3	0.1	0.1	0.2	0.2	0.1	0.0	0.0	0.1	0.2	0.1	0.0	0.0	0.0	3
Mining	0.0	0.2	0.1	0.1	0.1	0.7	0.5	0.2	0.2	0.2	0.1	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0	3
Food	0.1	0.0	0.3	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.0	1
Textile	0.0	0.0	0.1	3.2	0.1	0.4	0.1	0.2	0.3	0.6	0.3	0.0	0.0	0.2	0.1	0.1	0.0	0.1	0.0	6
Wood	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.1	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	1
Chemicals	0.2	0.3	0.4	1.0	0.2	2.2	1.1	0.7	1.4	1.4	0.4	0.0	0.2	0.6	0.1	0.8	0.1	0.2	0.1	11
Metals	0.0	0.1	0.1	0.1	0.1	0.4	2.7	1.1	1.3	1.5	0.4	0.0	0.2	0.2	0.0	0.2	0.0	0.1	0.0	9
Machinery	0.0	0.1	0.0	0.1	0.0	0.2	0.2	0.5	0.2	0.3	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	2
Electrical	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.3	1.4	0.4	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.1	0.0	3
Automotive	0.0	0.1	0.1	0.1	0.0	0.2	0.1	0.1	0.2	1.9	0.0	0.0	0.0	0.3	0.0	0.4	0.0	0.0	0.0	4
Other manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Electricity, gas and water	0.0	0.1	0.0	0.1	0.0	0.2	0.4	0.2	0.3	0.3	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	2
Construction	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Wholesale and retail	0.2	0.6	0.8	3.0	0.4	1.9	1.4	1.0	2.1	1.7	0.6	0.0	0.1	0.9	0.3	0.9	0.1	0.2	0.1	16
Hotels and restaurants	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	1
Transport and telecom	0.2	0.9	0.8	2.0	0.5	2.5	1.9	1.0	3.1	1.7	0.7	0.1	0.2	2.0	0.3	5.1	0.2	0.5	0.1	24
Financial intermediation	0.1	0.3	0.3	0.9	0.2	0.9	0.7	0.5	1.6	0.8	0.3	0.0	0.1	0.5	0.1	0.7	0.2	0.2	0.1	9
Business activities	0.0	0.1	0.2	0.5	0.1	0.5	0.4	0.3	0.6	0.5	0.1	0.0	0.0	0.3	0.1	0.4	0.1	0.1	0.0	4
Social and personal services	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	1
TOTAL	1	3	4	12	2	11	10	6	14	12	3	0	1	6	2	10	1	2	1	100
Year: 2011																				
Agriculture	0.2	0.1	0.8	0.3	0.1	0.4	0.2	0.1	0.2	0.3	0.1	0.0	0.0	0.2	0.2	0.1	0.0	0.1	0.0	3
Mining	0.1	0.3	0.1	0.2	0.1	1.5	0.9	0.4	0.5	0.5	0.1	0.0	0.1	0.2	0.0	0.5	0.0	0.1	0.0	6
Food	0.0	0.0	0.2	0.1	0.0	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	1
Textile	0.0	0.0	0.1	1.7	0.1	0.4	0.2	0.2	0.2	0.5	0.1	0.0	0.0	0.2	0.0	0.1	0.0	0.1	0.0	4
Wood	0.0	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	1
Chemicals	0.2	0.3	0.3	0.5	0.2	2.2	1.0	0.8	1.2	1.6	0.3	0.0	0.1	0.5	0.1	0.7	0.1	0.2	0.1	10
Metals	0.1	0.2	0.1	0.1	0.1	0.6	2.4	1.2	1.0	1.7	0.2	0.0	0.1	0.2	0.0	0.3	0.0	0.1	0.0	9
Machinery	0.0	0.2	0.1	0.1	0.0	0.3	0.3	0.9	0.3	0.6	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	3
Electrical	0.0	0.1	0.0	0.1	0.0	0.2	0.2	0.3	1.0	0.5	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	3
Automotive	0.0	0.1	0.1	0.1	0.0	0.2	0.2	0.3	0.2	2.4	0.0	0.0	0.0	0.2	0.0	0.3	0.0	0.1	0.0	4
Other manufacturing	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1
Electricity, gas and water	0.0	0.1	0.1	0.1	0.0	0.3	0.7	0.4	0.4	0.6	0.1	0.0	0.0	0.1	0.0	0.1	0.0	0.1	0.0	3
Construction	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
Wholesale and retail	0.2	0.5	0.7	2.2	0.3	2.3	1.9	1.5	1.8	2.6	0.5	0.1	0.1	0.8	0.2	0.9	0.1	0.3	0.1	17
Hotels and restaurants	0.0	0.0	0.0	0.1	0.0	0.2	0.2	0.1	0.2	0.2	0.0	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.0	1
Transport and telecom	0.2	0.5	0.6	1.9	0.3	2.5	2.2	1.6	2.5	2.5	0.6	0.1	0.2	1.0	0.2	1.5	0.1	0.4	0.1	19
Financial intermediation	0.1	0.1	0.1	0.3	0.1	0.5	0.5	0.4	0.8	0.6	0.1	0.0	0.0	0.2	0.0	0.2	0.1	0.1	0.0	4
Business activities	0.1	0.3	0.3	0.7	0.2	1.2	1.0	0.9	1.0	1.3	0.2	0.0	0.1	0.5	0.1	0.6	0.1	0.3	0.1	9
Social and personal services	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	1
TOTAL	1	3	4	9	2	13	12	9	12	16	3	0	1	5	1	6	1	2	1	100

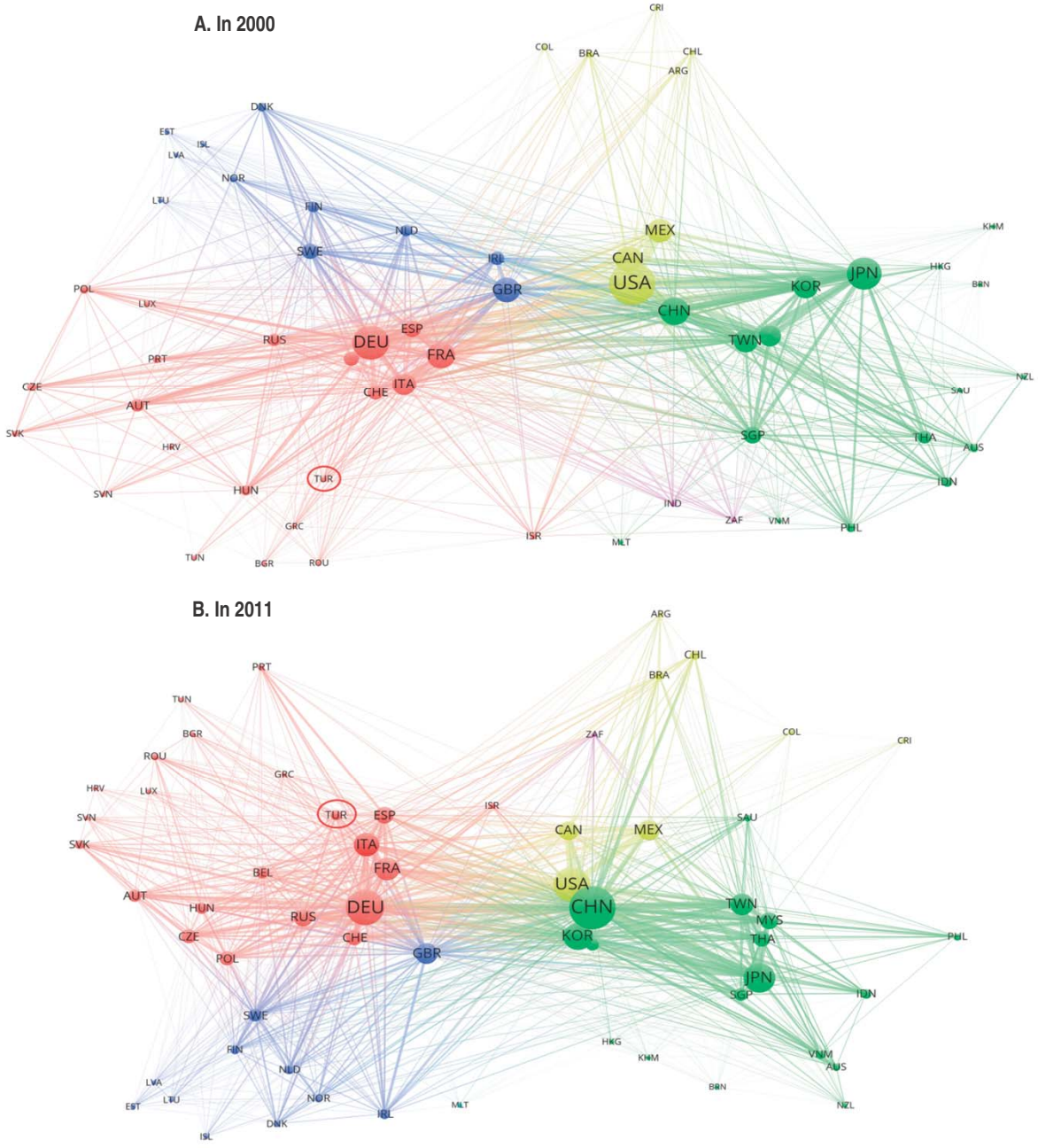
Source: Input-Output table of Turkish value added embodied in foreign countries' exports (shares in %). Rows show Turkish source sector, columns show foreign exporting sector.

ANNEX A5

Network visualisation maps

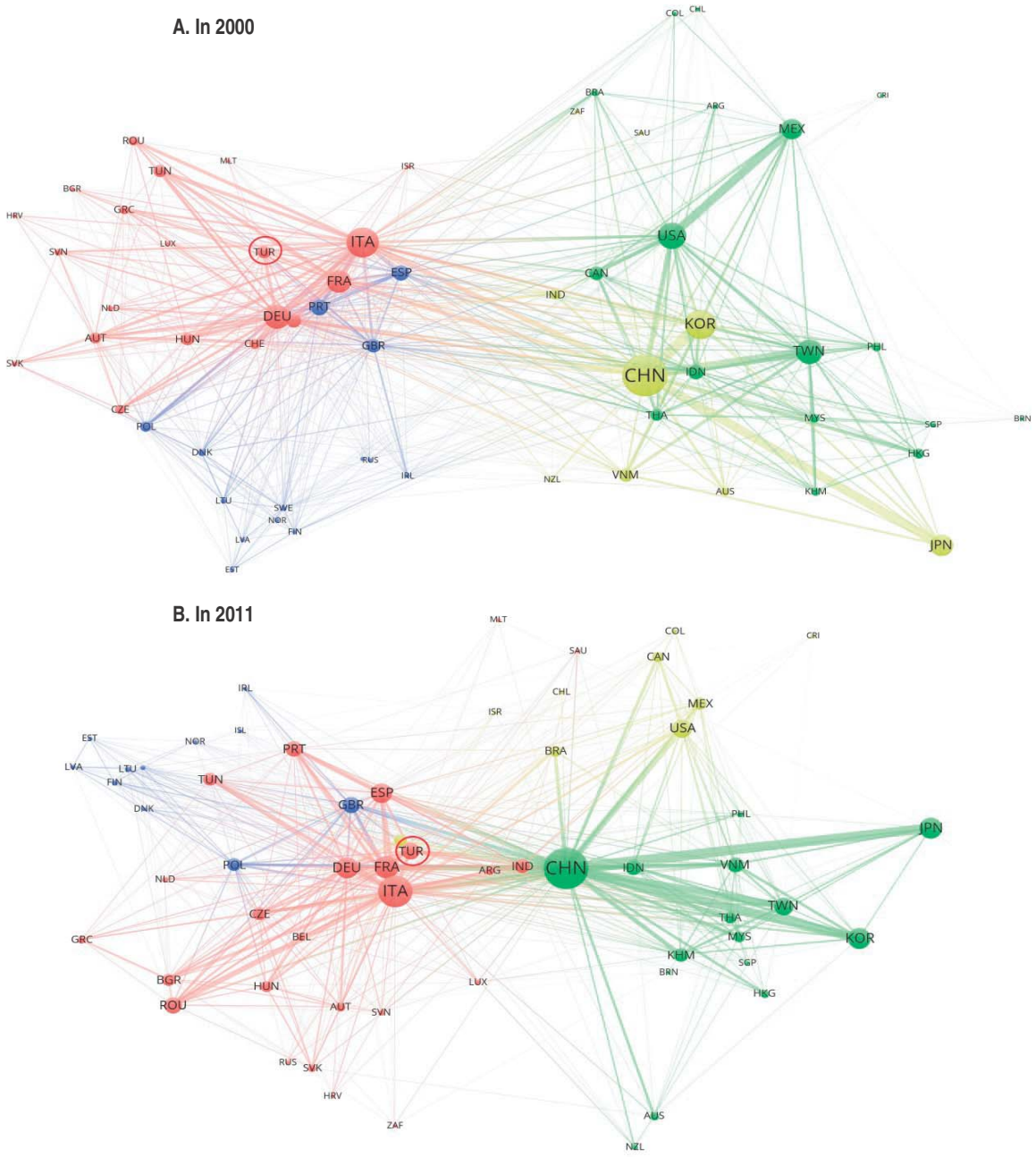
The following network maps are based on bilateral trade in value-added flows. The visualisation of similarities technique (VOS, see Waltman et al., 2010) locates countries in such a way that the distance between any two countries reflects their relative trade-connectedness. The underlying mapping approach boils down to minimising the sum of squared distances weighted by relative bilateral trade flows subject to a given average distance between countries. The size of circles is proportional to the countries' trade volume. Colours indicate clusters.

Figure A5.1. **Manufacturing**



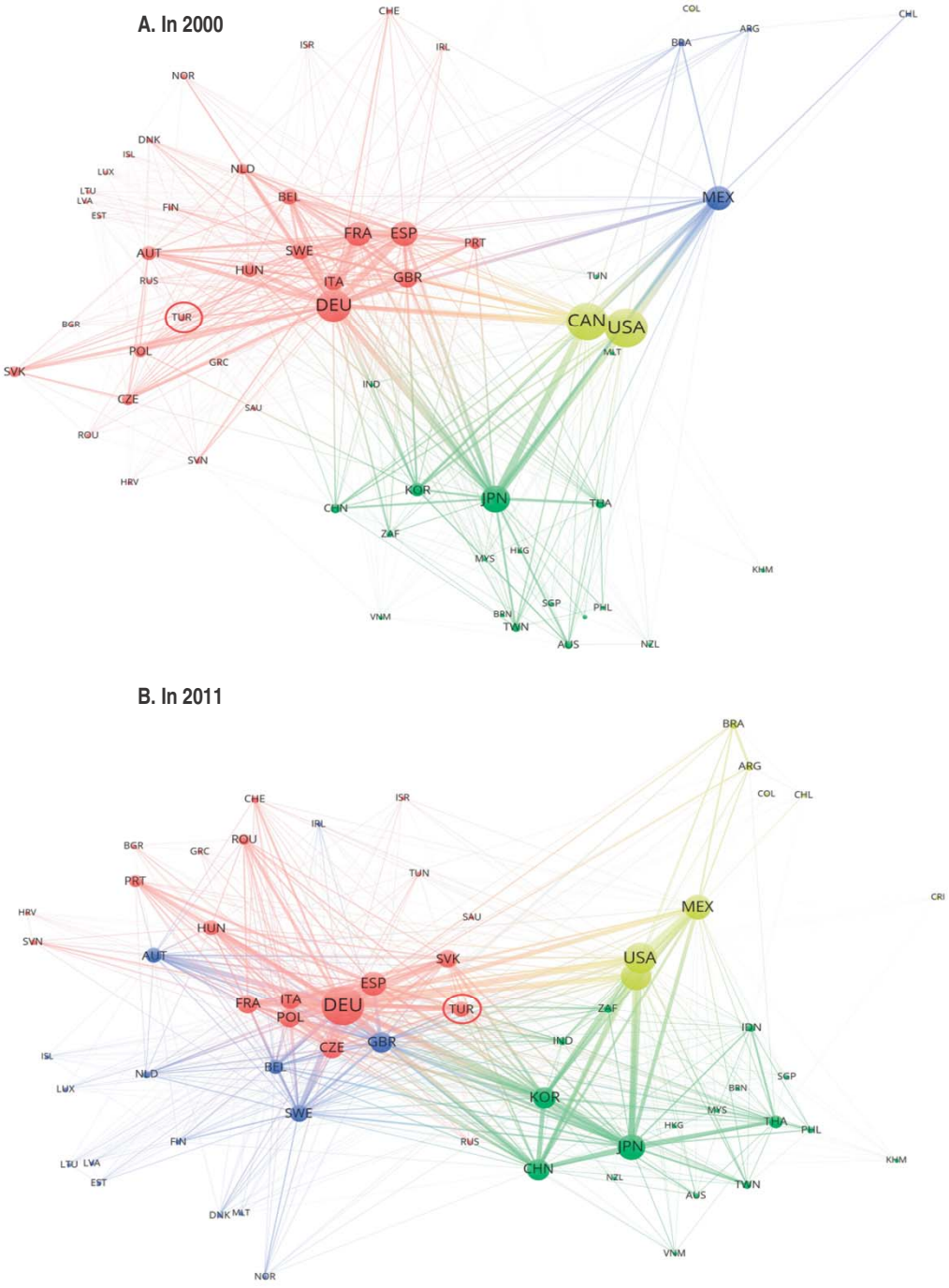
Note: The size of circles is proportional to the countries' trade volume. The colours indicate clusters.
Source: Calculations based on OECD/WTO (2016), "Trade in value added", OECD-WTO: Statistics on Trade in Value Added (database). DOI: http://dx.doi.org/10.1787/data-00648-en.

Figure A5.2. **Textile**



Note: The size of circles is proportional to the countries' trade volume. The colours indicate clusters.
Source: Calculations based on OECD/WTO (2016), "Trade in value added", OECD-WTO: Statistics on Trade in Value Added (database). DOI: http://dx.doi.org/10.1787/data-00648-en.

Figure A5.3. **Automotive sector**



Note: The size of circles is proportional to the countries' trade volume. The colours indicate clusters.
Source: Calculations based on OECD/WTO (2016), "Trade in value added", OECD-WTO: Statistics on Trade in Value Added (database). DOI: http://dx.doi.org/10.1787/data-00648-en.

ANNEX A6

Drivers of GVC participation – an econometric assessment

Backward and forward participation indices suffer from an identification problem since potential drivers for GVC integration affect both the numerator and the denominator. Against this background, the subsequent analysis builds on per capita domestic value added, forwarded value added (that is the domestic value added that ultimately serves as input to foreign countries' exports) and backward-sourced value added (that is foreign value added contained in domestic gross exports), as dependent variables. In accordance with available data points annualised growth rates of the dependent variable are calculated over a total of 4 windows (1995-00, 2000-05, 2005-08, 2008-11):

$$g_{it} = \frac{1}{n}\log\left(\frac{Y_{it}}{Y_{it-n}}\right) \quad \begin{cases} n = 5 if\ t = 2000,2005 \\ n = 3 if\ t = 2008,2011 \end{cases}$$

Explanatory variables are either expressed in annualised contemporaneous log-growth terms (defined similar to *g* and denoted *x*) or are lagged 5- or 3-year averages of policy variables P:

$$Z_{it} = \frac{1}{n}\sum_{s=t-n-1}^{t-1} P_s \quad \begin{cases} n = 5 if\ t = 2000,2005 \\ n = 3 if\ t = 2008,2011 \end{cases}$$

In line with the vast literature on real per capita GDP convergence (Barro, 2015), lagged dependent variables are introduced in the regression to account for convergence of per capita exports. The estimated specification is:

$$g_{it} = \alpha \log Y_{it-1} + \beta x_{it} + \gamma Z_{it} + d_i + d_t + \varepsilon_{it} \qquad (1)$$

Where d_i denote country-dummies and d_t time-dummies to account for country- and time-fixed effects. Standardised coefficients are reported. For instance, a one-standard deviation increase in FDI inflows is, *ceteris paribus*, associated with roughly a 0.3 standard deviation increase in real per capita export growth rates.

Table A6.1. **Drivers of GVC participation**

	Domestic value added content		Foreign value added content		Domestic value added content in foreign countries' exports	
	nominal	real	nominal	real	nominal	real
Lagged log-level of dependent variable	-2.177***	-2.915***	-1.719***	-1.913***	-1.884***	-2.415***
Tariffs (manufactured products)	-0.106	-0.161	0.012	-0.004	-0.203*	-0.281**
EPL – Severance pay	-0.132	-0.085	-0.104	-0.042	-0.110	-0.045
EPL – Temporary contracts	-0.046	-0.020	-0.285*	-0.284	-0.160	-0.152
PMR – Barriers to trade facilitation	-0.145	-0.348***	-0.122	-0.235*	-0.103	-0.264**
PMR – Treatment of foreigner suppliers	-0.352**	-0.223	-0.173	-0.034	-0.378***	-0.265
Annual growth rate of terms of trade	0.177*	-0.014	0.020	-0.161*	0.190***	-0.005
Percent of GERD financed abroad	0.397*	0.561**	0.224	0.262	0.166	0.228
FDI inflows	0.286**	0.200	0.335**	0.244*	0.343***	0.256**
R&D personnel per 1 000 employees	0.383*	0.687**	0.069	0.192	0.268	0.498*
Country- and time-fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-Square	0.419	0.245	0.374	0.231	0.482	0.320
Countries	35	35	35	35	35	35
Observations	111	111	111	111	111	111

Note: * significant at 5%, ** significant at 1%, *** significant at 1‰. The panel is constructed over 5- or 3-year windows with the last year being 2000, 2005, 2008 and 2011. The dependent variable is the annualised gross rate of per capita exports. The export deflator is taken from the Penn World Tables. Independent variables are averages over lagged 5- or 3-year windows except for annual growth of terms of trade which is contemporaneous and calculated like the dependent variable. Standardised coefficients are reported.

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