

McKinsey  
& Company

# Pathways to Israel's prosperity: Improving productivity and accelerating growth

Report – McKinsey Israel

January 2023

# Pathways to Israel's prosperity: Improving productivity and accelerating growth

January 2023

## **Authors**

David Chinn, Tel Aviv

Tera Allas, London

Eliav Pollack, Tel Aviv

Eyal Hashkes, Tel Aviv

# Preface

Israel is often described as the “start-up nation” because of its world-renowned innovation ecosystem and its rapid transition to a global leader in research and development. In the 74 years since its independence, Israel has grown into a modern and prosperous economy.

Dig deeper, however, and a sharp contrast becomes evident: while Israel’s tech sector thrives, the country’s overall economic performance has lagged. GDP growth is relatively high compared to peer economies in the OECD, but this is largely driven by population growth. Adjusted for purchasing power, living standards as measured by GDP per capita are well below the level among peers.

Low productivity is a key determinant of this gap in the standard of living: Israeli productivity, as measured in GDP per hour worked, is about 40 percent lower than the average of the top half of OECD economies—and the gap has been widening. This translates into lower wages and corporate profits, with the impact on living standards exacerbated by the higher cost of living.

This report focuses on why productivity in Israel is lagging and what can be done to boost it, in order to substantially increase the nation’s standard of living and ensure sustainable and inclusive growth providing broad-based prosperity in the future.

This research was led by David Chinn, managing partner of McKinsey in Israel, together with Tera Allas, director of research and economics in McKinsey’s London office, and Eliav Pollack, an associate partner based in Tel Aviv. Eyal Hashkes, a consultant based in Tel Aviv, led the working team, which comprised Roei Ashkenazi, Betzalel Cohen, Vita Gopin, Tzur Heinig, David Myers, Iftach Nevo, Adi Or, Yoav Shehory, and Oria Ben Yosef.

The report was developed for publication by Matt Cooke, communications director, and Dor Glick, communications specialist in the Israel Office, together with senior graphics specialist Lilach Weiss-Englund. The report was edited by Peter Gumbel.

We thank numerous business and government leaders for contributing valuable insights to this report, which also incorporates primary research produced by a range of leading institutions and individuals, in Israel and abroad.

This research contributes to our mission to help bring about sustainable and inclusive growth. This research has not been commissioned or sponsored in any way by any business, government body, or other institution.

# Contents

Preface .....	3
Executive summary .....	6
Chapter 1:	
Israel's productivity gap .....	10
Chapter 2:	
A more competitive and dynamic Israeli economy .....	23
Chapter 3:	
Closing gaps in Israel's public infrastructure and private capital .....	34
Chapter 4:	
Closing Israel's human capital gap .....	49
Chapter 5:	
The Israel of tomorrow .....	59



# Executive summary

Israel's economy has grown faster than many peers', and it benefits from a thriving high-tech sector that accounts for about 15 percent of GDP and attracts very substantial international investment. Viewed as a whole, however, the economy has a significant productivity gap to comparable OECD economies that has widened over the past two decades. That gap constrains the country's economic potential and has held back growth in GDP per capita. This has created a "two-speed" economy in Israel characterized on one side by highly productive, globally oriented tech companies with well-paid, highly skilled employees and, on the other, by lower-productivity companies in most other sectors that tend to be less competitive and pay lower wages.

This report examines the factors contributing to this productivity gap and what can be done to reduce it. It focuses on three critical areas: the economy's lower competitiveness; its relatively low levels of public and private capital stock, including critical infrastructure; and the need to improve the performance and inclusivity of schooling and adult training to equip all Israelis with the skills to take on higher productivity jobs, that will enable them to participate in the economy more fully and thrive in an increasingly interconnected and digital world.

Productivity can sometimes seem an abstract concept, but its real-world consequences are tangible. As part of this research, we modeled an aspirational economic scenario that estimated the impact of improvements in three areas: total factor productivity; higher public and private investment; and increased labor force participation. It suggests that by 2035, Israel could substantially boost GDP per capita by as much as \$13,500 compared to the expected level without such interventions. An increase of that size would bring the Israeli economy (in GDP per capita) to the same level as the top echelon of OECD economies. For the average Israeli employee, it could mean a monthly raise of nearly 7,000 NIS compared to today's average pay.<sup>1</sup>

## Israel has a significant and widening productivity gap compared with OECD peers

To understand Israel's economic performance, we compare it to six OECD country peers with relatively similar populations and levels of economic development: Austria, Belgium, the Czech Republic, Denmark, the Netherlands, and Sweden. Israel's GDP growth has easily outpaced the growth of these peers over the past two decades: since 2000, the size of Israel's economy has roughly doubled in real terms, according to OECD data, while the peers have increased on average by 40 percent.

However, more than half of this expansion has been propelled by rapid population growth rather than by productivity growth. Indeed, productivity in the Israeli economy is considerably lower than in these peers—and the gap has widened slightly in the past two decades. In 2000, the differential between Israel's productivity levels per hour worked and peers' level was about \$20 in purchasing power parity terms. By 2019, this gap had increased to nearly \$23.<sup>2</sup> While labor productivity in Israel (GDP per working hour adjusted for purchasing power) is about 43 dollars, in peer countries the average productivity is about 66 dollars:<sup>3</sup> a gap of 40 percent. The gap is apparent across multiple sectors. For example, productivity in Israel's financial services sector is 54 percent lower than in peers. Israel also has lower productivity in wholesale, retail, accommodation, food services, transportation, and storage (as a whole sector); manufacturing, mining, and utilities; construction; agriculture; and professional, scientific and technical activities, and administrative and support service activities, along with other service activities.<sup>4</sup>

Even the innovative information and communications sector (which comprises much of the high-tech sector) is less productive than peers.<sup>5</sup> It nonetheless has a significantly higher rate of productivity than other sectors of the Israeli economy, and the productivity gap between the tech sectors and other sectors results in a two-speed economy accompanied by high income inequality. An average high-tech sector salary is about 2.2 times an average salary and 5.0 times the minimum wage. Israel's Gini coefficient—a common measure of wealth and income inequality—is much higher than that of its peers at 0.37 in 2020.<sup>6</sup>

---

<sup>1</sup> Today's average pay is 12,000 NIS per month.

<sup>2</sup> Israel's productivity gap slightly decreased in 2020, but this might not be representative due to the impact of the COVID-19 pandemic.

<sup>3</sup> 2015 international dollars.

<sup>4</sup> Analysis of OECD value added and employment per industry data.

<sup>5</sup> GDP on a PPP basis per hour worked in information and communications was \$95 in peer OECD countries in 2019 compared with \$74 in Israel, according to OECD value added and employment per industry data.

<sup>6</sup> *Scope of poverty and inequality of income*, State of Israel, National Insurance Institute (Bituach Leumi), 2020.

## Making the Israeli economy more competitive and dynamic

Global rankings give Israel's business environment low scores on competitive intensity and show that levels of regulation are high compared to peers. There are also tariff and non-tariff barriers that currently restrict the ability of foreign companies in multiple sectors to enter the Israeli market to make it more competitive. Addressing these issues— as well as raising the level of business digitization and business-oriented government digitization — could lead to more efficient business processes. Further productivity improvements would result from taking advantage of best-in-class practices related to digital adoption, human capital management, and other modern management practices.

International indexes mark down Israel's bureaucracy for the quantity of regulation and its quality, including the large number of regulatory processes and of different regulators. For example, construction processes are regulated by 20 to 30 different regulators; new business need to go through seven different regulators and authorities; facilities with dangerous materials are regulated by three distinct agencies with differing mandates; and financial organizations are regulated by multiple entities.<sup>7</sup>

Successive Israeli governments have sought to address many of these issues, but the country still has room to do more to modernize and improve competition.

Relatively low levels of digitization are another major barrier to higher productivity. In 2020, for example, only 59 percent of businesses and 49 percent of personal users were estimated to use digital governmental services.<sup>8</sup>

While Israeli government policy can do much to make the economy more competitive, private-sector initiatives are just as important. Companies can go a long way to improve their own productivity performance, regardless of government policy. Possible measures include digitizing business activities; investing in employee skills; and increasing reliance on professional, merit-based management practices.

## Closing gaps in Israel's public infrastructure and public and private capital stock

Substantial underinvestment in public infrastructure and private capital stock are detrimental to Israel's productivity growth. We can make country comparisons of the gross capital stock per employee, which in Israel is less than half that of the country's OECD peers in purchasing power parity terms, at just over \$280,000 per employee compared with \$590,000 for peers.<sup>9</sup>

Israel is behind peers on the development of public infrastructure: we estimate that the country's updated infrastructure stock is now less than 45 percent of GDP compared with about 66 percent for peers. According to our estimates,<sup>10</sup> closing the public infrastructure gap will require investments of about 4 percent to 5 percent of GDP annually to 2035, well above the current 2.5 percent to 3 percent, along with careful planning and improved execution of infrastructure projects.

Israel also has a transportation infrastructure problem. According to various estimates, Israel loses 2 percent to 3 percent of GDP due to traffic congestion, considerably more than its OECD peers.<sup>11</sup> While car use is rising, use of public transportation is low, further exacerbating congestion.

Israel also lags on digital infrastructure comparisons. As of December 2021, only 19 percent of Israel's fixed broadband connections were fiber connections, compared to 78 percent in Sweden, 44 percent in Denmark, and 25 percent in the Netherlands. Israel is currently rolling out fiber connections across the country, and their share of total fixed broadband connections has risen by 17 percentage points since 2018.<sup>12</sup>

Israel also has a large private capital stock gap. It is apparent across many industries and is most striking in the financial services sector and in the professional, scientific and technical services sector. Israeli business credit is low, a key impediment to investment in private capital and likely a leading reason for Israel's capital stock gap. Access to credit is crucial for businesses to expand, increase productivity over time, and to invest in new technologies. However, in Israel, credit to corporates (nonfinancial) is just 72 percent of GDP, far below peers, whose corporate credit amounts to 123 percent of GDP.<sup>13</sup>

<sup>7</sup> Guy Mor, *Gaps and fundamental problems in the regulatory system in Israel: Looking towards a smart regulation policy*, 2021.

<sup>8</sup> Central Bureau of Statistics (CBS) digital indicators in Israel. It is possible that in light of the circumstances in 2020, including the growing need of private users and businesses to interact with government websites, there was growth in the use of online government services during that year that does not reflect the reality today, and that the rate today is actually lower.

<sup>9</sup> Analysis of OECD fixed assets and employment data, 2019, excluding Sweden due to data availability.

<sup>10</sup> "Public infrastructure" is defined in this assessment as road, rail, port, airport, energy, water, and telecom infrastructure—a definition that varies between estimates in other reports.

<sup>11</sup> *Assessing incentives to reduce congestion in Israel*, OECD, 2019; *Measuring road congestion*, JRC Scientific and Policy Reports, European Commission, 2012; Proposed legislation for the Israeli 2021–22 state budget.

<sup>12</sup> OECD broadband statistics, 2021.

<sup>13</sup> Analysis of Bank for International Settlements debt securities data, Q2 2021.

Various metrics suggest that banks are less inclined to lend in Israel than in peer countries, particularly to small and medium-size enterprises.

To improve business credit availability, Israel could continue its efforts to increase competition in the banking system and increase lending to SMEs. Possible actions by regulators and banks themselves include: evaluating and reducing the quantity of regulation and barriers to entry to allow new banks to enter; offering deposit insurance to safeguard customer deposits in banks to support growth of small banks; digitizing front- and back-office activities; and enriching digital offerings beyond daily banking activities.

### **Closing Israel's human capital gap**

Human capital is hugely impactful for productivity. Israel's K-12 education system as a whole performs poorly in international tests, a gap that persists when measuring adult skills. While test scores of the general education system school population are similar to the average in peer countries, overall scores are reduced by the poor test scores among Israel's main minorities: the Arab and Haredi (Jewish Ultra-Orthodox) populations.<sup>14</sup> K-12 performance gaps carry on into work life: Israeli has severe shortages of the digital and other advanced skills that it needs, crucial both for high-tech and for productivity in sectors not considered high-tech.

Israel has a range of options to close the human capital gap, which would lift productivity in the medium to longer term. These include, first, improving the quality of Israel's primary and secondary education system and, second, lifting levels of adult skills and continued education. Both at school and at work, data point to a *de facto* tripartite system consisting of the Arab and Haredi populations falling behind both in educational performance and in workforce skills and readiness, a broad non-tech Hebrew-speaking population in the middle who tend to be in low-productivity jobs with commensurate low wages, and, at the top end, highly skilled, productive, and highly paid tech workers.

Employers have a major role to play and our research shows can have high impact on the human capital of their employees. For example, they can attract and retain the best talent by investing in improving employee skills; by evaluating employees; by embracing mobility within the workplace; by considering candidates with different backgrounds and histories; and by creating both upward and lateral career paths within the organization so that employees can gain more varied experience.<sup>15</sup> Upskilling and retraining workers is a win-win: the employee accumulates human capital while the employer benefits by reducing recruitment costs and securing a more productive workforce. Active employer efforts to upskill employees can potentially be quicker and impact a larger scale of individuals compared to reforms in the formal education system.

While these three areas amount to critical challenges for Israel, they also spell a huge opportunity. By increasing competitive intensity, closing infrastructure gaps, and raising educational performance and workforce skills, Israel could ensure that its future economic growth will be more vibrant and more inclusive, creating greater prosperity for all and reducing the gaps in the two-speed economy.

**“Raising Israel’s productivity in the scenario we modeled would mean a monthly raise for the average Israeli employee of nearly 7,000 NIS compared to today’s average pay.”**

<sup>14</sup> Peer countries also have challenges in integrating minority populations into the economy, but in most cases, these populations consist of immigrants who integrate over time into the economy. In contrast, in Israel, the lack of economic integration of minority populations continues over time. For details, see in-depth analysis of *specific countries in Economic Policy Reforms 2021: Going for Growth: Shaping a Vibrant Recovery*, OECD, 2021.

<sup>15</sup> Human capital at work: The value of experience, McKinsey Global Institute, June 2022.



# 1. Israel's productivity gap

While Israel's economy has grown faster than that of many peers, much of this trend is attributed to population growth, and Israel has a significant productivity gap that has widened over the past two decades. This has resulted in reduced GDP per capita growth and constrained the country's economic potential. The productivity gap is evident across most sectors of the Israeli economy, with the notable exception of high-tech, which makes an outsized contribution to GDP, employment, and exports. This chapter analyzes the overall productivity gap and the key contributing factors to this two-speed economy and estimates the GDP per capita bounce if the gap could be closed.

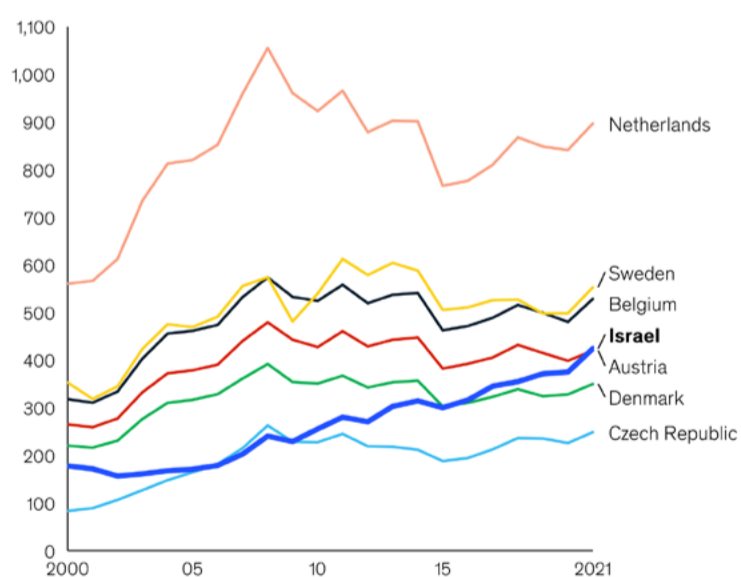
## A growing population rather than rising productivity is driving Israel's economic growth

To compare Israel's performance, we use as peers six OECD countries with a similar population and level of economic development: Austria, Belgium, the Czech Republic, Denmark, the Netherlands, and Sweden.<sup>16</sup> Israel's GDP growth has outpaced the growth of these peers over the past two decades, with the exception of the Czech Republic: since 2000, the size of Israel's economy has more than doubled in real terms. When measured taking into account purchasing power, an adjustment crucial to allow for different costs of living, Israel's superior growth is less positively marked, because of the country's high cost of living compared to peers (Exhibit 1).<sup>17</sup> GDP per capita in Israel of \$40,000 when accounting for purchasing power (constant prices, 2015 base year) is below the overall OECD average and far behind that of most peers in the comparison group, which have an average GDP per capita of \$49,000.<sup>18</sup> Moreover, this GDP growth is fueled in large part by population growth rather than productivity growth.

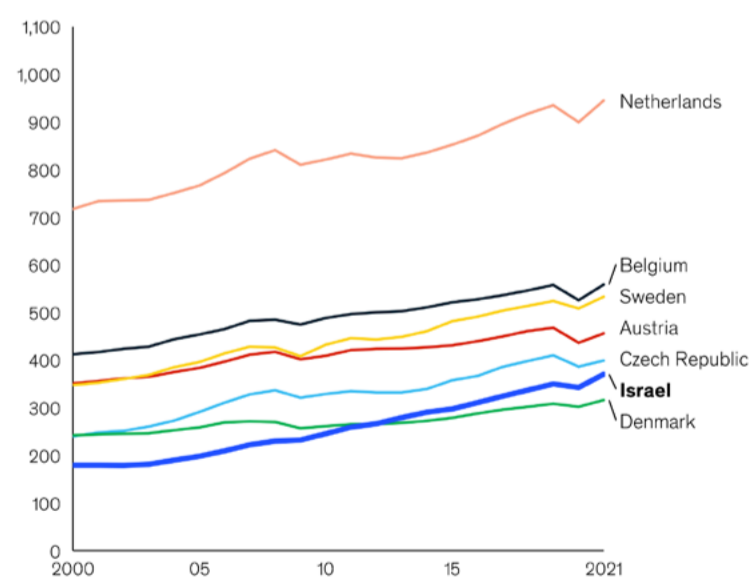
Exhibit 1

**Israel's economy has grown faster than those of its peers in absolute terms, although this growth is slower when considering relatively high living costs**

**GDP, constant prices**  
Billions 2015 US dollars



**GDP adjusted for purchasing power (PPP), constant prices**  
Billions 2015 international dollars



Source: OECD, team analysis

<sup>16</sup> The Czech Republic has lower productivity than other peers. We include it because of its high productivity growth and similar population to Israel. The country's economy has grown rapidly since it joined the European Union in 2004 along with several other former Communist countries in Eastern Europe.

<sup>17</sup> OECD GDP data.

<sup>18</sup> OECD GDP per capita data, constant 2015 international USD.

## The fast-growing Israeli population, an exception in the OECD, is a key growth contributor

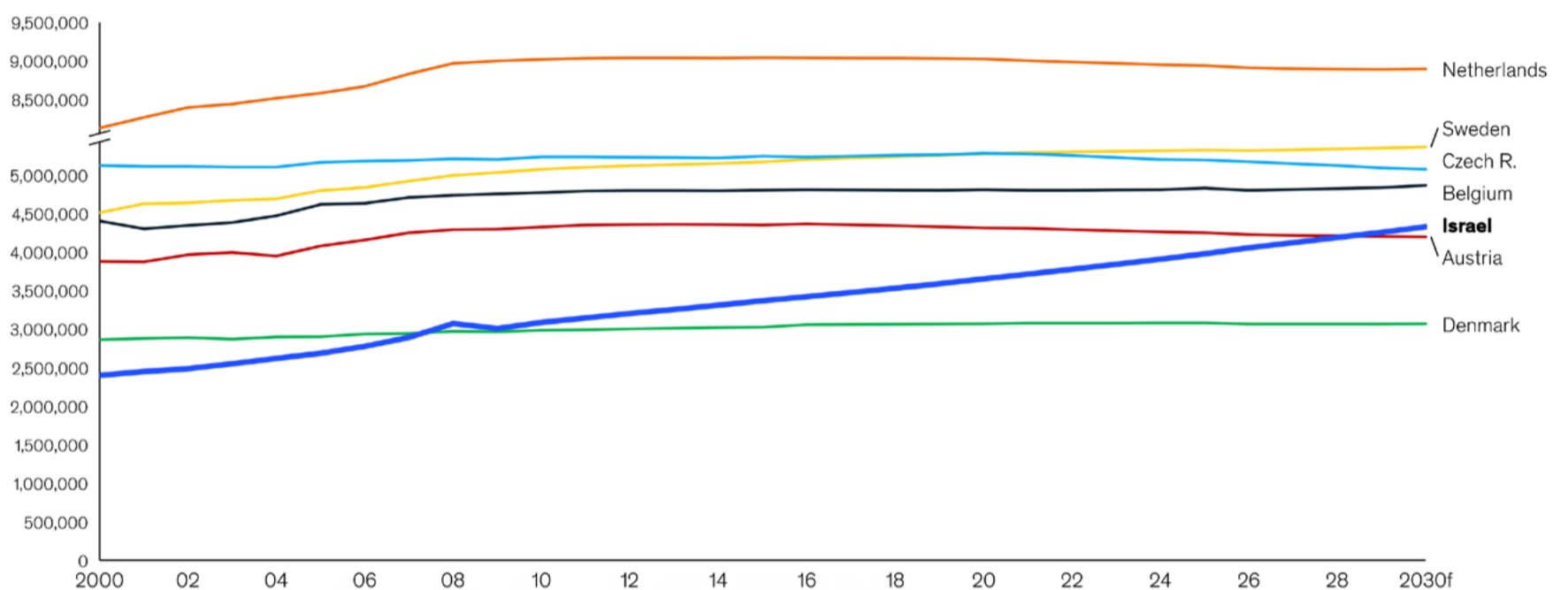
Over half (57 percent) of Israel's economic growth in purchasing power terms comes from population growth; the population increased by an average annual rate of 1.9 percent between 2000 and 2020, more than double the overall OECD rate (0.7 percent) and almost quadruple the rate among chosen peers (an average of 0.5 percent). As we discuss in chapter 4, an increase in the employment rate over the past decade helps explain part of the economic growth not stemming from population growth. In the OECD as a whole, only around 42 percent of GDP growth comes from population growth. A fast-growing working-age population adds demand and production capacity to the economy, and Israel is an exception among developed economies in its population growth, which is set to continue; today, 28 percent of the Israeli population is under the age of 14, compared to just 18 percent in the OECD.<sup>19</sup> The McKinsey Global Institute projects that by 2030, Israel's labor force will surpass 4.3 million people compared to about 3.7 million today, while the labor pools of the peer group countries will stagnate or shrink (Exhibit 2).<sup>20</sup>

Exhibit 2

### Israel's labor force is projected to grow in the future, while peer countries' labor pools will likely stagnate or shrink

#### Projected labor force

People in labor force (employed or seeking employment)



Source: McKinsey Global Institute data and Projections

Israel's high population growth can be a continuing driver of economic growth, but it also entails risks for the economy. Large amounts of public and private investment will be needed to keep the same level of capital per person or per worker and to support productivity. As we elaborate in chapter 3, simply keeping public infrastructure capital at current rates of GDP would require collective public investments of about \$280 billion until 2035. Otherwise, growth of output per worker as well as the quality of public services would likely stall. Closing the capital gap to peers would require a much larger investment.

The demographic mix of the population growth is also important. According to projections from Israel's National Economic Council, Israel's Haredi population will grow from about 13 percent of the total population today to about 24 percent by 2050.<sup>21</sup> The Haredi population currently has a lower rate of employment as well as lower levels of secular education and workforce skills than the rest of the workforce. If not addressed, these factors could lower the rate of overall economic growth.

<sup>19</sup> World Bank and OECD population data.

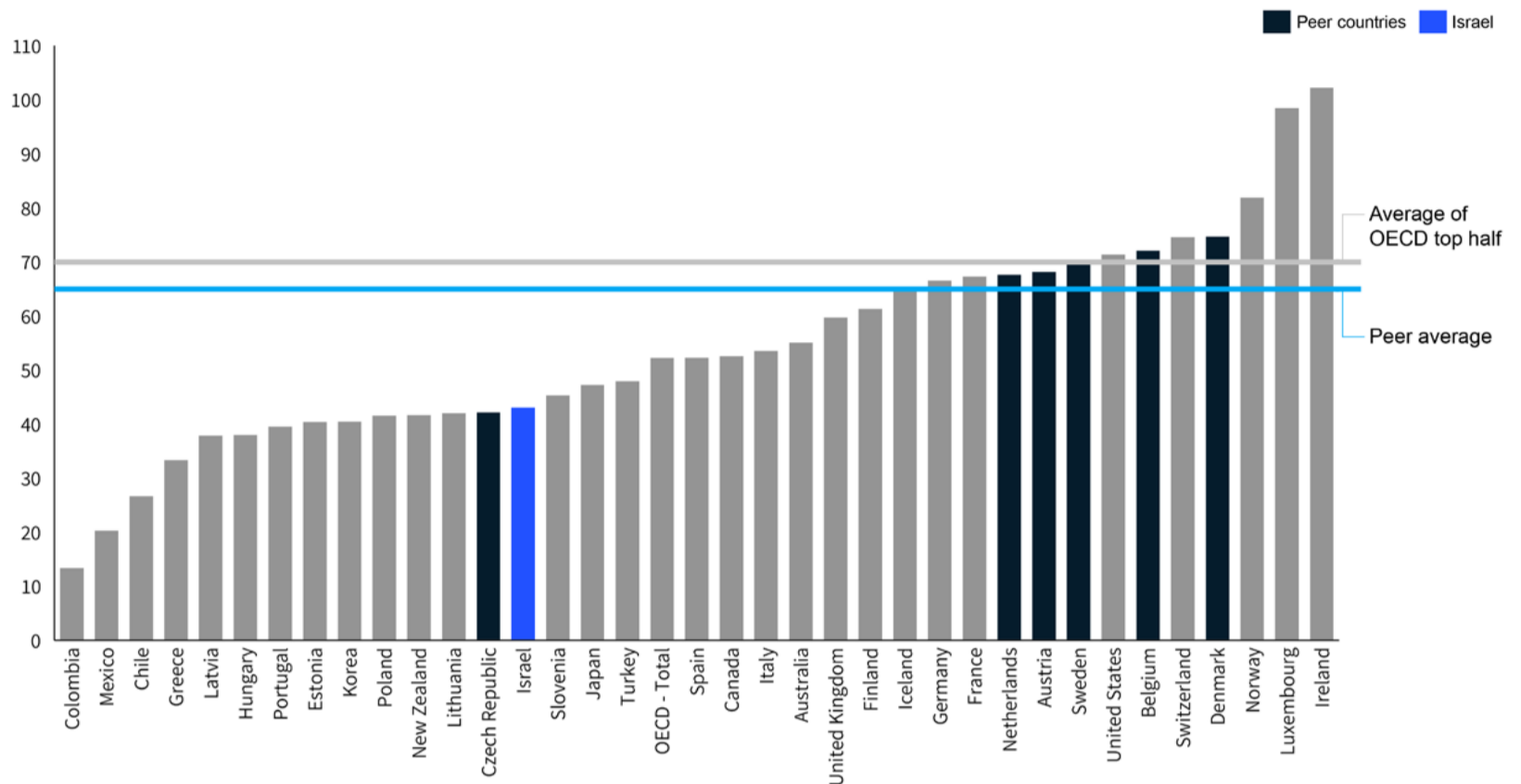
<sup>20</sup> McKinsey Global Institute projections.

<sup>21</sup> National Economic Council population projections.

Exhibit 3

**Israel's low productivity lags behind other developed economies**

**GDP PPP per hour worked, 2019<sup>1</sup>**  
2015 international dollar



1. In constant PPPs.  
Source: OECD

**Israel's productivity is lower than that of its OECD peers, and the gap has widened in the past two decades**

GDP per capita can be broken down to hours worked per capita and GDP per hour worked. Israeli workers put in more hours worked per capita than peer countries' workers. In 2020, Israeli workers worked 810 hours per person (895 in 2019, before the COVID-19 pandemic), above the OECD average of 758 hours (822 in 2019) and far above the number of hours worked in some peer countries, including Belgium (612 hours in 2020, 672 in 2019), Denmark (687 and 708), Sweden (696 and 724), and Austria (701 and 771).<sup>22</sup> While the higher number of hours worked in Israel contributes (at least directly) to its GDP per capita, it means that Israeli productivity figures compare unfavorably on a GDP per hour worked basis (Exhibit 3). Israeli productivity, as measured in GDP per hour worked, is about 40 percent lower than the average of the top half of OECD economies.<sup>23</sup>

Israel's productivity gap with chosen peer countries has actually slightly increased over the past two decades. In 2000, the differential between Israel's productivity levels per hour worked and its peers' level was about \$20 in purchasing power parity terms. By 2019, this gap had increased to nearly \$23.<sup>24</sup> The gap with the OECD average remained around \$9 per hour (Exhibit 4). In this 19-year period, Israel's annual average productivity grew by 1.5 percent, an insufficient growth rate to close the gap, while the Czech Republic caught up to Israel's productivity level.<sup>25</sup>

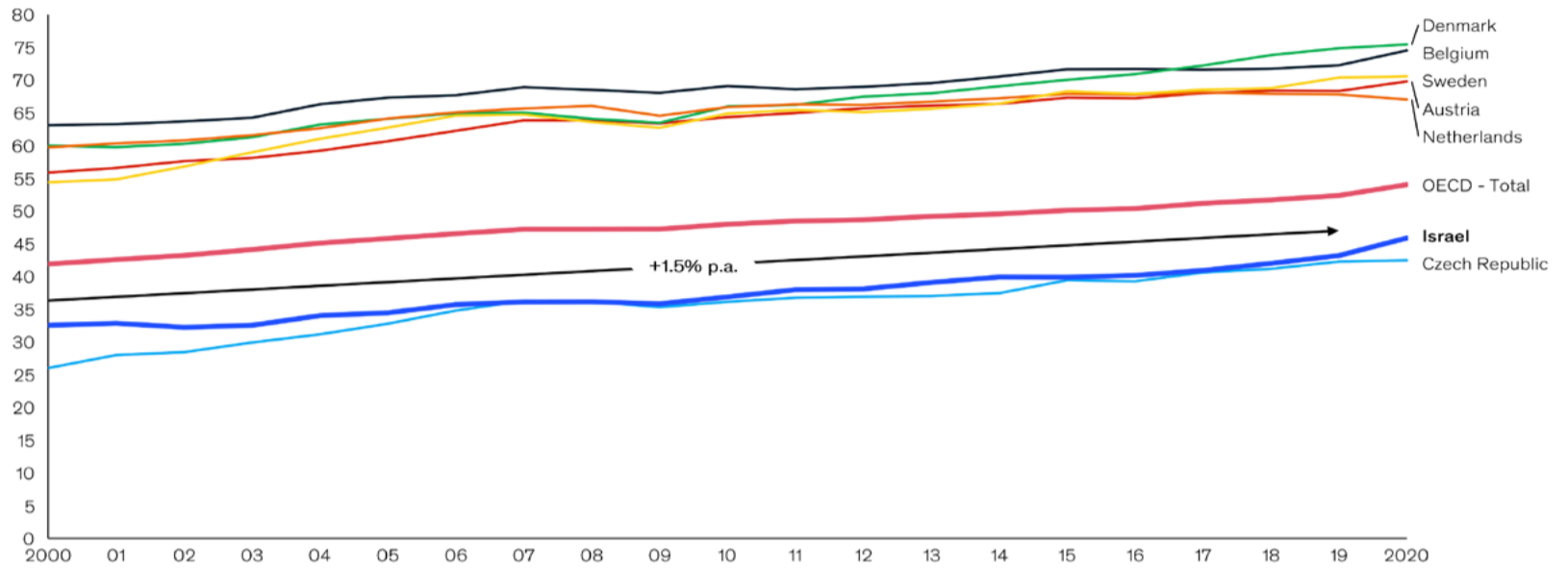
**“Israeli productivity as measured in GDP per hour worked is about 40 percent lower than the average of the top half of OECD economies.”**

<sup>22</sup> Analysis of OECD hours worked and population data.  
<sup>23</sup> OECD productivity data.  
<sup>24</sup> Israel's productivity gap slightly decreased in 2020, but this might not be representative due to the impact of the COVID-19 pandemic.  
<sup>25</sup> OECD data on productivity in OECD countries.

Exhibit 4

**Israel's productivity gap with peers has widened since 2000**

**Productivity: GDP (PPP) per hour worked, constant prices**  
2015 International dollars



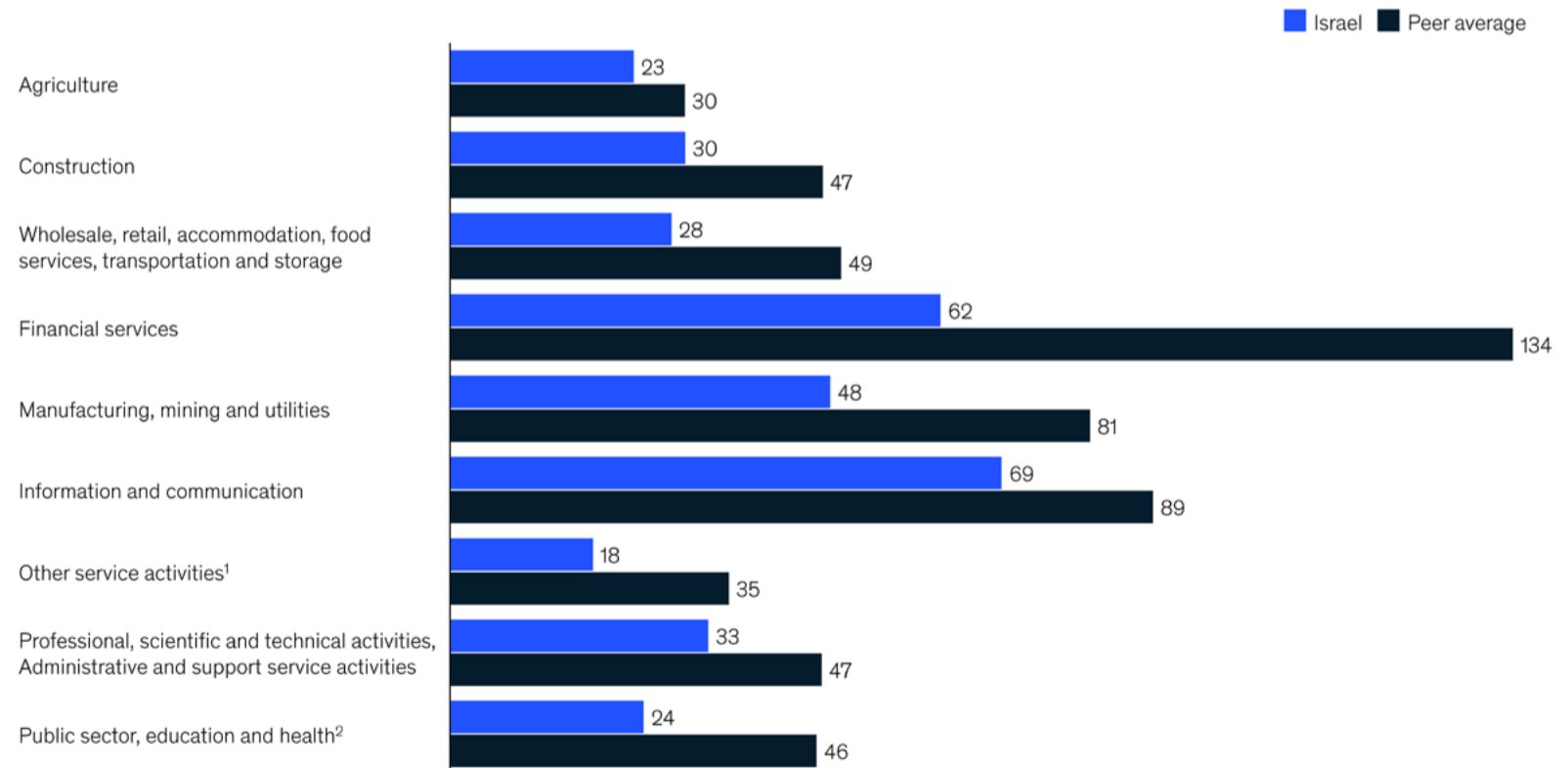
Source: OECD

This productivity gap is apparent across sectors.<sup>26</sup> For example, productivity in Israel's financial services sector is 54 percent lower than in peer countries. Israel also has lower productivity in wholesale, retail, accommodation, food services, transportation, and storage (as a whole sector); manufacturing, mining, and utilities; construction; agriculture; and professional, scientific and technical activities, and administrative and support service activities, along with other service activities (Exhibit 5). Even information and communications, Israel's most productive sector, is less productive than peer countries'.<sup>27</sup>

Exhibit 5

**Israel has lower productivity than peers in all sectors**

**GDP (PPP) per hour worked by sector, 2019**  
2015 International dollars



1. Includes ISIC 4 categories of other service activities (S), arts, entertainment and recreation (R), activities of households (T) and activities of extraterritorial organizations (U)

2. The measured productivity in the public sector is affected by public sector salaries, which are higher in peer countries; indirectly, these salaries are affected by productivity and wages in other sectors

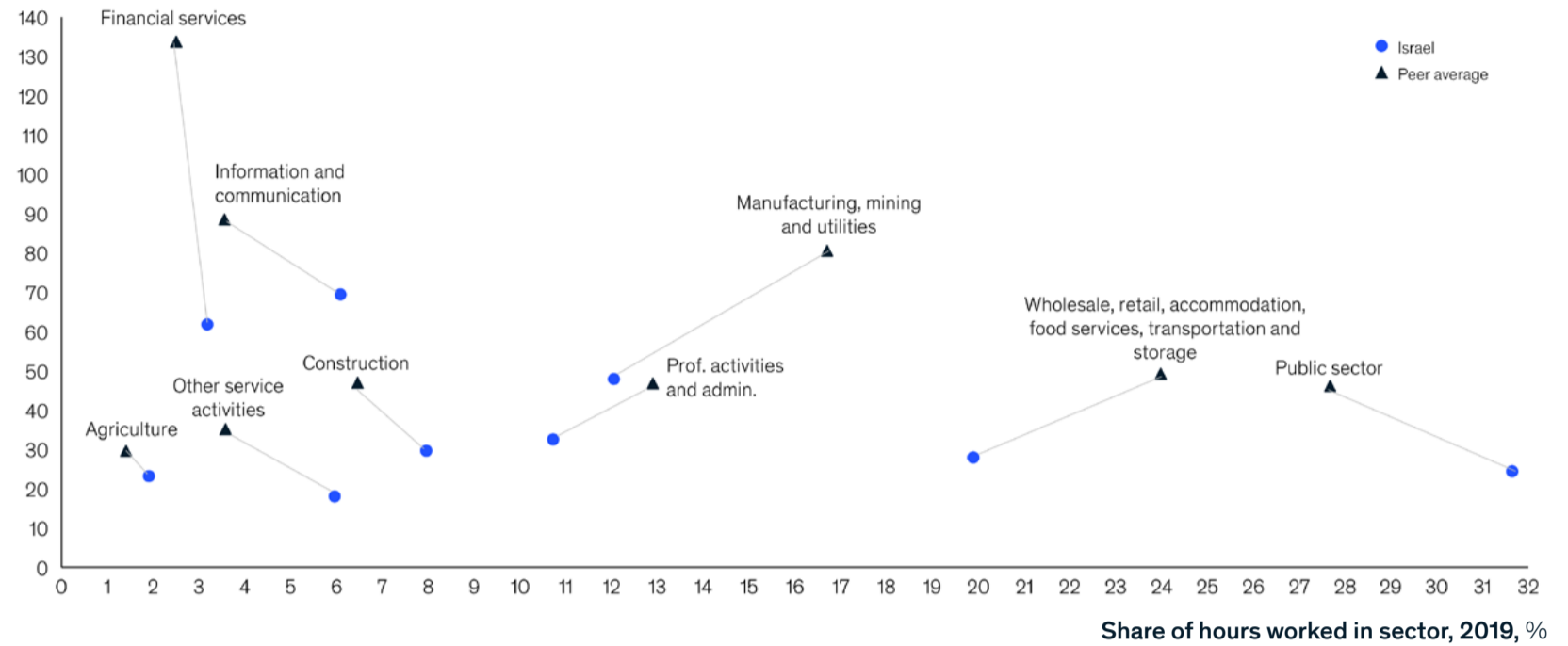
Source: OECD, team analysis

<sup>26</sup> GDP is typically not measured at a sector level. Instead, national accounts measure an equivalent concept of output called gross value added (GVA). The only difference between GDP and GVA is the treatment of product taxes and subsidies. For ease of communication, in this report, we use the term GDP instead of GVA when discussing sector-level indicators. To measure the productivity gap by sector, we use sectoral GVA (gross value added, the relevant output concept at the sector level) per employee, adjusted for purchasing power.

<sup>27</sup> Analysis of OECD gross value added and employment per industry data. 2019 is used as the last year with data available without COVID-19- related disruptions.

**GDP (PPP) per hours worked by sector, 2019**

2015 International dollars



Source: OECD, team analysis

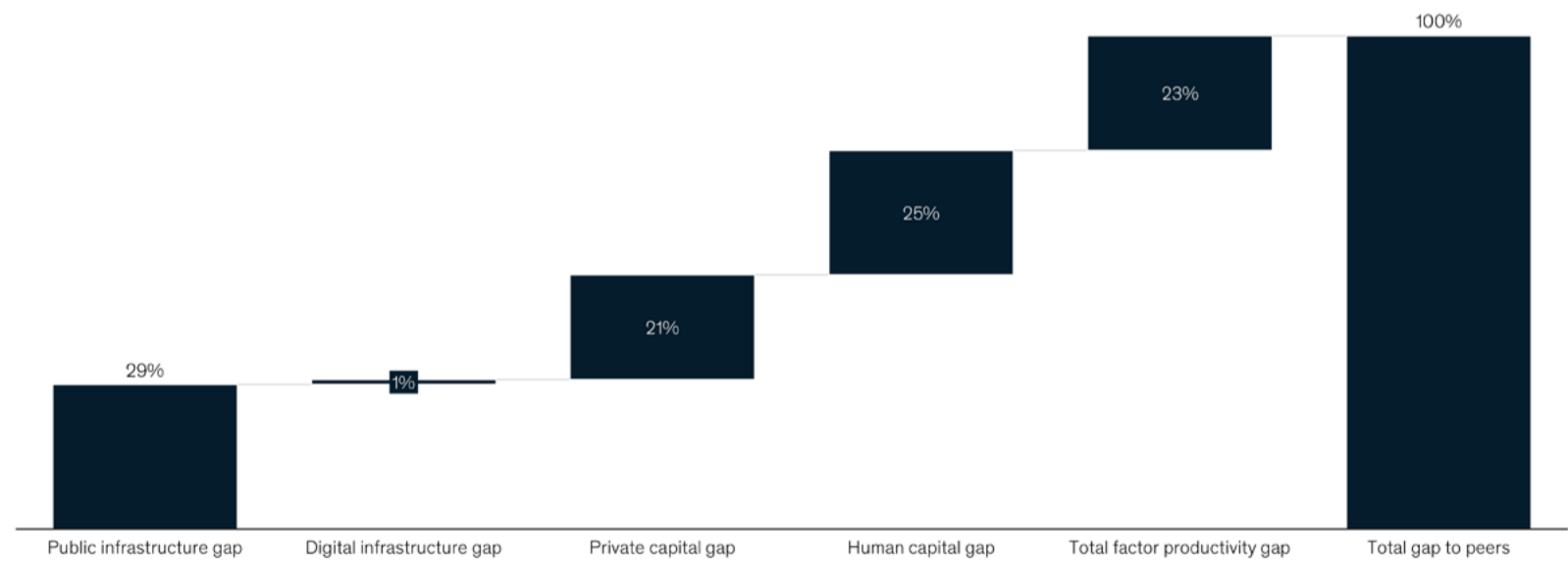
We identify several root causes of Israel’s low productivity, including issues related to human capital, infrastructure, and other factors explored in this report. The Aaron Institute for Economic Policy identifies similar factors and assesses that the human capital gap is responsible for 25 percent of the productivity gap (compared to a slightly different group of peer countries); the private capital and public infrastructure gap is assessed to be responsible for 51 percent of the gap; and other elements related to total factor productivity<sup>28</sup> account for 23 percent of the gap (Exhibit 6).<sup>29</sup>

**Exhibit 6**

**Reasons for the productivity gap include public infrastructure, private capital, human capital, and total factor productivity gaps**

**Reasons for productivity gap, analysis by Aaron Institute for Economy Policy<sup>1</sup>**

% of total gap to peers



1. Peer countries cited in Aaron Institute’s report are slightly different than in this report and include Austria, Finland, Netherlands, Sweden and Denmark. In contrast, this report does not include Finland and does include Belgium and Czech Republic in addition to the Austria, Netherland, Sweden and Denmark. Figures do not sum up to 100% due to rounding

Source: Public Investments and Structural Reform to Increase Productivity and Growth in the Economy, Aaron Institute for Economy Policy

<sup>28</sup> Total factor productivity refers to growth not explainable by human and physical capital, for example: technological developments and changes in impediments to growth.

<sup>29</sup> *Public investments and structural reform to increase productivity and growth in the economy*, Aaron Institute for Economic Policy, 2022. Peer countries cited in the Aaron Institute report differ slightly from those we use in this report. They include Austria, Denmark, Finland, the Netherlands, and Sweden.

## “Start-up nation”: Israel’s two-speed economy is marked by stark contrasts

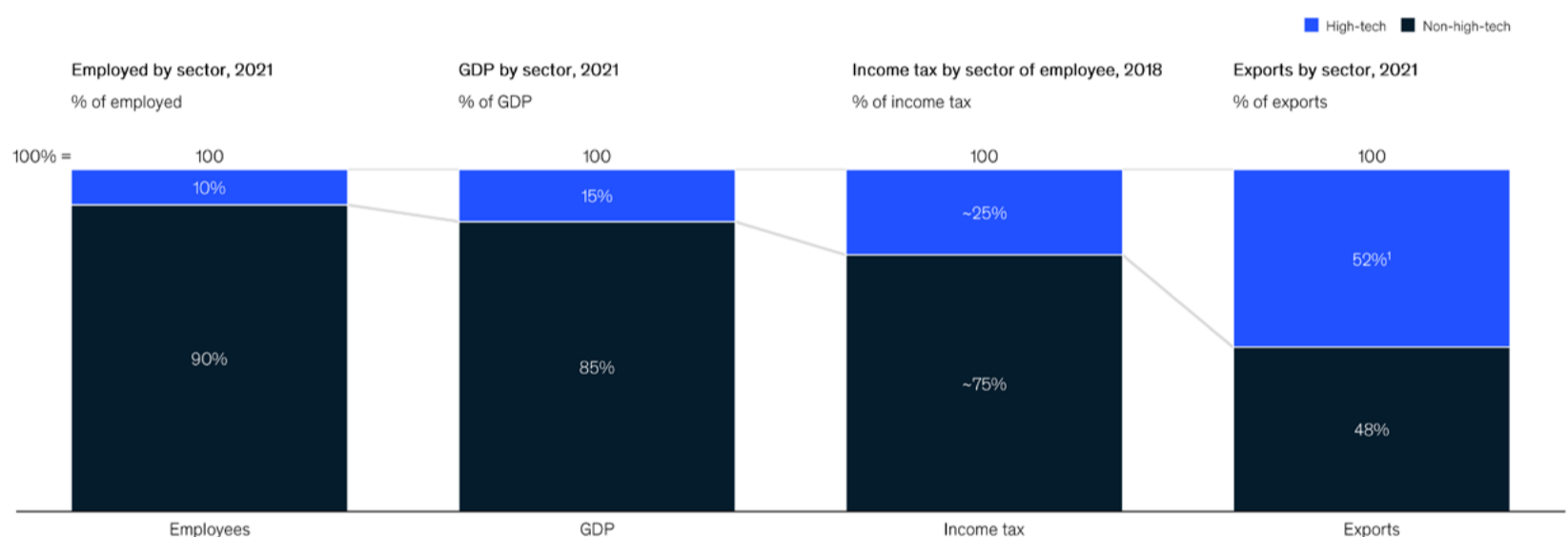
Israel’s high-tech sector has an outsized effect on the Israeli economy, propelling growth and employment and attracting international investment. It accounts for about 15 percent of GDP and continues to grow substantially faster than other sectors. While an undoubted success story, it also highlights the poor productivity of much of domestic industry.

### Israel’s high-tech sector has an outsized effect on the Israeli economy

In recent years, Israeli high-tech companies have enjoyed significant growth and prosperity. Among other things, this trend is reflected in the amount of capital raised by local start-ups (\$10.4 billion and \$25.8 billion during 2020 and 2021, respectively),<sup>30</sup> the number of exits over \$10 million (41 and 99 deals in 2020 and 2021, respectively, not including IPOs),<sup>31</sup> and the percentage of Israeli exports and jobs created by the sector. The high-tech sector in Israel employs just over 10 percent of the country’s workers, with an economic impact that far exceeds its contribution to employment.<sup>32</sup> It contributes over 15 percent of GDP (inclusive of most of the information and communications sector, as well as certain subsegments of other sectors), accounts for more than half the exports of goods and services, and generates about 25 percent of personal income tax (Exhibit 7).<sup>33</sup>

Exhibit 7

#### The high-tech sector has an outsized role in Israel’s economy



1. Not including exports that are knowledge-intensive that are not considered high-tech

Source: Israel Central Bureau of Statistics, Bank of Israel, Innovation Authority reports, To What Extent Can the Start-up Nation Grow?, Taub Center 2018

Information and communications (ICT) is at the core of high-tech and is Israel’s fastest-growing sector (Exhibit 8).<sup>34</sup> A breakdown of GDP to its components shows that, between 2013 and 2020, ICT grew by 4.6 percentage points as a share of GDP (and by 3.1 percentage points between 2013 and 2019), while the share of most other sectors declined.<sup>35</sup>

The ICT sector in Israel is large by international comparison. It accounted for 9.5 percent of GDP in 2019 in Israel and 11 percent in 2020<sup>36</sup> (the high-tech sector, which includes components of other economic sectors is 15 percent of GDP, as previously mentioned) while for the OECD peer group we use in this report, the average contribution was about 5 percent in both 2019 and 2020.<sup>37</sup>

<sup>30</sup> Israel tech review, Q3 2022, IVC and LeumiTech, October 2022.

<sup>31</sup> Hi tech exit report 2021, PwC Israel, 2021.

<sup>32</sup> Annual innovation report: State of high-tech 2022, Israel Innovation Authority, 2022.

<sup>33</sup> Bank of Israel Annual 2021 report; To what extent can the start-up nation grow?, Taub Center, 2018.

<sup>34</sup> In addition to the ICT sector, High-tech commonly includes certain manufacturing and professional, scientific, and technical activities.

<sup>35</sup> CBS GDP by economic sector data.

<sup>36</sup> It is possible that 2020 does not represent the size of the information and communications sector well, due to effects of the Covid-19 crisis that led to a general decline in GDP alongside stability or growth of the high-tech sector that year.

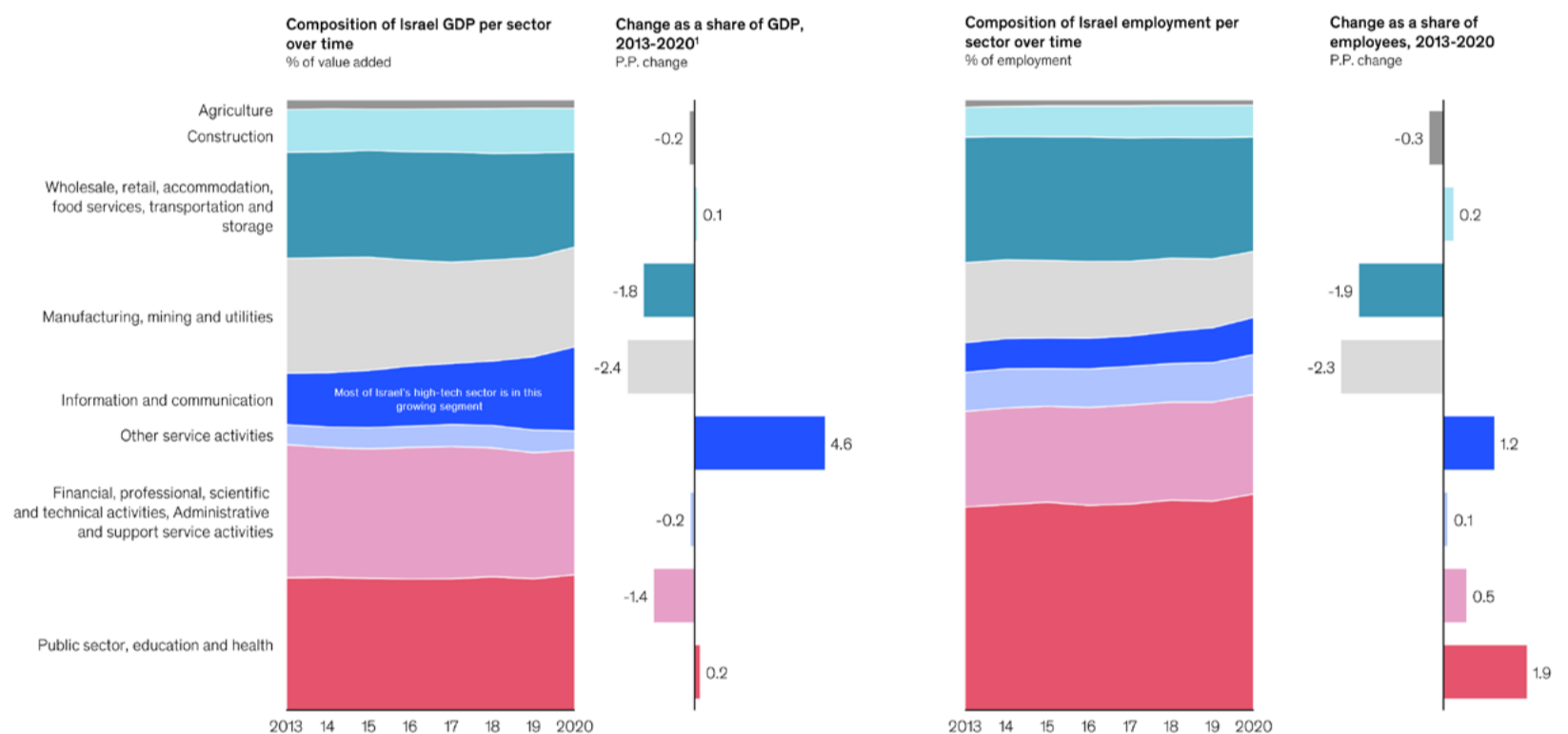
<sup>37</sup> OECD gross value added by sector data.

Israel's strong tech sector attracts international capital, including some of the world's highest rates of venture funding per capita. This in turn enables growth by fueling the high-productivity high-tech sector. Israel's net inflows of foreign direct investment (FDI) are the highest of peers at 6 percent of GDP in 2020 (versus 0.15 percent on average among peers).<sup>38</sup> Israel's high-technology and knowledge-intensive exports (a broader definition than high-tech only, which accounts for 52 percent of exports as previously mentioned) account for 58 percent of all exports (compared to an average of 46 percent among peers).<sup>39</sup>

Israel's high-tech success can be attributed to a combination of factors. Israel spends 5.4 percent of its GDP on R&D, greater than the 3.5 percent or less spent by peers.<sup>40</sup> Israel benefits from a pool of highly skilled employees who graduated from Israeli universities or served in high-tech units in the military; one of the world's highest proportion of tech and engineering graduates; robust academic institutions with high-quality tech-oriented studies, such as the Hebrew University of Jerusalem, the Technion in Haifa, Ben Gurion University in Beersheba and Tel Aviv University; various cultural norms that emphasize the value of education and of challenging existing practices, encouraging entrepreneurship; government support programs for entrepreneurship such as the Yozma program, a 1990s initiative to attract venture capital; and a "virtuous cycle" ecosystem, in which international capital and talent, and multinational companies are drawn to Israel's high-tech sector, fueling further success.<sup>41</sup>

Exhibit 8

**Israel's ICT sector is growing faster than other sectors in terms of both GDP contribution and employment**



1. Including GDP attributed to Housing Services, and excluding taxes and subsidies on products  
 Source: Israel Central Bureau of Statistics

**“Israel spends 5.4 percent of its GDP on R&D, greater than the 3.5 percent or less spent by peers.”**

<sup>38</sup> World Bank foreign direct investment, net inflows data. Peer average excludes the Netherlands due to outlier negative data.  
<sup>39</sup> McKinsey Global Institute export data, 2018. This is higher than only exports in High-tech, as seen in Exhibit 7.  
<sup>40</sup> OECD Main Science and Technology Indicators. For an analysis of the role of R&D in the Israeli economy, see Dan Senor and Saul Singer, *Start-Up Nation*, Matar Publishing House, 2009.  
<sup>41</sup> CBS prevalence of tech studies in Israel and other countries data; Schaul Chorev and Alistair R. Anderson, “Success in Israeli high-tech start-ups; Critical factors and process,” *Technovation*, 2006; Dan Senor and Saul Singer, *Start-up Nation*, Matar Publishing House, 2009.

## Israel's two-speed economy

Israel has a significant productivity gap between its high-tech industries (mostly ICT in the statistics) and other sectors. This gap in productivity is the underlying reason for the two-speed economy and results in a high level of income inequality. An average salary in the high-tech sector is about 27,500 NIS,<sup>42</sup> or about 2.2 times an average salary and 5.0 times the minimum wage in Israel (Exhibit 9).

This gap helps explain Israel's high Gini coefficient—a common measure of wealth and income inequality. The Gini index is always between 0 and 1, with a higher Gini score signifying greater inequality. In Israel, the Gini index is much higher than peers': in 2020, Israel's coefficient was 0.37,<sup>43</sup> while among peers, the range stretches from 0.25 in the Czech Republic to 0.30 in Austria.<sup>44</sup> This inequality metric has slightly decreased in Israel in recent years, likely due to an increase in employment rate of minority groups (see chapter 4) but has remained high.

High-tech employees are able to command substantially higher wages than workers in the traditional economy. This reflects both their skill sets, and the fact that their employers serve global end markets, which, due to their larger scale, can support markedly higher wage levels than the local economy. While higher wages are first and foremost a reason for celebration and a critical source of funding for social spending, the gap between productivity and wage levels in high-tech, when compared to the traditional economy, contributes to relatively high levels of inequality.

Addressing inequality should focus on leveling up skills, productivity, and wages across the economy, with high-tech productivity levels setting an aspiration for the rest of the economy. While growth in the proportion of the workforce directly participating in the high-tech economy, already high at about 10 percent, can grow further, it is likely capped. There is real potential for productivity growth in other sectors by adopting practices from the high-tech sector, raising productivity and wages, and thereby decreasing inequality (see Box 1, "What traditional Israeli industries can learn from high-tech").

While leveling up is not easy, the alternative, namely persistently high levels of income inequality, can be detrimental to productivity and the economy more broadly, and run the risk of negatively affecting social cohesion. Income concentration in a small number of high earners may have a negative impact on the access of large swaths of the population to key enablers of future success. For example, high income earners can make housing less affordable to many, thereby reducing access to higher-paying jobs in locations with such jobs. Similarly, increasing private investment in education and healthcare by high earners drives up costs or reduces quality for all, as the public system strains to compete with compensation in the private markets, potentially increasing disparities between groups.

Helping the traditional economy, employing up to 90 percent of the labor force, achieve productivity and wage levels closer to those achieved in the high-tech sector will be critical to ensuring that these dynamics do not perpetuate the two-speed economy.

**“There is real potential for productivity growth in other sectors by adopting practices from the high-tech sector.”**

<sup>42</sup> CBS employee positions and average wages per employee in the high-tech sector data.

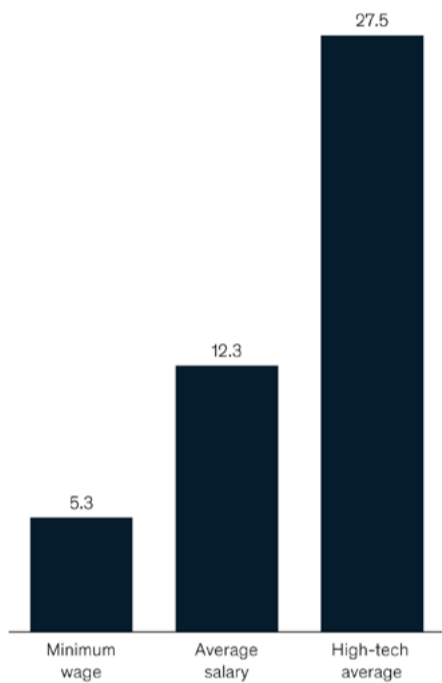
<sup>43</sup> *Scope of poverty and inequality of income*, Bituach Leumi, 2020.

<sup>44</sup> World Bank Gini Index data, 2019 or latest year available. The World Bank cautions that not all data points are comparable because of different ways the Gini Index is calculated in some countries.

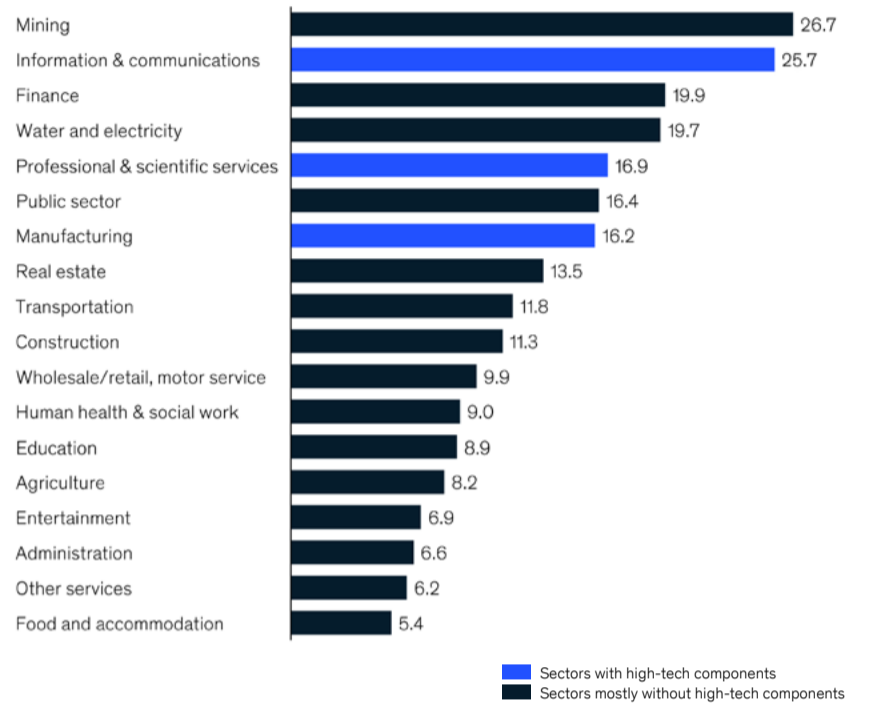
Exhibit 9

**High-tech workers are substantially better paid than average Israelis**

**Gross average monthly wage by main categories, September 2022**  
Thousand NIS

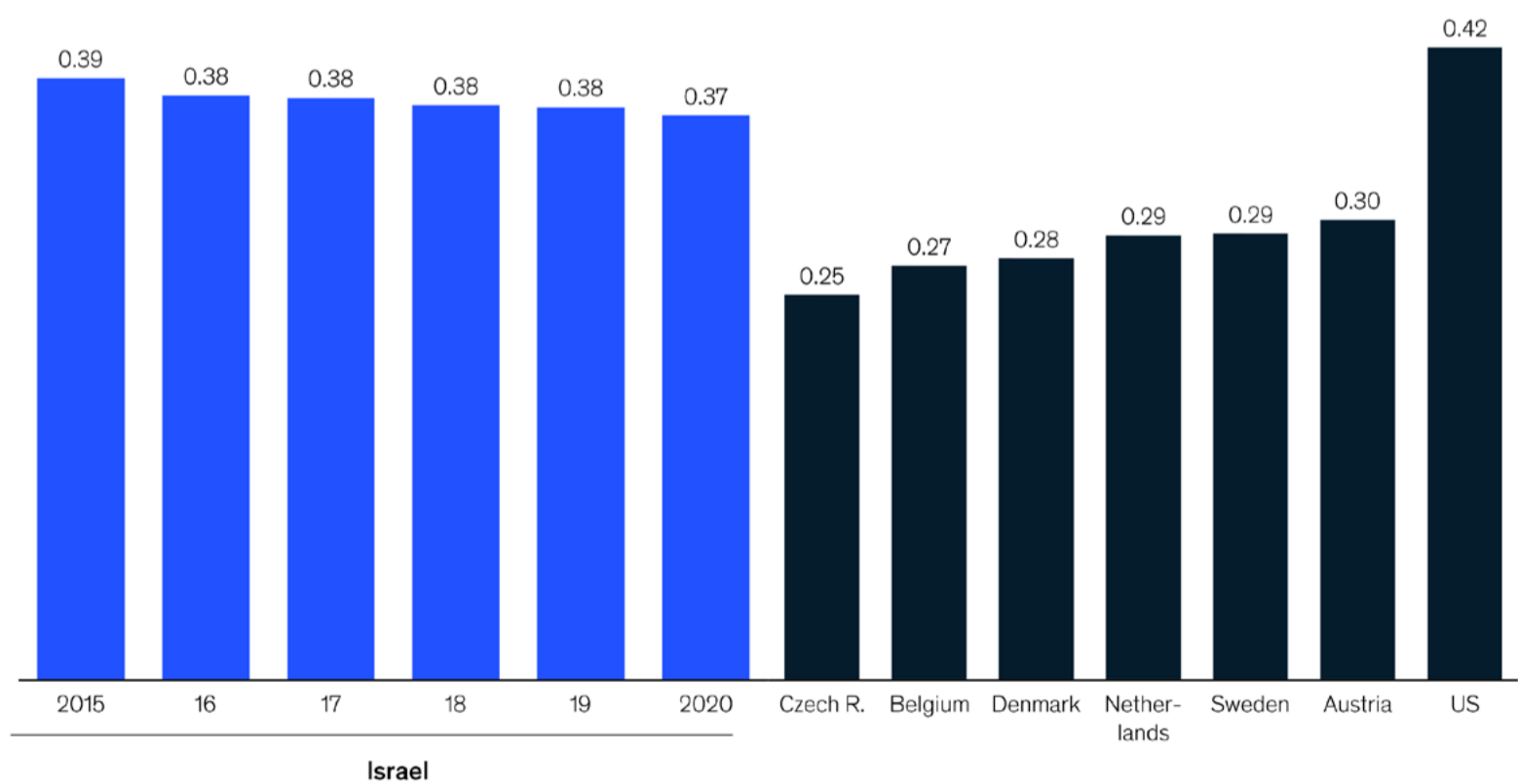


**Average gross monthly wage by sector, 2021**  
Thousand NIS



Source: Israel Innovation Authority, CBS Bituach Leumi, World Bank

**Gini Index by net income<sup>1</sup>**  
(Index between 0 (complete equality) and 1 (absolute inequality))



1. After transfer payments. Israel Gini Index is from Bituach Leumi and country Gini Index for peers and US are for latest year available in World Bank (typically 2019)

Source: Bituach Leumi, World Bank

## What traditional Israeli industries can learn from high-tech

While the final product of Israel's traditional industries might be inherently different from that of high-tech companies, the former can learn much from the latter's success in Israel. This includes the value of gender diversity, an international and collaborative mindset, and a sharp focus on technology.<sup>1</sup> In later chapters, we explore other aspects including management practices.

**Gender diversity.** McKinsey analysis using Start-Up Nation Central data for high-tech companies in Israel with a valuation of at least \$50 million<sup>2</sup> shows that the more successful companies have about a 40 percent higher share of women employees at the C-level. Companies in the top quartile for gender diversity on their executive teams are 21 percent more likely to experience above-average profitability than companies in the fourth quartile (it should be noted that this correlation does not necessarily prove causation). Research across a broad swath of sectors and countries supports these findings and demonstrates gender diversity is associated with increased sales revenue and greater profits.<sup>3</sup>

**International collaboration.** Israel's high-tech companies are connected to the world: funding, recruiting, partnerships, and the customer base are all highly international. Exposure to international competition and access to international talent encourage and enable more productive business practices.

**Collaboration with academia and other domestic companies.** Israel's high-tech sector was ranked second in 2022 in collaboration between industry and academia, according to the Global Innovation

Index, measured by the number of joint publications.<sup>4</sup> However, only a small share of academia-industry collaborations are collaborations with Israeli non-tech companies.<sup>5</sup> Through such partnerships, non-tech companies could potentially gain access to cutting-edge technologies and technology design expertise.

**Focus on tech infrastructure.** While Israel is a leader in innovation and R&D, many high-tech developments are exported and not used locally. As explored in chapter 2, technologies such as cloud computing, customer relationship management systems, and artificial intelligence (AI) are much less used outside of the high-tech sector, creating a less productive environment for non-tech players and the public sector. Adoption of these technologies can help accelerate productivity in companies in traditional industries.

**Tech-minded management.** Ensuring that at least some C-suite executives have experience with advocating for and implementing tech-enabled business practices (such as data analytics, AI, and robotics) can increase productivity and accelerate diffusion of efficiency and innovation. A McKinsey study found that 60 percent of companies identified as early adopters of artificial intelligence reported depending on significant support from their C-suite.<sup>6</sup>

**Recruitment and training focused on employee skills.** Management can implement initiatives to improve employee and management understanding of technology and also focus on efficient ways of working. Recruiting people with the skills to turn external innovation into concrete business practices can also lead to greater productivity.<sup>7</sup>

**“Exposure to international competition and access to international talent encourage and enable more productive business practices.”**

<sup>1</sup> Some of the details in this box are based on an analysis of the current high-tech environment in Israel using data from Start-Up Nation Central. The analysis will be published separately in the near future.

<sup>2</sup> In this analysis, an Israeli high-tech company is defined as a company whose founders are Israeli, whose research and development is located in Israel, or has a different kind of presence in Israel, even if its headquarters are not located in Israel.

<sup>3</sup> Cedric Herring, "Does diversity pay?: Race, gender, and the business case for diversity," *American Sociological Review*, 2009.

<sup>4</sup> Global Innovation Index 2022.

<sup>5</sup> *Annual innovation report: State of high-tech 2022*, Israel Innovation Authority, 2022; *R&D output in Israel: Analysis of scientific publications*, Samuel Neaman Institute for National Policy Research, 2018.

<sup>6</sup> See "Accelerating the diffusion of technology-enabled business practices," *McKinsey Quarterly*, 2018; *How artificial intelligence can deliver real value to companies*, McKinsey Global Institute, 2017.

<sup>7</sup> See "Accelerating the diffusion of technology-enabled business practices," *McKinsey Quarterly*, 2018.

## How big could the economic boost to Israel be if it closed the productivity gap?

If Israel were to continue on its current path without addressing the structural issues that inhibit growth in productivity and GDP, it could likely still expect to create above-average growth driven by population growth (see Box 2, “Staying resilient during a volatile period for the global economy”).

However, Israel has the potential for greater prosperity. Closing the productivity gap and increasing the employment rate would allow Israel to unleash economic growth that would see Israel’s prosperity rise to new levels, benefiting a wider swath of the population and closing much of the GDP per capita gap with its OECD peers.

As an illustrative exercise aimed at estimating the potential upside to the economy from higher overall productivity and labor participation, we modeled two scenarios using McKinsey’s Global Growth Model using assumptions on labor, investment, and total factor productivity gains. This exercise should not be taken as a projection of likely future outcomes. Rather, it shows how much Israel and Israelis have to gain from a more productive and inclusive economy.

The two scenarios modeled are, first, a business-as-usual scenario, which assumes no change in general levels of capital investments along with a slight and gradual growth (broadly in line with historic trends) in the labor participation rate of 1.1 percentage points by 2035,<sup>45</sup> and a 0.6 percent annual growth rate in total factor productivity. The second scenario, the aspirational scenario, depends on Israel enhancing its human capital, investing in infrastructure, and reducing other gaps to productive economic activity. Specifically, we model that Israel closes some of the capital stock gap to peers with an increased investment of 4.0 percentage points of total GDP (both public and private) per year, increases the labor participation rate by 8.2 percentage points to reflect significant additional employment of Arab and Haredi populations, and achieves total factor productivity growth of 1.2 percent annually.

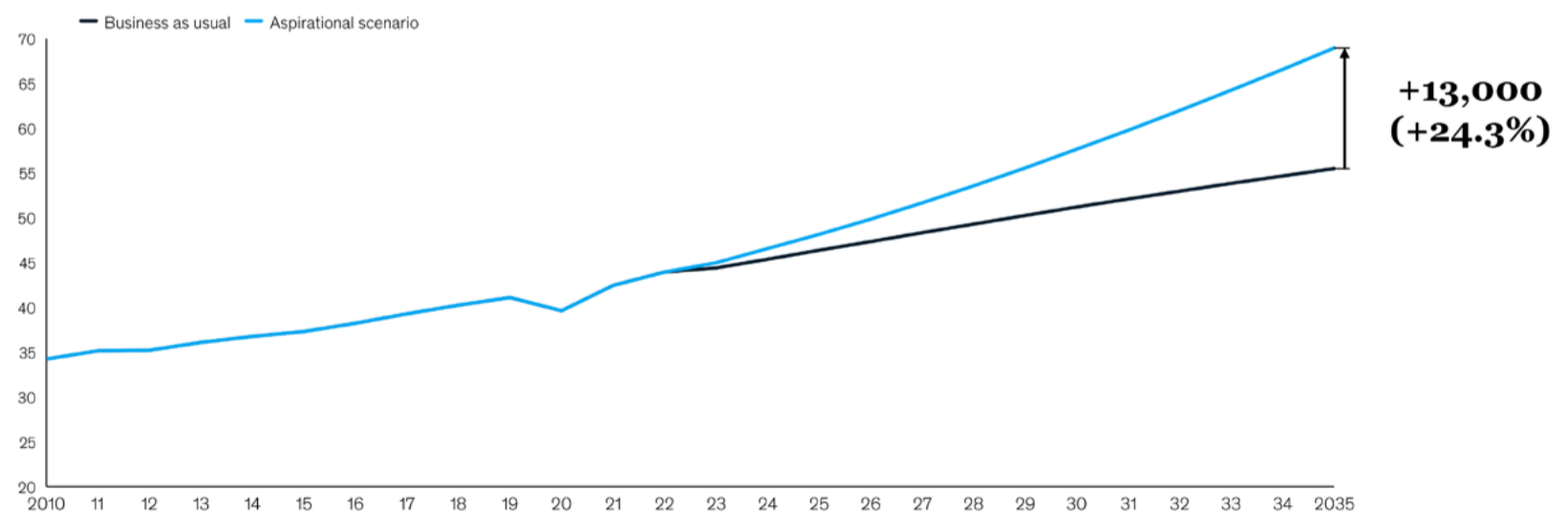
The difference between the two scenarios—the potential opportunity if Israel could boost its productive capacity as laid out in this report—amounts to additional growth in real GDP per capita of 25 percent over the next 13 years, to 2035 (Exhibit 10).

Exhibit 10

**Labor, productivity, and investment gains from our aspirational scenario could lift Israeli real GDP per capita by nearly 25 percent**

### Israel GDP per capita (PPP)

Thousands 2015 international dollars



Source: McKinsey’s Global Growth Model

<sup>45</sup> Current labor participation rate used as starting point in the modeling exercise is 67.6 percent.

The business-as-usual scenario sees Israel's real GDP per capita, as measured in purchasing power parity (PPP) terms and in constant 2015 prices, growing from around \$40,000 to around \$55,500 by 2035.<sup>46</sup>

The aspirational scenario, with added labor, productivity, and investment, would result in gains to GDP per capita of a further \$13,500 per year (again using PPP and in constant 2015 prices). This would bring Israel's total GDP per capita to \$69,000 by 2035—a level slightly higher than the leading OECD peer countries today. For the average Israeli employee, using today's ratio of GDP per capita to salary as a rough indicator, it could mean an average monthly pay increase of about 3,500 NIS compared to the business-as-usual scenario, and an increase of nearly 7,000 NIS compared to today's average pay.<sup>47</sup>

In the following chapters, we outline areas where the private and public sectors could focus to help turn such an aspiration into reality.

---

<sup>46</sup> Today's average pay is 12.3 thousands NIS per month.

<sup>47</sup> In 2015 terms.

## Box 2

### Staying resilient during a volatile period for the global economy

Following a long period of low inflation, various factors are pushing the global economy into a more challenging period marked by slowing growth and recession in some countries, inflationary pressures, supply-chain disruptions, an energy crisis that is contributing to volatile commodity markets, and lingering effects of the COVID-19 pandemic, including on the labor market in some countries.<sup>1</sup>

In the United States, inflation for both consumers and producers is at levels not seen in recent memory. In Europe, soaring energy prices related to Russia's invasion of Ukraine have compounded the inflationary problems.

In this unsettled situation, Israel has some economic resilience factors that protect it—and it enters this period with buoyant growth and a better inflation environment than many peers as its starting point. Nonetheless, uncertainty about how long this cycle could last and how deep it could go mean there is no room for complacency: both the private sector and the public sector will likely need to focus on improving resilience.<sup>2</sup>

The inflation rate for 2022 is expected to be 4.6 percent, significantly lower than in most developed countries, and is forecast by the Bank of Israel to drop to 2.5 percent for 2023.<sup>3</sup> Several factors explain this relatively low inflation rate in Israel. First, Israel is today less exposed to global energy price volatility, due to offshore natural gas reserves that have made the country mostly self-sufficient in electricity generation: going from a net importer to an exporter of natural gas. Israel's exposure to energy price volatility in the future is also limited by long-term contracts it has signed. As energy prices are a significant component of the consumer price index, Israel's advantage in sourcing energy inputs has kept inflation in check.<sup>4</sup>

Second, the Bank of Israel attributes the country's low inflation rate in part to the relatively early slow-down of the expansionary monetary policy, which it enacted during 2021.

Lastly, according to the Bank of Israel, the appreciation of the shekel has contributed to a slowdown in the pace of price increases in all components of the consumer price index and, therefore, resulted in lower inflation.<sup>5</sup>

Economic activity remains robust, as Israel's economy has rebounded faster than other developed economies from the COVID-19 pandemic. The GDP contraction in 2020 was milder in Israel, even when taking into account the growth in population, at minus 1.9 percent compared to declines of 3.4 percent in the United States and 5.6 percent in the European Union.<sup>6</sup> Similarly, Israel's rebound from COVID was more robust, with GDP growth of 8.6 percent in 2021 compared to 5.7 percent in the United States and 5.4 percent in the EU.<sup>7</sup> Looking forward, Israeli GDP growth is expected to be 6 percent in 2022 and 3 percent in 2023.<sup>8</sup> This is also much higher than expected growth in the EU and the United States.<sup>9</sup>

Other indicators of economic activity in Israel, such as goods and services exports, construction starts, and the various components of imports, also point to heightened activity, despite the global slowdown.<sup>10</sup> The outlook is positive even though fiscal support programs during the pandemic were lower in Israel than in many other countries; for example, Israel spent 10.3 percent of GDP from January 2020 through September 2021 on direct fiscal support compared with 25.5 percent in the United States.<sup>11</sup> Such metrics suggest that Israel may be more economically resilient to the current global circumstances.

How will the slowing global economy affect Israel's two-speed economy? One focus is the labor market, with current unemployment at 4.3 percent. The tech industry, which employs about one in ten workers, is affected by changes in the global economy, and it has started to make some layoffs, both locally and abroad. Any layoffs in the tech sector, while unfortunate, could be an opportunity for other industries in Israel to recruit highly skilled and educated workers and for employees to take opportunities to reskill or upskill.

---

<sup>1</sup> See, for example, Chris Bradley, Jeongmin Seong, Sven Smit, and Jonathan Woetzel, "On the cusp of a new era?" McKinsey Global Institute, October 20, 2022.

<sup>2</sup> For details on the business response to inflation, see *How business operations can respond to price increases: A guide for Israel's CEOs*, McKinsey, April 8, 2022.

<sup>3</sup> Bank of Israel forecast, October 2022.

<sup>4</sup> Financial Stability Report for the first half of 2022, Bank of Israel.

<sup>5</sup> The consumer price index tracks the rate of change in prices over time. An inflation rate is defined as the percentage change in CPI over time.

<sup>6</sup> IMF GDP growth data.

<sup>7</sup> Ibid.

<sup>8</sup> Bank of Israel forecast, October 2022.

<sup>9</sup> *Critical trends and risks in the global economy*, McKinsey Global Economics Intelligence, October 2022.

<sup>10</sup> Minutes of interest rate discussion on October 2–3, 2022, Bank of Israel.

<sup>11</sup> IMF database of country fiscal measures in response to the COVID-19 pandemic.



# 2. A more competitive and dynamic Israeli economy

Israel does not score highly in international rankings of economic dynamism and competitive intensity. Barriers to doing business cited include high regulatory burdens, low digital capabilities, and a business environment that is generally seen as lacking in competitiveness and efficiency. Low competitive intensity in sectors protected by trade and regulatory barriers often reduces the need for business to become more efficient, decreasing their overall productivity.<sup>48</sup> Small and medium-size enterprises are especially affected, as larger enterprises have more resources and experience, allowing them to better steer through the obstacles of Israeli bureaucracy.

Successive Israeli governments have sought to address a number of these issues. Here, we look at several areas where Israel could do even more to modernize and become more competitive. This is not just an issue for government: the private sector has a major role to play in modernizing itself, and thereby the economy as a whole.

## Israel's highly regulated business environment affects competitive intensity and efficiency

International rankings find that the Israeli economy is bureaucratic, with outdated and inefficient procedural mechanisms and institutions that do not provide effective instruments for business management (Exhibit 11). For example, it typically takes 11 days to register a business, 200 days to receive a construction permit, 37 days to register a property, and 975 days to enforce a contract.<sup>49</sup> In most cases, this is much slower than in peer countries. Closing a business takes an average of two years to complete, at a cost of 23 percent of the value of the debtor's assets—far higher than in peers.<sup>50</sup> Alongside direct costs like dispute resolution expenses, delays in projects, and loss of workdays, these long timetables can act as disincentives to start new businesses and can affect the ability of businesses in Israel to become agile and more competitive.<sup>51</sup>

**“While successive governments have sought to address barriers to doing business, more can be done to modernize the economy and make it more competitive.”**

<sup>48</sup> Eitan Regev and Gilad Brand, “The causes for widening of productivity gaps between Israel and the OECD: a multi-year sector comparison,” Taub Center, 2015.

<sup>49</sup> Red tape examples: Ease of Doing Business Index; based on the 2019 Ease of Doing Business Index, World Bank (this index was suspended, but we believe the data in this report is reflective for Israel, as data for Israel was not found to be directly affected by data irregularities).

<sup>50</sup> Data is prior to Israel's new insolvency law.

<sup>51</sup> See, for example, IMD Competitiveness Index, 2022, efficiency subindexes; the IMD World Competitiveness Ranking offers comprehensive rankings of the competitiveness of nations based on 334 competitiveness criteria.

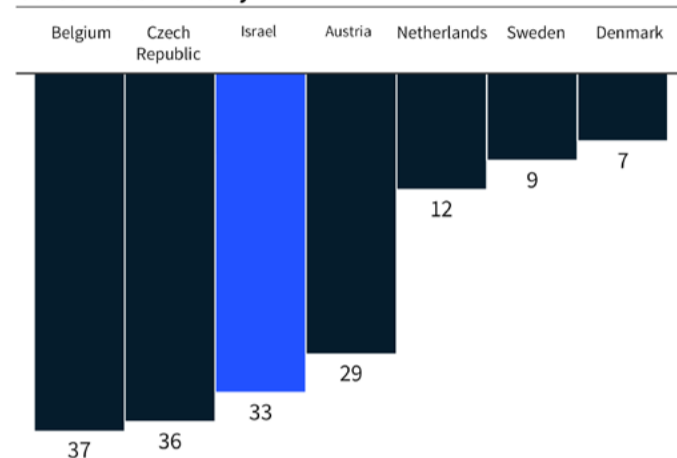
Exhibit 11

**Israel's business and government efficiency both score relatively poorly compared to peers in the IMD competitiveness index**

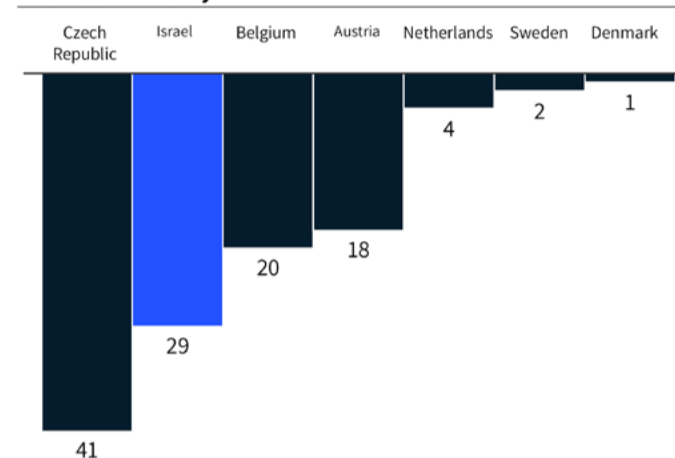
**IMD Competitiveness Index<sup>1</sup>**

Rank (of 63) - a lower number reflects a higher ranking

**Government Efficiency**



**Business Efficiency**



1. The IMD World Competitiveness Ranking is A highly respected and comprehensive report on the competitiveness of nations based on 334 competitiveness criteria

Source: IMD Competitiveness index

**Selected indicators in Ease of Doing Business Index**

	Starting a business		Managing a business (days to execute)			Closing a business (resolving insolvency)	
	Days	Cost, %	Construction permits	Registering property	Enforcing Contracts	Years	Cost, %
<b>Israel</b>	11.0	2.7	200.0	37.0	975.0	2.0	23.0
Austria	21.0	4.7	222.0	20.5	397.0	1.1	10.0
Belgium	5.0	5.3	212.0	49.0	505.0	0.9	3.5
Czech Republic	24.5	1.1	246.0	27.5	678.0	2.1	17.0
Denmark	3.5	0.2	64.0	4.0	485.0	1.0	4.0
Netherlands	3.5	4.0	161.0	2.5	514.0	1.1	3.5
Sweden	7.5	0.5	117.0	7.0	483.0	2.0	9.0

Source: Ease of Doing Business Index

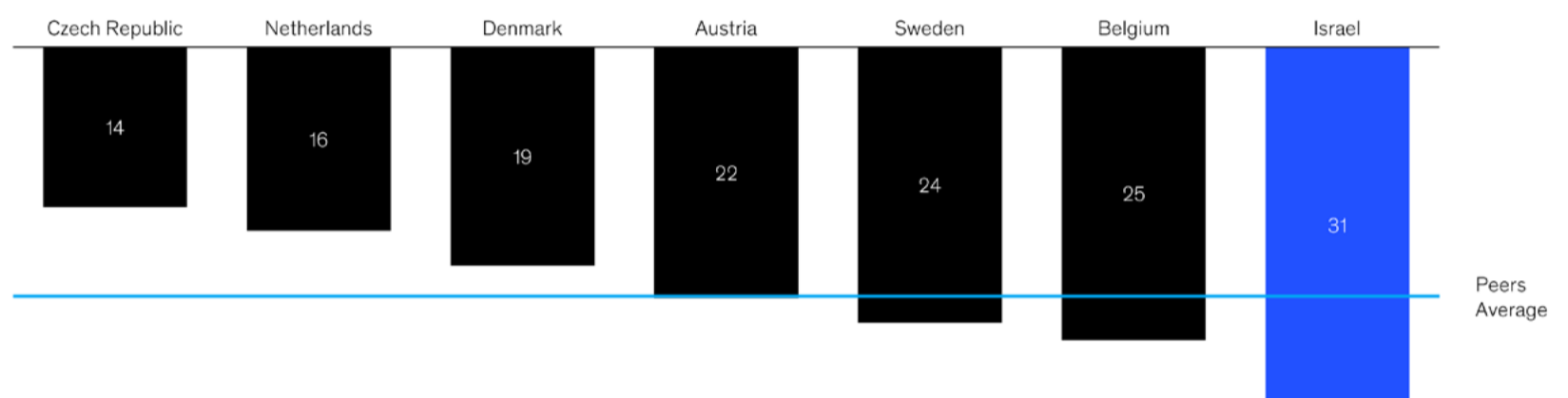
Israel's bureaucratic burden can be divided into two: international trade regulation and internal regulation, including state involvement in business operations and limitations on businesses.

**Trade regulation.** Israel has been taking steps to reduce tariff and non-tariff barriers to foreign trade.<sup>52</sup> However, compared to peer countries, international rankings indicate that Israel has more trade restrictions and is more prone to protectionism. This is prevalent in both product and services restrictions, across sectors. The IMD Competitiveness Index ranks Israel on protectionism at 46th place out of 63 countries (where 1 is the least protectionist country), significantly more protectionist than peers.<sup>53</sup> The number of restrictions per sector is estimated by the OECD STRI index as the highest among peers (Exhibit 12).<sup>54</sup>

Exhibit 12

**Israel has an excessive number of restrictions on both trade and movement of goods, compared to peers**

**Avg. Number of international trade Restrictions per country per sector, 2021<sup>1</sup>**  
Compared to Peers - A lower number reflects a higher ranking



1. Based on The OECD Services Trade Restrictiveness Index, an evidence-based set of indicators that collects information on services trade restrictions across 19 major services sectors.

Source: OECD STRI

As an example, the regulation on standards for many imports in Israel typically imposes multiple obligations on importers, such as licensing, preapproval of import, and model testing, all according to Israeli standards, including for products that meet international standards (this was at the center of a recent import reform).<sup>55</sup> Applying complex requirements to foreign trade can impede business and price competitiveness, and raises input costs for businesses. It also reduces the degree to which businesses learn from global best practices and are encouraged to innovate and improve business models to become more efficient and effective.

**Internal regulation.** Businesses in Israel, even working only within its borders, need to operate within a regulated environment across many industries. This is often characterized by redundancies of requirements and outdated procedures<sup>56</sup> imposed on businesses, significantly reducing their ability to be competitive and productive. Specific examples include: construction processes which are regulated by 20 to 30 different regulators; new business that need to go through seven different authorities; facilities with dangerous materials regulated by three distinct agencies with differing mandates; and financial organizations regulated by multiple entities.<sup>57</sup> Such multiplicity can create redundancies as well as contradictions in regulation, and in any case impose a significant burden on businesses. Even if all the regulation is appropriate, the variety of regulatory bodies involved can greatly complicate processes. In an international comparison, the OECD Product Market Regulation (PMR) index scores Israel relatively low compared to peers. Israel also scores poorly on indicators of state involvement in the operation of businesses (Exhibit 13).<sup>58</sup> It is important to note that internal regulation has also been the focus of various reforms in recent years.<sup>59</sup>

<sup>52</sup> OECD Economic Surveys: Israel 2020, OECD, September 2020.

<sup>53</sup> The IMD World Competitiveness Index – protectionism subindex. This specific subindex is based on a survey question about the statement "Protectionism of your government does not impair the conduct of your business."

<sup>54</sup> OECD STRI restrictions average. The OECD Services Trade Restrictiveness Index is an evidence-based tool that collects information on services trade restrictions across 19 major service sectors.

<sup>55</sup> The Ministry of Economy and Industry, What is the Import Reform?

<sup>56</sup> Regulatory authority - objectives, tools and frameworks, Aaron Institute for Economic Policy, 2022.

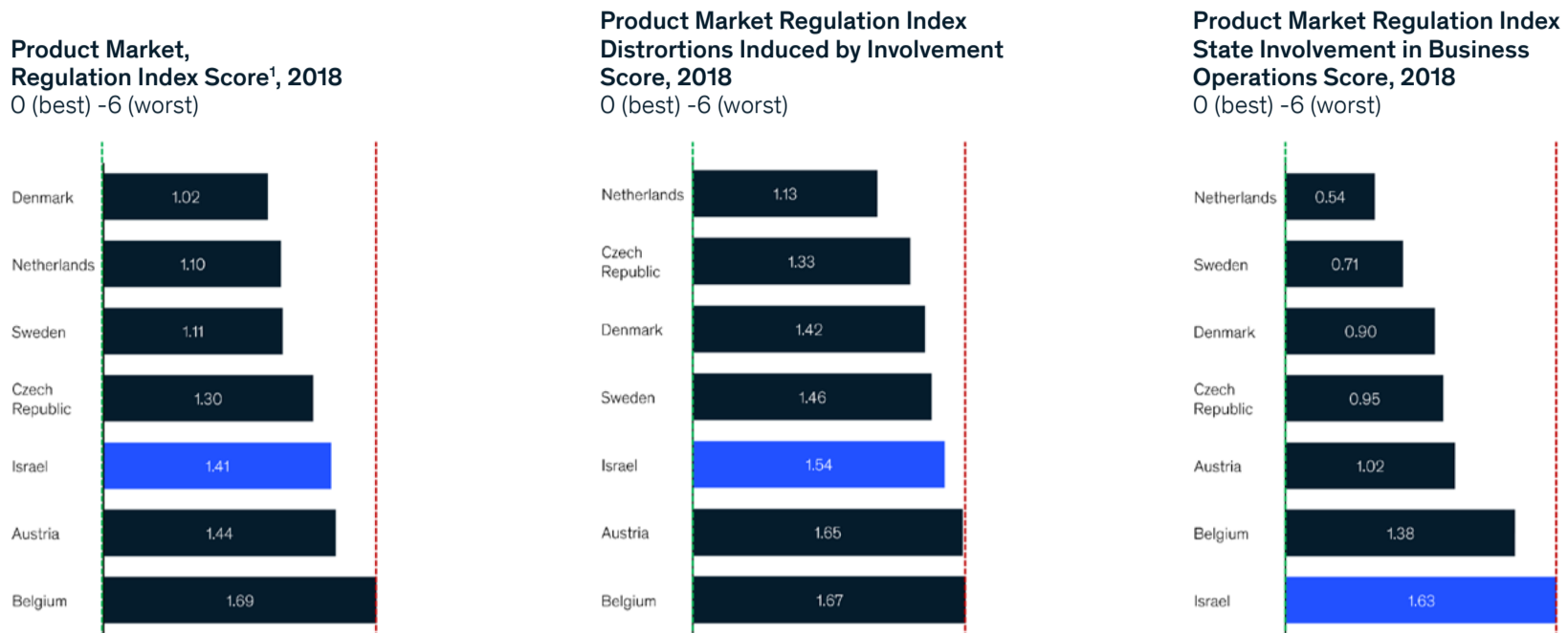
<sup>57</sup> Guy Mor, Gaps and fundamental problems in the regulatory system in Israel: Looking towards a smart regulation policy, 2021.

<sup>58</sup> The Product Market Regulation (PMR) score is made up of distortions induced by state involvement and barriers to domestic and foreign entry; within state involvement, one key subindex is involvement in business operations.

<sup>59</sup> For example, see the Reform in Business Licensing, Government Regulation Website.

Exhibit 13

**Israel scores less well than peers on measures of product market regulation relating to state involvement in business operations**



1. Based on the OECD Product Market Regulation Index, an evidence-based tool that collects information on product market regulations  
 Source: OECD Sector indicators

Israel's bureaucracy is marked down in these indexes for both the quantity of regulation and its quality. That is seen by the OECD as regulation that is ineffective, outdated, or redundant. Israel has a fragmented regulatory system, with an estimated 200 regulatory bodies.<sup>60</sup> This can complicate the adoption and implementation of effective regulation and make it harder for businesses to both comply and operate efficiently.<sup>61</sup> Israel also lacks a structured ex-post evaluation mechanism that would examine the efficiency of Israel's existing regulation.<sup>62</sup>

**Steps Israel could consider taking to alter protectionism and regulation**

Israeli decision makers have a range of policy options available as they look to make the country more competitive. In this section, we examine some of the most significant possible opportunities, based on our analysis.

**Reducing foreign trade barriers.** Israel is aware of its high level of trade barriers and recently began implementing an import reform that aims to increase access to foreign trade and increase competition.<sup>63</sup> For example, companies no longer need to apply for an Israeli safety standard when an internationally recognized one has already been granted.<sup>64</sup> Among other measures, the Ministry of Finance and Ministry of Agriculture recently signed a warrant to reduce tariffs on several types of fruits and vegetables.<sup>65</sup>

While import reform is an important step, many products are not included in the scope, while others will be included only in later years. Israel has capacity to push further and faster, for example by considering adopting international standards and mechanisms for import and applying these to a broader range of products. Import reform will likely increase growth; a study on 50 years of economic growth in more than 100 countries, for example, found that countries that liberalized trade saw an increased rate of economic growth by 1.5 percentage points.<sup>66</sup> While other literature has noted the sometimes negative employment effects of liberalized trade, particularly in advanced economies,<sup>67</sup> coupled with the measures we discuss later about investment in human capital, such dislocations in labor markets can often be managed and can ultimately lead to better, higher-paying jobs for more people.

<sup>60</sup> *Strengthening capacities and institutions for co-ordinating regulatory policy and measuring regulatory burdens*, OECD, 2017.  
<sup>61</sup> For example, several agencies that regulate the same issues, like construction or business licensing. See Guy Mor, *Gaps and fundamental problems in the regulatory system in Israel: Looking towards a smart regulation policy*, 2021.  
<sup>62</sup> Ibid.  
<sup>63</sup> Decree on the customs tariff and purchasing tax on goods, amendment number 20 and temporary order number 14, 2022.  
<sup>64</sup> Ibid.  
<sup>65</sup> Decree on the customs tariff and purchasing tax on goods, amendment number 20 and temporary order number 14, 2022.  
<sup>66</sup> Romain Wacziarg and Karen Horn Welch, "Trade liberalization and growth: New evidence," *The World Bank Economic Review*, 2008.  
<sup>67</sup> See, for example, Eddy Lee, *Trade Liberalization and Employment*, *United Nations Department of Economic and Social Affairs*, October, 2005.

**Adopting a transformation mindset rather than a reform-only mindset.** Israel has taken steps to address its regulatory burden, including in 2014, when the government committed to lowering the quantity of regulation across government ministries.<sup>68</sup> This effort was expanded in 2018, following an OECD report on the matter, and in 2021.<sup>69</sup>

As in many other countries, reducing regulation has proven more difficult than expected.<sup>70</sup> In 2021, Israel legislated a regulation law to improve all aspects of regulation and align Israel with international standards, based on effective cost-benefit and efficiency analysis. One key aspect of this reform was the foundation of a Regulation Authority, which is intended to be a comprehensive governmental agency that will streamline regulations. This could help Israel create more efficient regulatory processes that overcome fragmentation. This organization is being set up at the time of writing, and a chair for the authority has been appointed by the Israeli government.<sup>71</sup> The success of this new authority will be determined over time; international best practice suggests some paths to bringing about more enduring change (see Box 3, “Successful regulatory reform: An example from Canada”).

<sup>68</sup> Israeli Government resolution number 2118, October 2014.

<sup>69</sup> Israeli Government resolution number 4398, December 2018.

<sup>70</sup> Government resolution on smart regulation implementation of OECD recommendations to the government from July 2018, RIA on Regulation Policy in Israel, Prime Minister’s Office.

<sup>71</sup> Israeli Government Resolution number 1697, June 2022.

### Box 3

## Successful regulatory transformation: An example from Canada

The Canadian province of British Columbia (BC) in 2001 founded a Deregulation Ministry as part of a full transformation process to reduce red tape and bureaucratic burdens. Between 2001 and 2015, BC reduced 43 percent of its regulatory requirements. The province significantly improved its economic performance, including surpassing Canada’s real GDP growth, raising disposable income from below to above average, and increasing business incorporations. While other factors were also at play, the improvements are commonly attributed in part to the reduction of red tape.

Key learnings from this reform, as analyzed in a study conducted by the Mercatus Research Center at George Mason University, include the following.<sup>1</sup>

**Defining clear measures.** BC chose to count regulatory requirements defined as: an action, step, information requirement, or any other conduct required by a regulation. The method is simple to apply and quantify while not being oversimplified and susceptible to manipulation. However, it does not always capture the full scope of the costs associated with a regulation. As one option, Israel’s decision makers could consider using a standard cross-offices unit of measurement that would be simple to implement across the board.

**Creating a database.** Every ministry in BC counted regulations, contributing to a preliminary list of 382,139 regulatory requirements. In Israel, one crucial part of the planned reform was the foundation of a regulatory database.<sup>2</sup>

**Defining clear goals.** In 2001, BC’s newly elected premier appointed the first minister of deregulation and defined a clear destination of reducing regulation by one-third in three years. In the early years of the transformation, the BC government published quarterly updates of

regulation reduction. In 2015, Israel implemented a five-year plan with a goal of reducing 25 percent of existing regulation costs.<sup>3</sup> However, it is estimated that 23 percent of the recommendations adopted in the years 2015–19 were implemented in full.<sup>4</sup> One lesson from BC is to set clear, time-restricted, measurable goals, which can be monitored and implemented successfully.

**Defining clear rules.** At the first stage of the BC reform, two regulation requirements had to be eliminated for each new regulation enacted. Later, the ratio was five to one until eventually stabilizing at a one-to-one ratio. In 2015, Canada adopted a one-to-one policy, becoming one of the first countries in the world to have a main-legislation hard cap on regulations. Israel has not defined such a consistent mechanism. The new regulation reform does require regulators to provide explanations for existing regulations but does not force them strictly to reduce requirements.

**Creating a streamlined decentralized process.** While BC has a minister in charge of deregulation, it used a decentralized approach, with offices and ministries leading their own regulation reduction. Ministries were in charge not only of regulatory counts but also of identifying how to achieve three-year goals, with only guidance and consultation provided by the deregulation office. Offices were also in charge of complying with the required regulation criteria and cap. Thus, for each new regulation, a regulator needed to fill out a form explaining how such regulation was in compliance with the criteria for regulation, and which regulation requirements would be eliminated instead. The regulation authority in Israel could consider similarly harnessing the capabilities of regulators and integrate a holistic transformation, without creating a centralized bottleneck.

<sup>1</sup> *Cutting red tape in Canada: A regulatory reform model for the United States*, Mercatus Research, 2015.

<sup>2</sup> *Organizing regulation*, Ministry of Finance, 2021.

<sup>3</sup> “In detail - the five-year plan,” Government Regulation website.

<sup>4</sup> *A national plan for regulation policy: Recommendations of the inter-ministerial team for smart regulation*, 2021.

## Boosting digital capabilities is critical for business productivity

Another barrier to higher productivity for the Israeli business-enabling environment is relatively low levels of digitization. This is in striking contrast to the advanced technology adoption of the export-focused high-tech sector. This low level of digitization is, in part, due to a lack of national ICT infrastructure (as we describe in the next chapter).

Digitization can be divided into three elements: business digitization; business-oriented governmental digitization; and citizen-oriented governmental digitization. While the latter is an important part of digitization efforts, with significant advancements in Israel in recent years, such digitization is not directly linked to business productivity and therefore lies outside the scope of this report.

### Israel's business-oriented government digitization capabilities are comparatively low but rising

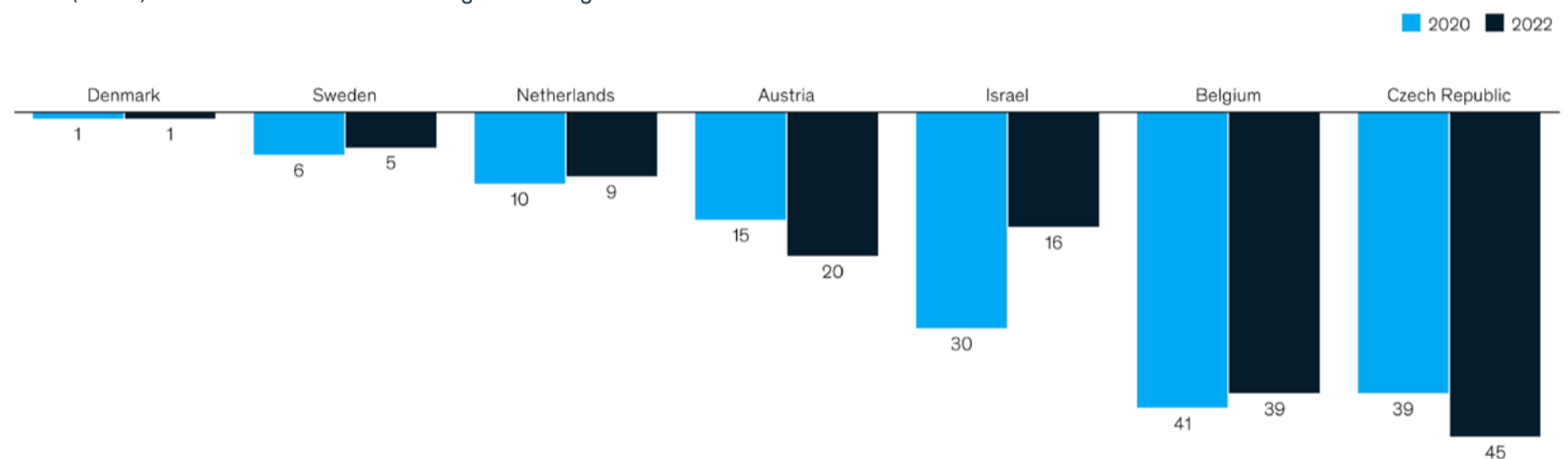
Israel's digital governmental services are improving but still rank lower than those of some peers.<sup>72</sup> In 2020, only 59 percent of businesses and 49 percent of personal users were estimated to use digital governmental services.<sup>73</sup> In comparison, both South Korea and New Zealand are above 90 percent of business usage of digital government services. Personal usage of governmental services is increasing: the UN ranks Israel below best-in-class peers in its e-government index, which includes elements relating to business-facing government digitization, although it has risen in the ranking and for 2022 was ahead of Austria, Belgium, and the Czech Republic (Exhibit 14), illustrating Israel's ability to achieve higher levels of digital adoption.<sup>74</sup>

Exhibit 14

#### How Israel compares to peers at e-government

##### UN e-government Index

Rank (of 193) - A lower number reflects a higher ranking



Source: UN E-government index – 2020 and 2022

### Closing the digital gap by investing in e-government

One possible way to address Israel's bureaucratic burden is to fully digitize more procedures and services. Israel is aware of the need for digitization and working toward improvement; among other steps, in 2013 it decided to found the Digital Israel HQ.<sup>75</sup> The HQ mainly focuses on government-citizen initiatives. In addition, Israel has made serious strides in government-related digitization with the Nimbus project, which will enable moving the digital infrastructure of government ministries to the cloud.<sup>76</sup> This will likely enable higher digitization of government and encourage businesses that interact with the government to use cloud technologies, as well as grow the talent base proficient in cloud applications. At least for now, however, a comparison of recent international indexes indicates that the impact of the Israeli efforts on businesses is still to be seen, even during the COVID-19 pandemic, as illustrated by data on personal and business use of digital government services in 2020.<sup>77</sup> Successful digitization of government service goes hand in hand with simplification of regulation and processes, as government-business digitization initiatives would require a rethinking of business-related regulatory processes.

<sup>72</sup> CBS digital indicators in Israel.

<sup>73</sup> Ibid. It is possible that in light of the circumstances in 2020, including the growing need of private users and businesses to interact with government websites, there was growth in the use of online government services during that year that does not reflect the reality today, and that the rate today is actually lower.

<sup>74</sup> UN E-Government Index, 2020 and 2022.

<sup>75</sup> Digital Israel website, The national initiative: Digital Israel.

<sup>76</sup> Nimbus Israel website: About Project Nimbus.

<sup>77</sup> CBS digital indicators in Israel.

One successful model is to be found in Estonia (see Box 4, “Estonia’s e-government performance could hold valuable lesson for Israel”).<sup>78</sup> Estonia has had a successful e-government program and in addition is today considered a success in digital business building; in recent years.

Israel could consider adopting capabilities found in Estonia that significantly improve its business efficiency. They include business registration, e-tax and e-banking options, and other digital commerce options. Such digitization requires a structured, ambitious, holistic, and non-incremental transformation process, which combines public-sector and private-sector efforts. A similar transformational effort could make Israel’s business environment more efficient and competitive and thus significantly increase business productivity and growth.

<sup>78</sup> Axel Domeyer, Solveigh Hieronimus, Julia Klier, and Thomas Weber, “Government data management for the digital age,” McKinsey, September 20, 2021.

#### Box 4

## Estonia’s e-government performance could hold valuable lessons for Israel

In 1991, Estonia, one of the smallest nations in Europe, had very little public infrastructure and virtually no commercial activity. It needed to build high-functioning government services for residents, businesses, and the public sector. Estonia’s government doubled down on technology, investing in efforts to bring services and citizens online. In 2003, it launched the first version of its e-government portal, which offered secure online access to a handful of government services. Today, Estonia’s residents can vote, pay taxes, and access more than 160 services online, including business registration. Private-sector entities, such as banks and telecommunications companies, also offer services through the state online portal.<sup>1</sup>

In the area of business efficiency, it takes only three minutes to file taxes online, and 98 percent of all tax declarations are filed online; 98 percent of companies are established online, and 99 percent of banking transactions are done online.<sup>2</sup>

Estonia’s transformation process can be assessed using a five-task framework for digital public services:<sup>3</sup>

**1) Setting a clear digital strategy and targets:** In 1996, Estonia launched the Tiger Leap Initiative, an IT infrastructure development program designed to catch up with the West by establishing IT facilities

and capabilities, thus setting a clear goal for digital improvement.

**2) Providing common IT platforms:** In 2001, Estonia launched X-road, a national integration platform destined to reduce data costs and data leaks.

**3) Defining technical standards:** Estonia was required to improve its cybersecurity capabilities after a cyberattack conducted against it in 2007, requiring international assistance. Due to that, Estonia became a leader in cybersecurity.

**4) Facilitating change through legislation:** As early as 1994, Estonia created the first draft of the Principles of Estonian Information Policy for parliament, describing the societal goals to be achieved with digitization, such as supporting a competitive economy and speeding up innovation; four years later, a strategic outline was drafted and ratified by the parliament.

**5) Incubating pilot projects and building critical skills:** In 1996, Estonia established e-banking services; in 2000 an e-tax board and m-Parking; in 2002 an e-ID; and in 2005 i-voting services. This shows that despite having a strategic outlook, Estonia incubated “lighthouse projects,” strengthening internal capabilities in the process.

<sup>1</sup> “Innovation in government: India and Estonia,” *McKinsey Quarterly*, 2012.

<sup>2</sup> e-Estonia Guide.

<sup>3</sup> e-Estonia website, Facts and Figures, e-Estonia Story.

## Providing incentives for businesses to digitize

A general digital transformation of Israel's business environment is required to improve the ease of doing business and, accordingly, productivity. Alongside this, and even prior to a complete digital transformation, Israel could do more to encourage businesses to digitize their operations. Such digitization services include social media presence, enterprise resource planning software, customer relationship management software, cloud computing, and more. Currently, Israel has only a few instruments designed to promote digital uptake by businesses.<sup>79</sup>

Going forward, Israel could potentially consider using both direct and indirect financial support to encourage businesses (especially small and medium-size businesses) to digitize, alongside nonfinancial measures and enabling regulation, as analyzed by the OECD Digital Economy Outlook.<sup>80</sup>

**Direct or indirect financial support**, including subsidies for certain digital technologies or tax credits for ICT investment, as implemented for example in the United Kingdom<sup>81</sup> and Japan.

**In nonfinancial measures**, Australia, Sweden, and Singapore grant nonfinancial support by providing business advice and services; Norway introduces relevant training to business. Some actions can provide support by harnessing existing capabilities. For example, Portugal encourages sharing experiences while advertising successful firms as “digital champions,” as well as mentoring initiatives.

**Regulations and statutory guidance** are instruments that allow a country to create an appropriate legal atmosphere for change. For example, Austria and Norway require suppliers of public-sector organizations to use electronic invoices. Outside of this example, almost all OECD countries have policies to promote the use of digital technologies by businesses.

## Israeli businesses have a modernizing role to play

Israeli government policy can do much to make the economy more competitive, but private-sector initiatives are also essential. Companies can go a long way to improve their own productivity performance. Possible measures include digitizing business activities, investing in employee skills, and increasing the use of professional, merit-based management practices (detailed in chapter 4). These suggestions would not only increase overall growth and productivity if widely adopted, but would also help to decrease the divergence in Israel's two-speed economy if adopted by businesses in sectors currently burdened by lower productivity.

### Israeli businesses can benefit from digital adoption and deployment

For all the country's high-tech renown, Israeli businesses on the whole are less digitized than peers and don't sufficiently implement digital capabilities that could improve their productivity. Exhibit 15 shows that Israeli businesses underperform compared to peer average in using business technologies—underperformance that is cross-sectoral.

**“Companies can go a long way to improve their own productivity performance.”**

---

<sup>79</sup> OECD Digital Economy Outlook 2020, OECD, 2020.

<sup>80</sup> Ibid.

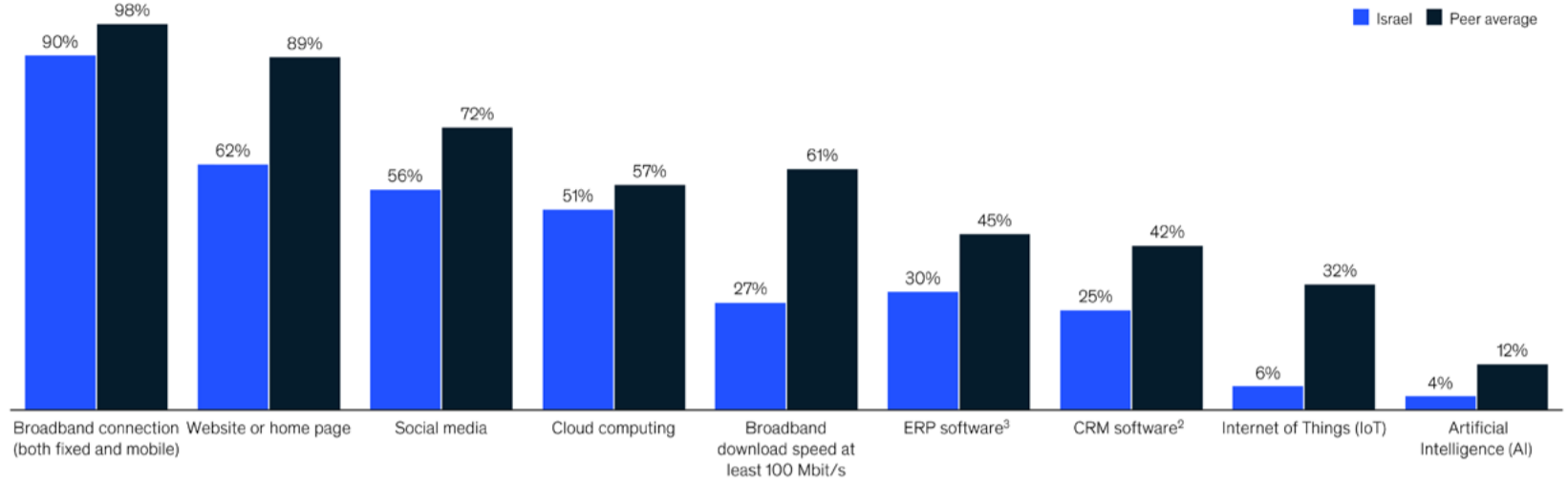
<sup>81</sup> UK Department for Business, Energy & Industrial Strategy.

Exhibit 15

**Israeli businesses have low levels of digital adoption compared to peers**

**Percent of business using select digital technologies, 2019-21<sup>1</sup>**

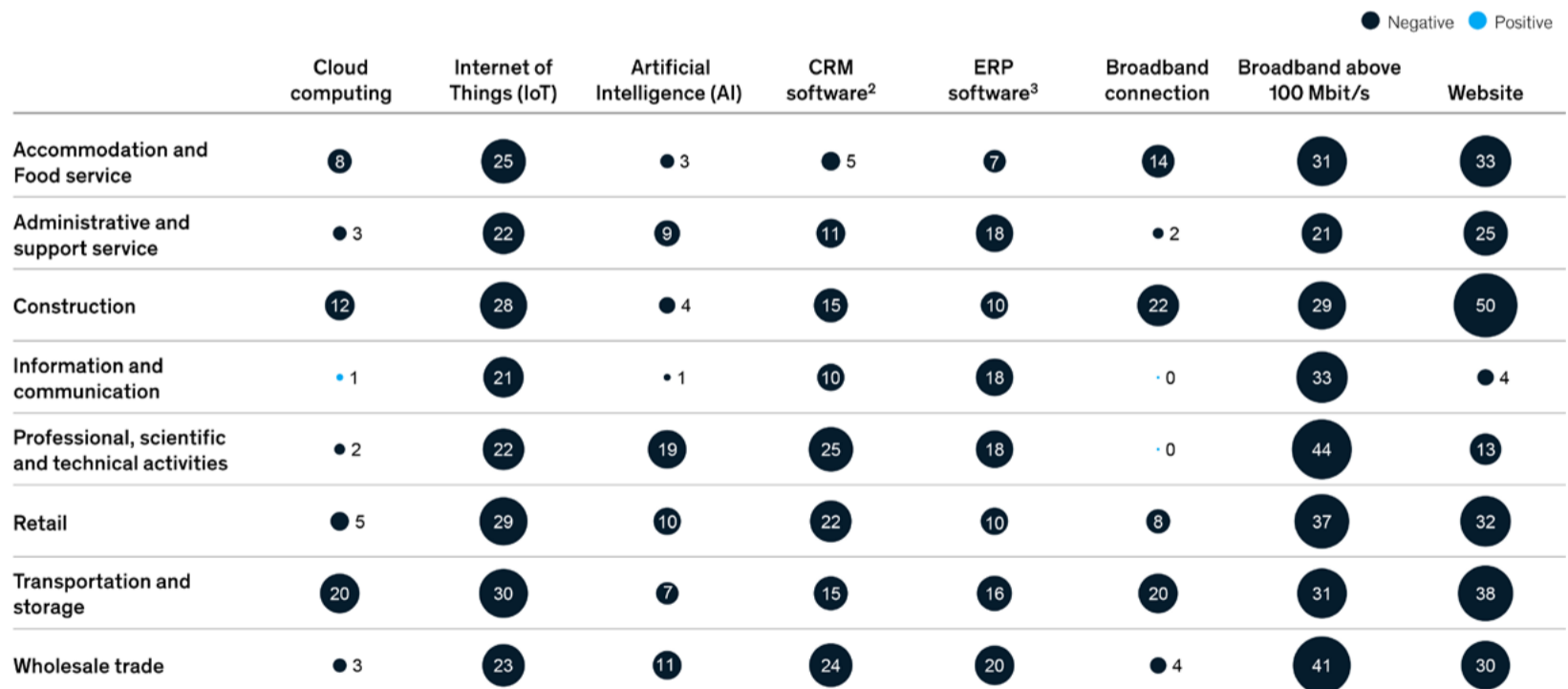
% of business, sample includes business with over 10 employees



1. Latest year data is available  
 2. CRM - Customer Relationship Management  
 3. ERP - Enterprise Resource Planning  
 Source: OECD ICT Access and Usage by Businesses database

**Difference between Israel and peers in businesses using select technologies, 2018-21<sup>1</sup>**

Percentage point difference, sample includes business with over 10 employees



1. Latest year data is available  
 2. CRM - Customer Relationship Management  
 3. ERP - Enterprise Resource Planning  
 Source: OECD ICT Access and Usage by Businesses database, team analysis

## Israeli businesses' lack of technology adoption is evident across sectors.<sup>82</sup>

Improving business digitization across the board in Israel would increase national productivity—and also boost these companies' value proposition to customers as well as their own profitability. Successful transformations typically involve multiple functions within the business and include deploying a variety of technologies, such as cloud-based services, mobile technologies, data analytics, data architecture, Internet of Things, artificial intelligence tools, and robotic process automation.<sup>83</sup>

However, successful digital transformations can be complex and don't always meet all their goals.<sup>84</sup> Best practice globally highlights some important steps to follow. They include setting clear priorities, investing in talent, committing an appropriate level of resources, adopting agile management practices, and empowering employees.<sup>85</sup> A focus on technology and data is critical, with management constantly seeking ways to apply technology to business issues, monitoring data usage, and making sure organizational realities allow technology and business teams to collaborate closely. Promoting digital adoption across the entire organization should also be a goal of a digital business transformation, led by management.

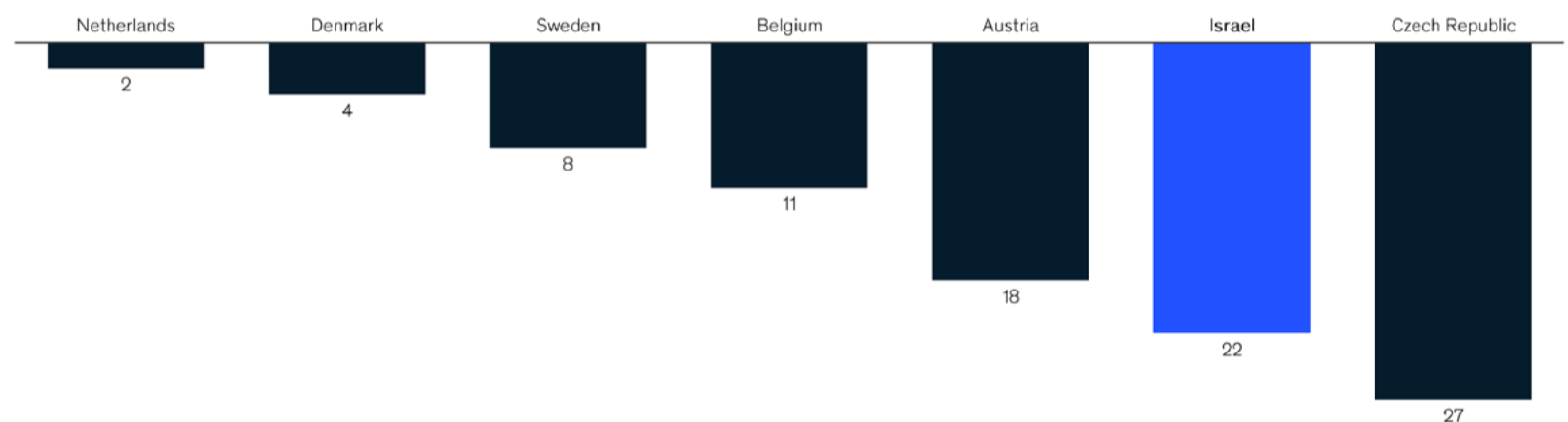
## Focusing on improved business management

A McKinsey study on management conducted with the Centre for Economic Performance at the London School of Economics in 2007 and updated in 2014 examines roughly 14,000 organizations in more than 30 countries.<sup>86</sup> The study shows that the core elements of management can be assessed and scored—and that well-managed firms have higher productivity, market value, and growth, as well as greater resilience in the face of adverse conditions, such as recessions. The World Management Survey (WMS) does not survey firms in Israel. However, some indication of the quality of Israeli management practices can be found as part of the World Economic Forum's Global Competitiveness Report, indicating that Israel is ranked relatively low in management practices compared to peers (Exhibit 16), though its rank of 22 is still relatively high when compared to most other countries.<sup>87</sup>

Exhibit 16

### Israeli business can improve on management practices

WEF Competitiveness index,<sup>1</sup> "Reliance on professional management" sub-index, 2019,  
Rank (of 141) – A lower number reflects a higher ranking



1. The WEF Global Competitiveness Report Provides insight into the business operating environment and competitiveness of over 140 economies. The management practices sub-index is based on the question: In your country, who holds senior management positions in companies? [1 = usually relatives or friends without regard to merit; 7 = mostly professional managers chosen for merit and qualifications]

Source: WEF Competitiveness index

Another potential indicator of management quality is the degree of international experience of Israel's managers. Of the top 100 companies by market capitalization in Israel, only about 20 to 25 percent of CEOs were found to have worked in an international firm, and similarly only about 25 percent had an advanced degree from outside of Israel, including an MBA, a doctorate, or an MS.<sup>88</sup> While international experience doesn't by itself determine the quality of management skills, international management norms and experience are frequently useful benchmarks and can aid in best-in-class management. Other elements of international business connectivity, such as exposure to international capital and investors, could also help Israeli managers adopt international management norms and practices.

<sup>82</sup> OECD ICT Access and Usage by Businesses database, team analysis.

<sup>83</sup> See, for example, *Unlocking success in digital transformations*, McKinsey, October 29, 2018.

<sup>84</sup> As detailed, for example, in Eric Lamarre, Kate Smaje, and Rodney Zempel, "The digital value guardian: CEOs and digital transformations," McKinsey, December 20, 2021; Jacques Bughin, Jonathan Deakin, and Barbara O'Beirne, "Digital transformation: Improving the odds of success," *McKinsey Quarterly*, 2019.

<sup>85</sup> Ibid.

<sup>86</sup> *Management practice and productivity: Why they matter*, Centre for Economic Performance, London School of Economics, 2007; John Dowdy and John van Reenan, "Why management matters for productivity," *McKinsey Quarterly*, 2014.

<sup>87</sup> Reliance on professional management sub-index in the WEF Global Competitiveness Report, which provides insight into the business operating environment and competitiveness of 141 economies. This sub-index contains a survey based on the question "In your country, who holds senior management positions in companies?" Responses range from 1 = "usually relatives or friends without regard to merit" to 7 = "mostly professional managers chosen for merit and qualifications."

<sup>88</sup> Capital IQ, LinkedIn, company websites; out of top 100 companies, data was lacking for about 15 CEOs.



# 3. Closing gaps in Israel's public infrastructure and private capital

Underinvestment in public infrastructure and private capital stock have been detrimental to Israel's productivity growth.<sup>89</sup> Significant investment would be needed to close the gap to peer economies. Doing so could enable the country to bolster growth and future prosperity and evolve its two-speed economy into a more modern and productive one across sectors.

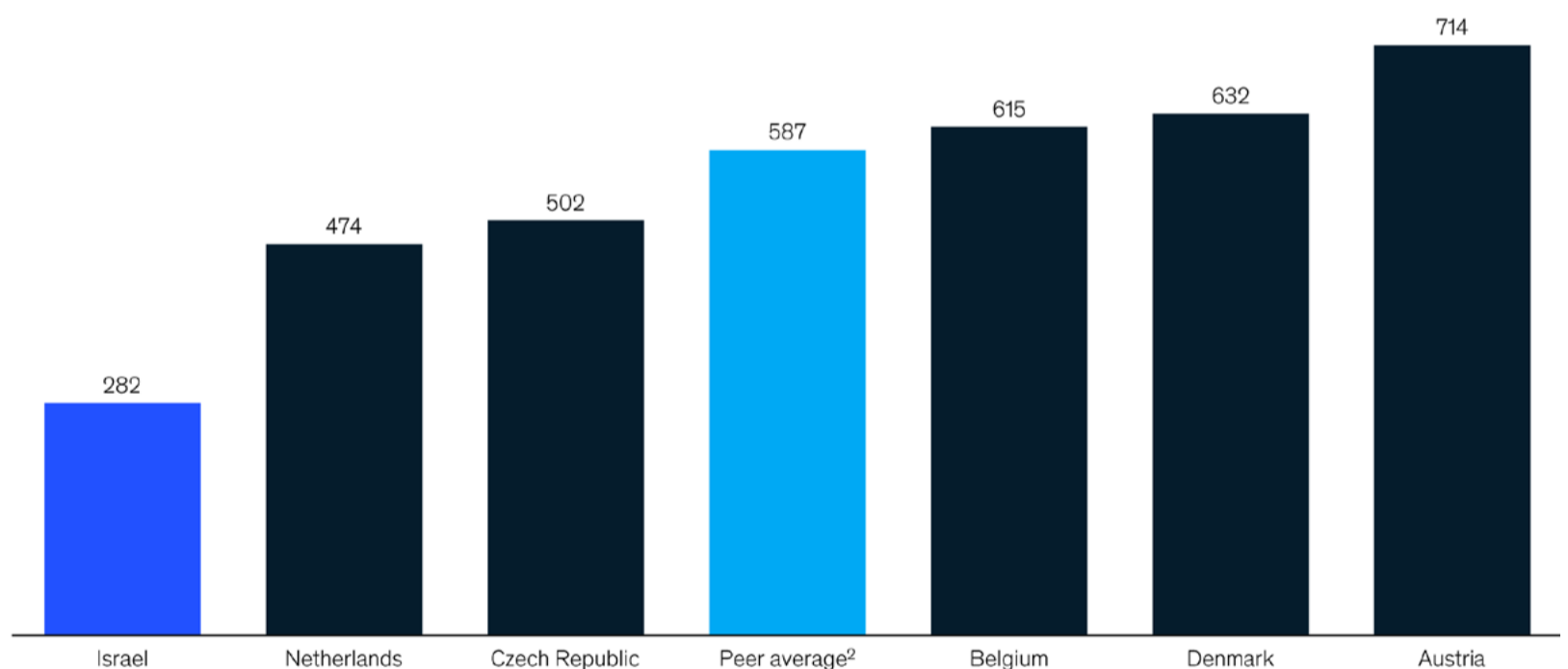
Key metrics for these gaps are to be found in measurements of Israel's gross capital stock.<sup>90</sup> Israel's per-employee figure is less than half that of the country's OECD peers in purchasing power terms, at just over \$280,000 per employee compared with about \$590,000 for peers (Exhibit 17).<sup>91</sup> In terms of GDP, a similar picture emerges. Israel's gross total fixed assets<sup>92</sup> amount to 331 percent of GDP, compared to 560 percent in peers. In net fixed assets,<sup>93</sup> Israel's stock is 206 percent of GDP versus 332 percent for peers.<sup>94</sup>

Exhibit 17

## Israel's capital stock is less than half the level in peer OECD countries

### Gross capital stock per employee, 2019<sup>1</sup>

Thousands PPP international dollars per employee



1. Not all relevant peers are represented due to data availability issues

2. Unweighted

Source: OECD, team analysis

<sup>89</sup> *Public investments and structural reform to increase productivity and growth in the economy*, Aaron Institute for Economic Policy, 2022.

<sup>90</sup> The cumulative flow of investments.

<sup>91</sup> Analysis of OECD fixed assets and employment data, 2019, excluding Sweden due to data availability.

<sup>92</sup> Defined in national accounts as nonfinancial produced assets that are used repeatedly or continuously in production for more than one year.

<sup>93</sup> Assets excluding depreciation.

<sup>94</sup> Analysis of OECD fixed assets data, 2019, excluding Sweden due to data availability.

## Israel has a public infrastructure gap to peers, especially in transportation and digital infrastructure

Public infrastructure is an important enabler of economic activity. Extensive research shows that public infrastructure projects generate high rates of return.<sup>95</sup> Israel is behind peers on the development of public infrastructure, mainly in transportation and digital infrastructure.<sup>96</sup>

Prior McKinsey research estimated that Israel's public infrastructure stock—which for the purpose of this report includes transportation, energy, telecom, and water—amounted to about 50 percent of GDP, as of 2015.<sup>97</sup> That compares with about 68 percent for OECD peers, as of 2015.<sup>98</sup> This gap has since widened due to GDP and population growth in Israel that is higher than investments net of depreciation. Building on our previous findings, we estimate that Israel's updated public infrastructure stock is now less than 45 percent of GDP, compared with about 66 percent for peers, with post-COVID-19 infrastructure investment packages in developed countries likely increasing this gap. This change indicates that investments in Israel have been less than would have been necessary to maintain the relative amount of public infrastructure stock and certainly not grow it. This implies that Israel's infrastructure is constraining economic growth and reducing living standards for its growing population. Israelis feel this as they travel to work every day.

According to our estimates, in order to maintain the current level of public infrastructure stock relative to GDP as GDP expands an investment of 2.9 percent of GDP is required; however, closing the public infrastructure gap could require investments of about 4 percent to 5 percent of GDP annually to 2035, compared to 2.5 percent to 3 percent today, along with careful planning and improved execution of infrastructure projects.

### The congestion from Israel's lacking transportation infrastructure saps productivity

Israel has a transportation infrastructure problem that creates congestion and leads to lost hours worked, lost productivity, and loss of economic activity as well as many losses not captured in GDP, such as lost leisure time and poorer bonds within and between families and communities. According to various estimates, Israel loses 2 percent to 3 percent of GDP due to traffic congestion, considerably more than its OECD peers (Exhibit 18).<sup>99</sup>

As well as the fatigue and frustration resulting from congestion, which on its own can decrease productivity, accidents can lead to lost lives and health-related costs, and supply chains are lengthier and more challenging, adding to costs and reducing the quality and innovativeness of the inputs used by businesses to produce their output. Productive economic opportunities could be passed over due to congestion-related concerns, with businesses able to service fewer customers at a given time and individuals making employment choices based on geographical closeness rather than on the best fit to their skills and aspirations.

**“Closing the public infrastructure gap could require investments of about 4 percent to 5 percent of GDP annually to 2035.”**

<sup>95</sup> See Jean-Marc Fournier, *The positive effect of public investment on potential growth*, OECD Economics Department Working Papers number 1347, November 2016; *Infrastructure at the crossroad: Lessons from 20 years of World Bank experience*, World Bank, 2006; *Strategic infrastructure: Steps to prioritize and deliver infrastructure effectively and efficiently*, World Economic Forum, 2012; and *Four ways governments can get the most out of their infrastructure projects*, McKinsey Global Institute, 2020. A range of international organizations have attempted to quantify the socio-economic return on investment from public infrastructure investment, leveraging different methodologies and addressing economies at different levels of development. These studies consistently suggest substantial returns, largely aligned with McKinsey's Global Institute independent estimate of ~20%.

<sup>96</sup> One study estimates that insufficient public capital and infrastructure accounts for 29 percent of Israel's productivity gap to peer countries (for a slightly different group of peers). See *Public investments and structural reform to increase productivity and growth in the economy*, Aaron Institute for Economic Policy, 2022.

<sup>97</sup> Using Global Insight data up to 1991, yearly investment data since 1992 based on OECD and Israeli Ministry of Finance data, and assuming 2.5 percent yearly depreciation.

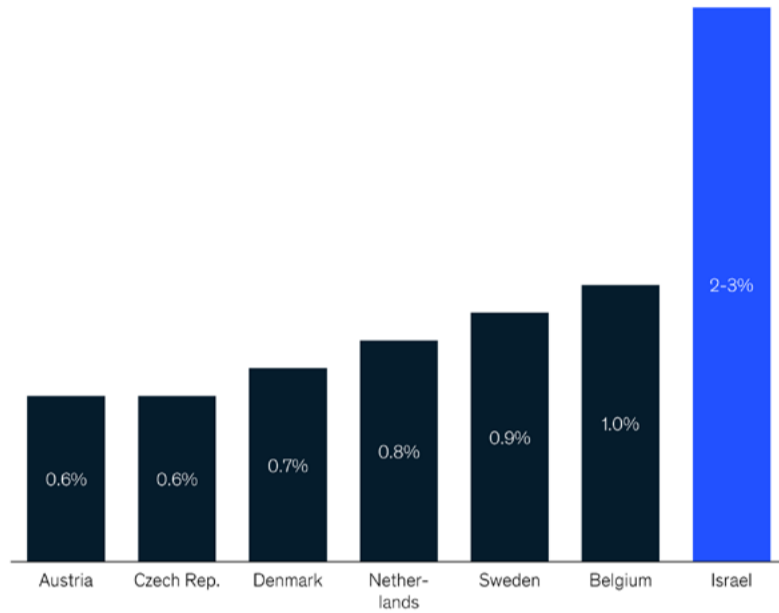
<sup>98</sup> The peers here differ from those we use for other analyses in this study to maintain consistency with previous McKinsey research. They are Austria, Belgium, Denmark, South Korea, and the United Kingdom.

<sup>99</sup> *Assessing incentives to reduce congestion in Israel*, OECD, 2019; *Measuring road congestion*, JRC Scientific and Policy Reports, European Commission, 2012; Proposed legislation for the Israeli 2021–22 state budget.

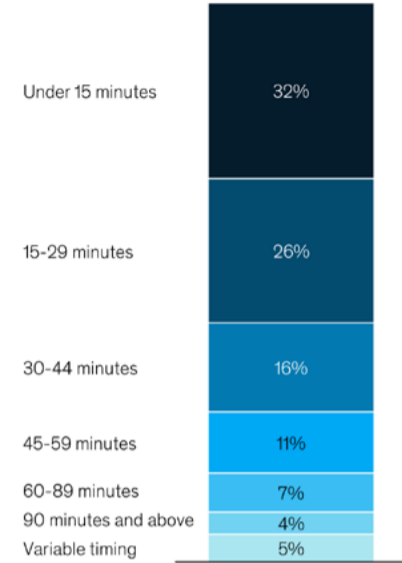
Exhibit 18

**Israel's traffic congestion takes a toll on economic output and productivity**

**GDP lost to congestion, estimates from various years**  
% of GDP



**Daily commute time in Israel, 2019**  
% of those surveyed in CBS Yearly Social survey



Source: OECD, Assessing Incentives to Reduce Congestion in Israel; European Commission, Measuring Road Congestion; Proposed legislation for the Israeli 2021-2022 state budget; Ministry of Transportation and the National Authority for Public Transportation, CBS; press reports

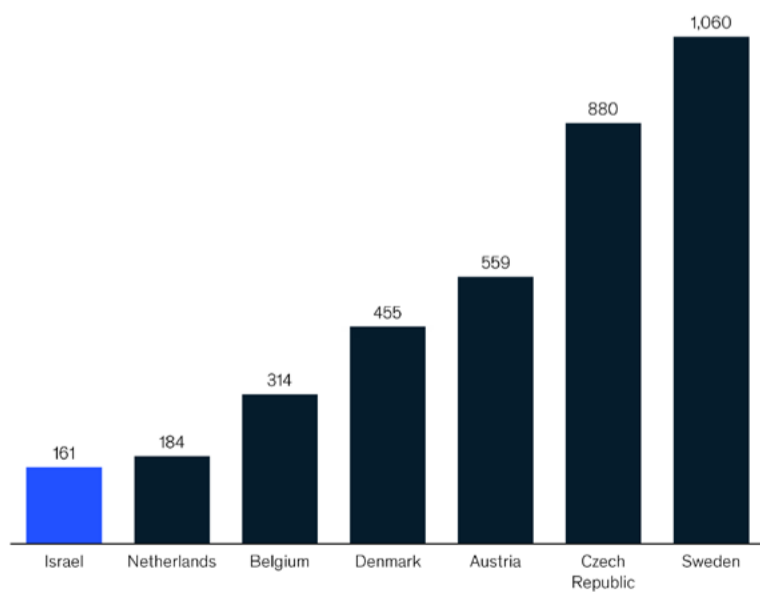
Moreover, growing use of private vehicles is expected to exacerbate the congestion problem. Israel still has fewer road motor vehicles per capita than peers, at 400 per 1,000 residents (compared to 675 for peers), but the share of passenger cars in total road motor vehicles is relatively high compared to peer countries and is growing (87 percent versus 76 percent for peers).<sup>100</sup> By contrast, the road network has not been expanding at the same pace: the number of kilometers traveled in motor vehicles rose by 73 percent between 2000 and 2019, while roads have grown just 21 percent in length and 51 percent in area.<sup>101</sup> The result of this widening gap is road traffic density that is higher than among peers.

While car use is rising, use of public transportation is low. The rail network is one example, with both rail infrastructure and rail usage much lower than for peers when adjusted for population size (Exhibit 19). Urban rail is currently limited to a single line in Jerusalem, although several other lines are in various stages of development in the Jerusalem and Tel Aviv areas.

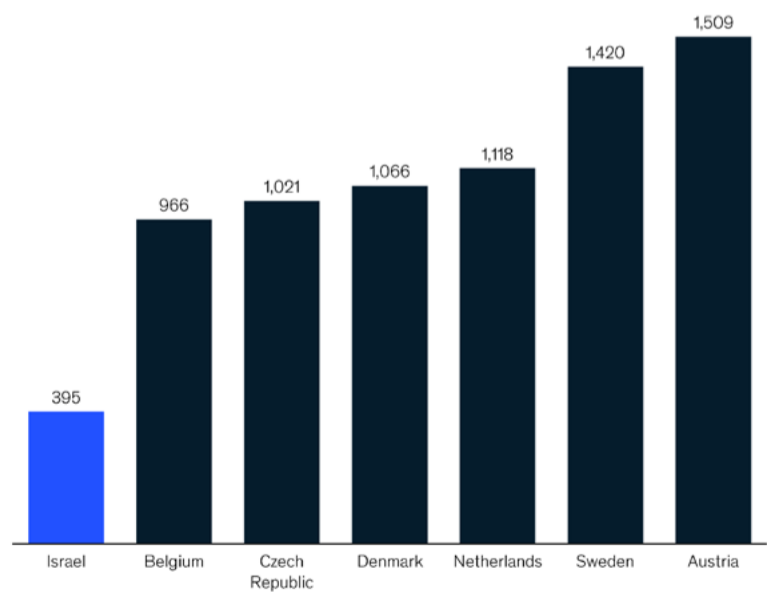
Exhibit 19

**Israel's rail network is limited, leaving much of the population underserved**

**Rail infrastructure per capita**  
KM of rail infrastructure per million in population



**Use of rail per capita**  
Passenger KM traveled via rail per capita (2019)



Source: For Israel – Israel CBS; for peers - European commission or local CBS; World Bank; team analysis

<sup>100</sup> OECD transportation data, 2020.

<sup>101</sup> CBS transportation data, 2000–19.

Use of public transportation is unequal. The Haredi population is by far the largest user of public transit, with 46 percent of all passenger kilometers traveled on public transit, compared to 20 percent in the Jewish non-Haredi population.<sup>102</sup> Higher public transport use by the Haredi population has been explained as due to lower household incomes; an average younger demographic mix; and fewer driving licenses per capita.<sup>103</sup> In contrast, the Arab population uses less public transport, with only a 17 percent usage rate.<sup>104</sup> This is likely a result of lower geographical access; for example, there is no Arab city or town with a direct rail connection (although two are planned in the coming years).<sup>105</sup> In addition to increased congestion, challenges in access to public transport services can lead to lower access to academic institutions, training programs, and high-productivity workplaces.

### Israel's digital infrastructure lags behind peers, with less broadband provision

Digital infrastructure is critical for productivity. Slow or unreliable internet connections can slow down internal processes; poor connectivity can prevent a channel of communication with customers; and lack of video conference capabilities can lead to higher complexity and slower networking.

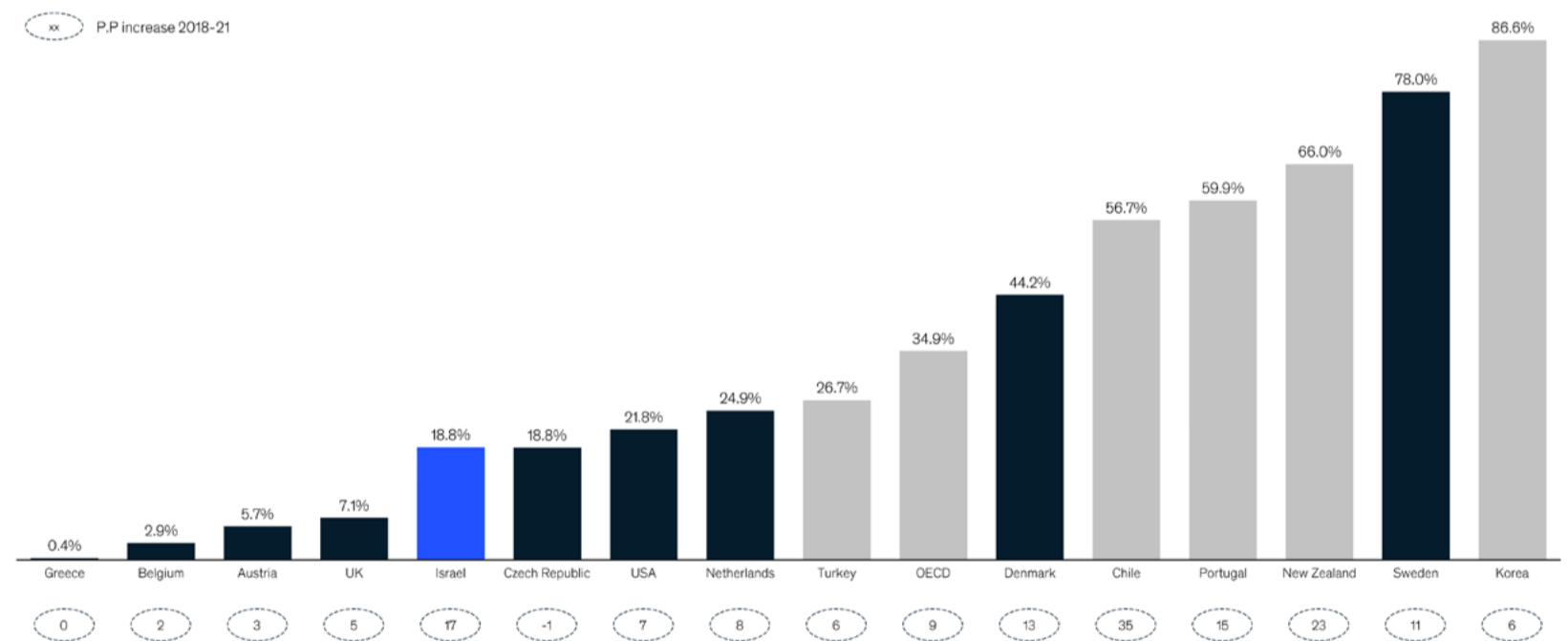
Israel lags behind on various metrics related to digital infrastructure. As of December 2021, only 19 percent of Israel's fixed broadband connections were fiber connections, compared to 78 percent in Sweden, 44 percent in Denmark, and 25 percent in the Netherlands (Exhibit 20). Israel reports only eight fixed broadband subscriptions at a speed of over 100 Mbps (Megabits per second) per 100 inhabitants, lower than all peers except Austria.<sup>106</sup> Israel is currently rolling out fiber connections across the country, and their share in total fixed broadband connections has risen by 17 percentage points since 2018, but there is still much progress to be made.<sup>107</sup>

Exhibit 20

### Despite significant improvements over the past few years, Israel's fiber optic penetration and overall connectivity are still relatively low

#### Share of fiber connections from total fixed broadband, December 2021

% of total fixed broadband connections



Source: OECD

**“The share of total fixed broadband connections in Israel has risen by 17 percentage points since 2018, but much progress can still be made.”**

<sup>102</sup> Analysis of CBS transportation habits survey, 2016–19. Excludes weekends.

<sup>103</sup> Yearbook of the Haredi society in Israel, Israel Democracy Institute, 2020.

<sup>104</sup> Analysis of CBS transportation habits survey, 2016–19. Excludes weekends.

<sup>105</sup> “A station is born: The train station on the eastern line will be called ‘Tira-Kochav Yair,’” Ministry of Transportation, 2021.

<sup>106</sup> OECD broadband statistics, 2021.

<sup>107</sup> Ibid.

The business implications of inadequate broadband infrastructure are significant. While Israel's large businesses have levels of broadband connections similar to peers', this rate is lower than peers' for small and medium-size businesses (Exhibit 21).<sup>108</sup> A survey of small and medium-size businesses by the Ministry of Economy found that only 47 percent of SMEs have issued a digital invoice, and only 40 percent use internet marketing platforms.<sup>109</sup>

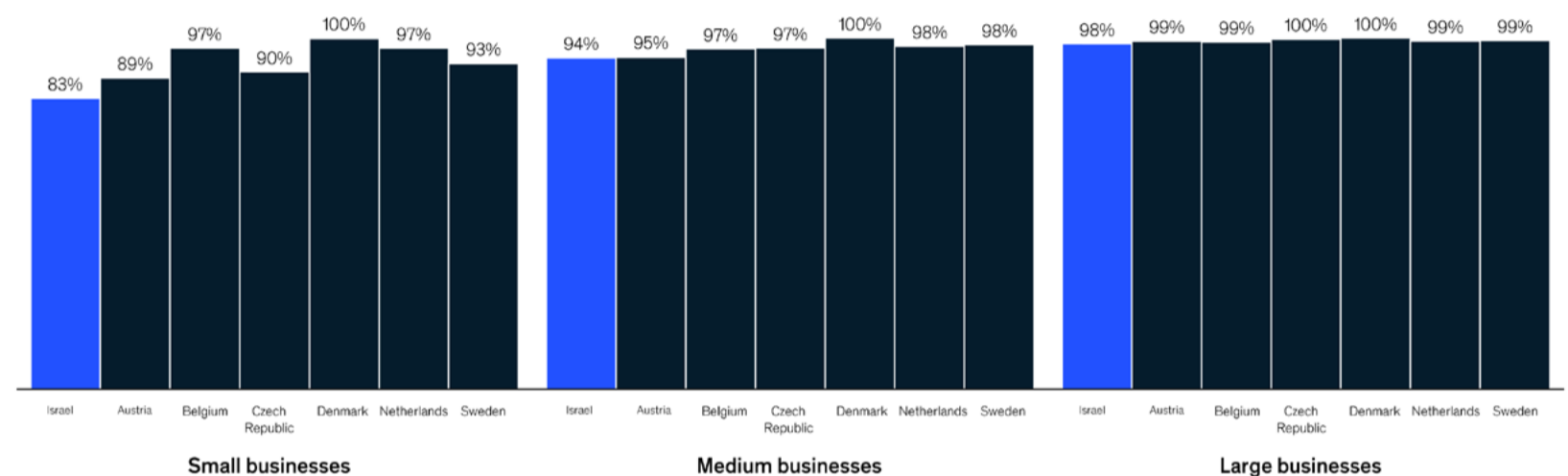
Arab and Haredi populations tend to have less access to the internet—or are less inclined to use it—for personal use as well as for work.<sup>110</sup>

Exhibit 21

**Small and medium-size businesses in Israel are not as well connected as businesses in peer countries**

**Businesses with a fixed broadband connection, 2021**

Percent of all businesses, by employment size class<sup>1</sup>



1. Includes businesses with 10 employees or more manufacturing and non-financial market services industries. Small business have 10-49 employees, medium have 50-249 employees, and large have 250+ employees. Data for Israel is for 2020.

Source: OECD

**We estimate that closing Israel's public infrastructure gap would take an investment of 4 percent to 5 percent of GDP annually to 2035**

In a 2017 analysis, we estimated Israel's required future investment in infrastructure through 2030. For this report, we have updated our model and extended the estimate to 2035.<sup>111</sup> The model calculates Israel's investment in public infrastructure across seven main categories: roads, rails, ports, and airports (together referred to as transportation), energy, water, and telecom.

We calculated Israel's needed investment according to three scenarios: first, that it would maintain its current infrastructure stock at just under 45 percent of GDP; second, that it would close 60 percent of its investment gap with peers, reaching a stock level greater than 57 percent of GDP; and third, that it would close 100 percent of the infrastructure gap to reach 66 percent of GDP, the level of its peers.

The results of our modeling suggest that simply sustaining its current stock level, accounting for depreciation and expected GDP growth, would require Israel to invest of about \$280 billion, or 2.9 percent of expected GDP over the period to 2035. Of this amount, about \$170 billion would be for transportation. By way of comparison, in recent years Israel has invested between 2.5 percent and 3 percent of GDP in this type of public infrastructure.

Closing 60 percent of the public infrastructure gap to peers would require Israel to invest about \$410 billion, or about 4.2 percent of its expected GDP over the period to 2035, of which about \$250 billion would go to transportation.

To fully close the infrastructure gap would take Israel investing about \$495 billion, or 5 percent of GDP over the period to 2035, of which about \$300 billion would go to transportation.<sup>112</sup> Optimal delivery would take careful management (see Box 5, "Beyond investment: Closing infrastructure gaps would take careful planning, management, and execution of infrastructure projects").

<sup>108</sup> Ibid.

<sup>109</sup> *Small and medium-sized business survey*, Agency for Small and Medium Businesses, April 2021.

<sup>110</sup> CBS Social Survey, 2019.

<sup>111</sup> McKinsey updated Israel infrastructure model, based on MGI and CBS data.

<sup>112</sup> The Aaron Institute for Economic Policy and Taub Center estimate public investment needs 6 percent of GDP, broadly in the same range as our estimates. The Bank of Israel recommends gradually increasing expenditure designed to stimulate growth by more than 3 percent of GDP by 2030.

## Beyond investment: Closing infrastructure gaps would take careful planning, management, and execution of infrastructure projects

While it is important to fund infrastructure projects, it is equally important to execute them well. Timely and effective delivery of projects is crucial to demonstrating to the public, to stakeholders in government, and to private partners that embarking on large infrastructure ventures is worthwhile. Israel will need to address several issues to enter this “virtuous cycle.” They include:

**Committing to strategy and pipeline.** Israel publishes an annual Infrastructure for Growth document detailing planned projects five years forward but lacks a detailed long-term strategy that is clearly communicated to all relevant authorities and stakeholders.<sup>1</sup> This leads to each authority developing its own independent development plan. There are different—and mostly independent—long-term plans for trains, urban development, and ports, for example.

Israel could consider resolving such issues by developing a national infrastructure strategy that includes long-term national development goals (for example, closing the productivity gap with peer countries and decreasing congestion to peer levels) and demand projections. This strategy could potentially cascade to more specific goals for development across all types of economic infrastructure and detail specific initiatives and projects in each sector. These could then be coordinated to form a holistic strategy. Israel could also consider creating a pipeline of prioritized projects that have already undergone detailed planning. Israel could also potentially benefit from methodical benefit-cost analysis to prioritize the projects.

**Ensuring effective delivery.** Israel experiences many barriers to efficient and quick delivery of funded projects, including a high number of stakeholders that must approve progression of various steps of each project; a tendency to limit the disruption created by construction by lengthening the delivery; a preference for cheaper

solutions that are less efficient in the long term; and limited incentives for many stakeholders, particularly the statutory authorities involved in infrastructure development, to quicken the pace of infrastructure projects and to adopt innovative solutions to make processes more efficient.<sup>2</sup>

Israel could consider defining a standard playbook of project execution measures. This could potentially include a range of planning and management elements such as standardized contract rules, data-driven systems to help ensure projects meet timelines, and fast-track processes for projects of national importance, an initiative now being tested as part of the Tel Aviv Metro planning.

**Addressing the lack of relevant skills, capabilities, and manpower.** The infrastructure gap is exacerbated by the lack of a workforce skilled in construction in Israel. Importing skilled construction workers is challenging, but hiring lower-productivity workers can lengthen the duration of a project. There is also a shortage of civil engineers, planners, and managers, likely due to higher earnings in other fields such as software engineering.<sup>3</sup> Moreover, engineering and construction firms cannot support a large number of projects at the same time. International companies who might otherwise seek to deliver such projects are often hesitant to enter Israel due to local regulation, low profit margins, and lack of a clear pipeline.<sup>4</sup>

Israel could work to increase infrastructure and construction skills and capabilities by, among other actions, communicating the opportunities to international companies and creating new international partnerships, examining working conditions for civil engineers, reducing entry requirements for skilled construction labor and expertise, and creating government- or private-sector-funded training to retrain skilled construction employees based in Israel.

“Timely and effective delivery of projects is crucial to demonstrating that large infrastructure ventures are worthwhile.”

<sup>1</sup> This sum includes both public infrastructure and additional education costs.

<sup>2</sup> See Infrastructure for Growth document, Government of Israel, 2021.

<sup>3</sup> Interviews with industry experts.

<sup>4</sup> *Engineering studies in the higher education system and the demand for engineers in the economy*, Knesset Research and Information Center, 2022.

Several practices could also help Israel in relieving congestion and encouraging modes of transportation other than private vehicles.

**Micromobility solutions.** Safe use of micromobility solutions (for example e-kick scooters, bicycles, and mopeds) can help reduce congestion and reduce commute times. Several practices could help expand the use of micromobility solutions.<sup>113</sup> While Tel Aviv has made strides in micromobility solutions in recent years, they have yet to be implemented in other localities. To advance the safe and effective implementation of micromobility solutions, the government could consider creating safe mobility corridors for all forms of transportation, such as dedicated bike lanes in and between cities. Encouraging the growth of an ecosystem that integrates micromobility and traditional public transit infrastructure could also create a degree of access, speed, and comfort that can compete with private vehicles. Such an ecosystem would include riding, parking, and charging infrastructure that integrates several micromobility modes and Mobility as a Service (MaaS) platforms, which combine all modes of transportation in a single application.

**Direct-to-consumer mobility incentives.** Incentives can help encourage a shift to alternative mobility. One option for authorities to consider may be offering commuters a discount on income tax for bicycle usage during peak hours. Many European countries are already offering similar incentives, with employers in the Netherlands and Belgium paying a tax-free allowance for each kilometer biked by workers.<sup>114</sup> Another possibility to consider could be to create incentives for carpooling by offering government subsidies for passengers using services like carpooling apps. Both schemes would be extensions of existing government policy for subsidizing public transportation usage and would offer the benefits of lowering congestion and emissions.

### Investing to close the national digital infrastructure gap

Israel also can invest to close the national digital infrastructure gap, including in 5G networks and fiber optics, where Israel is lagging behind.<sup>115</sup> An important focus will be on internet access among the Arab and Haredi populations. Research shows that this type of investment in digital infrastructure improves productivity and economic growth.<sup>116</sup> Along with public digital infrastructure, steps will be needed to increase digital fluency and capabilities to be able to use digital tools, currently low among Arab and Haredi populations. This gap, however, is smaller than the transportation infrastructure gap; the Aaron Institute for Economic Policy estimates it to account for only 1 percent of the productivity gap.<sup>117</sup>

## Closing Israel's private capital gap

Israel has a large private capital gap. It is apparent across many industries and is most striking in the financial services sector and in the professional, scientific and technical services sector (Exhibit 22).<sup>118</sup> These are the sectors that have lower productivity relative to peers, suggesting that low capital stock is likely one of the causes of the productivity gap.

<sup>110</sup> Why micromobility is here to stay, McKinsey Center for Future Mobility, December 2021.

<sup>114</sup> *Ways of encouraging bicycle use*, Government of the Netherlands.

<sup>115</sup> OECD broadband statistics, 2021; Ministry of Communications reports on 5G rollout.

<sup>116</sup> See, for example, Martin Fornefeld, Gilles Delaunay, and Dieter Elixmann, *The impact of broadband on growth and productivity*, European Commission, 2008.

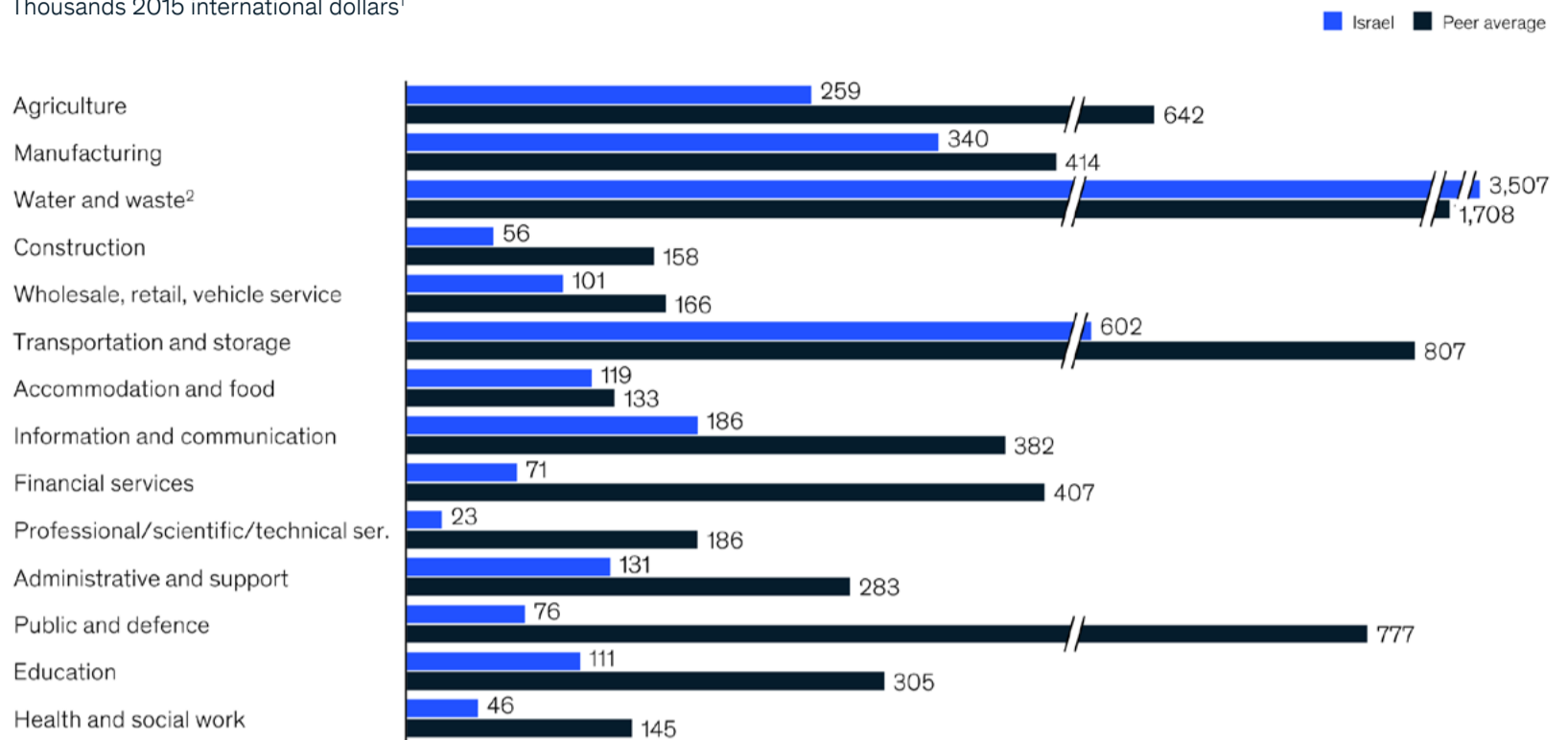
<sup>117</sup> *Public investments and structural reform to increase productivity and growth in the economy*, Aaron Institute for Economic Policy, 2022.

<sup>118</sup> Analysis of OECD fixed assets and employment data, 2019, excluding Sweden due to data availability. Categorization of sectors varies among the exhibits due to data availability issues. 2019 is used as the last year with data available without COVID-19-related disruptions.

Exhibit 22

**Israel's capital stock gap is apparent across most economic sectors**

**Gross capital stock (PPP) per employee per sector, 2019**  
Thousands 2015 international dollars<sup>1</sup>



1. Excludes Sweden due to data availability; real estate is excluded as a sector due to secondary importance for productivity. Changes in sectors from previous analyses are attributed to missing data for Israel in specific sectors
2. This sector is included in the overall "Manufacturing, mining and utilities" sector with a productivity gap to peers, but isn't marked here as a sector with a productivity gap to peers because as a stand-alone sub-sector likely had larger productivity due to Israel's leadership in the field

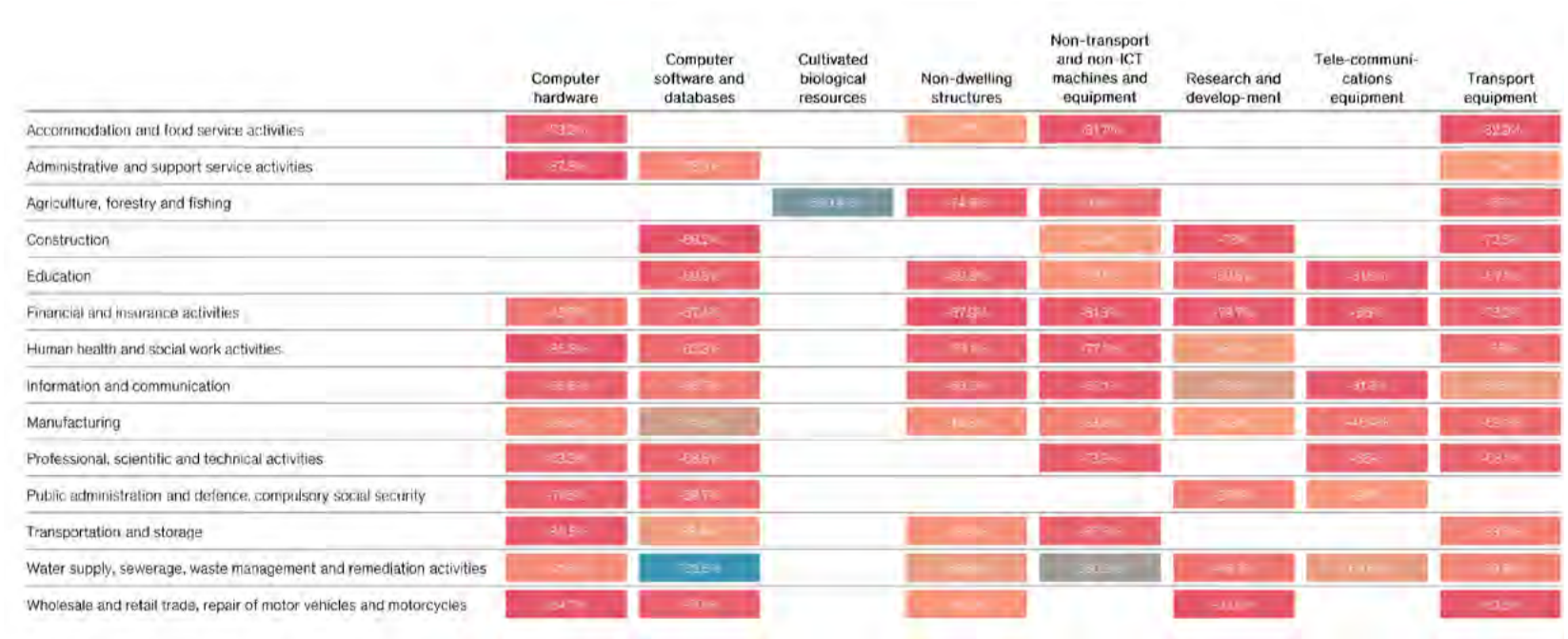
Source: OECD, team analysis

Exhibit 23 shows a heat map indicating the types of capital in which Israel is lower than peers per sector.<sup>119</sup> The capital gap is apparent across the board, with some exceptions where Israel has more capital than peers: water supply, sewerage, waste management, and remediation activities; cultivated biological resources, referring to fields and live stocks; and R&D in the information and communications sector.

Exhibit 23

**Breaking down capital stock per type of capital, it is also clear that Israel is far behind peers**

**Gross capital stock per employee by sector and investment type<sup>1</sup>, Israel gap from peers, 2019**  
Percent different to average peer levels of capital stock in PPP international dollars per employee



1. Excludes Sweden and Denmark due to data availability; removed outliers (>90% difference); removed dwellings and real estate sector

Source: OECD, team analysis

<sup>119</sup> Analysis of OECD fixed assets and employment data, 2019, excluding Sweden and Denmark due to data availability. Categorization of sectors varies among the exhibits due to data availability issues. 2019 is used as the last year with data available without COVID-19-related disruptions.

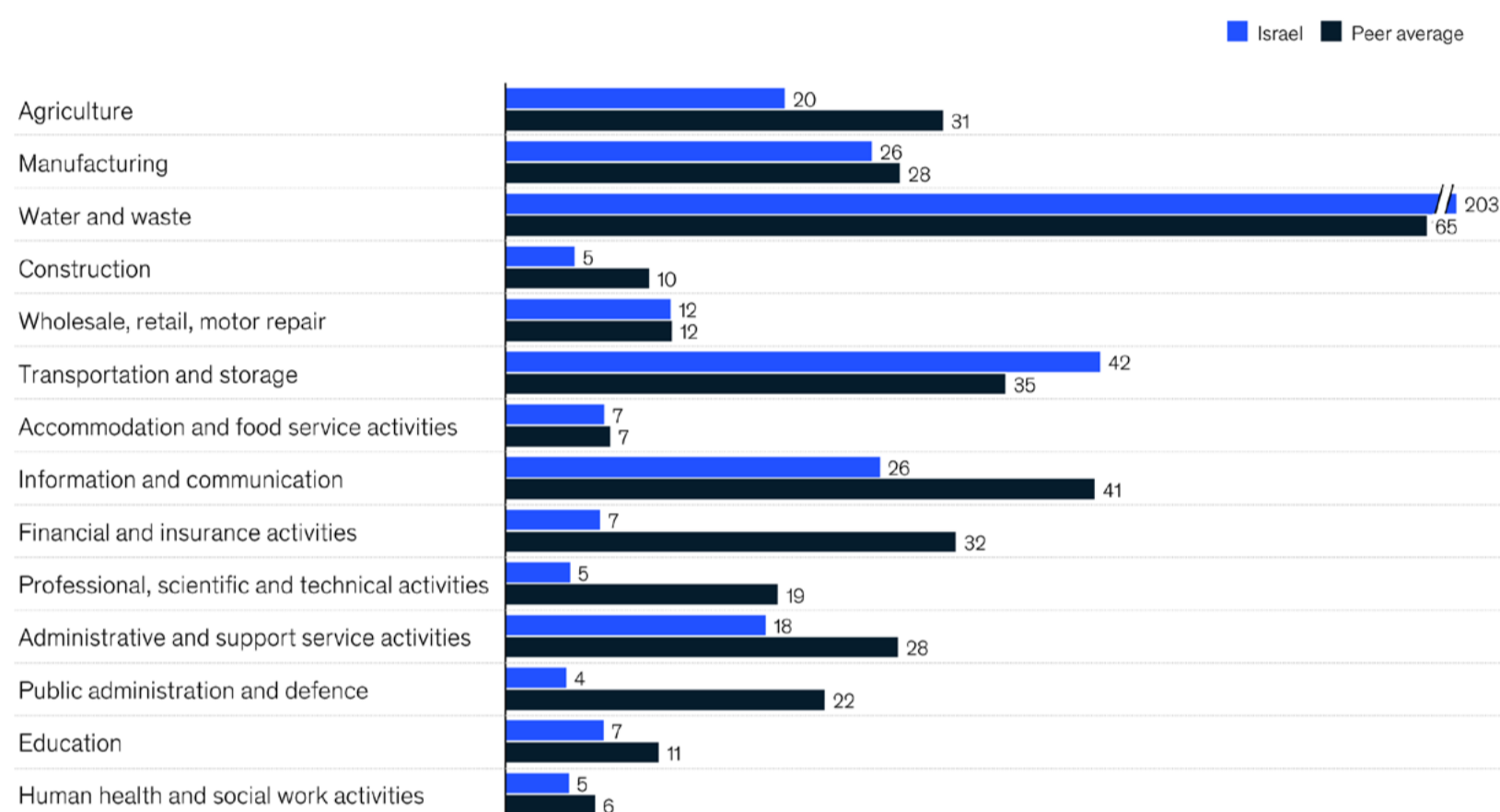
Investment is necessary to close this gap, and Israeli businesses are not investing enough to close the gap compared to peers. Investment accounts for 21 percent of GDP in Israel, compared with a peer average of 24 percent. In other words, Israel's private capital stock is falling further behind. This capital formation gap is consistent in most sectors. The gap is especially pronounced in financial services; professional, scientific and technical activities; administrative and support service activities; and the public, health, and education sectors, which all show low productivity (Exhibit 24).

Exhibit 24

### Israel's capital formation per employee worked is below that of peer economies

#### Gross fixed capital formation (PPP) per employee by sector<sup>1</sup>, 2019

Thousands 2015 international dollars



1. Excluding Denmark due to missing data

Source: OECD, team analysis

Based on examples from other countries, policy adjustments could potentially help encourage private investment and support business investment. Various suggestions to this effect have been made, including by the Bank of Israel and the OECD. The Bank of Israel in its 2021 growth acceleration report discussed the effectiveness of Israel's 1959 Law to Encourage Capital Investments and 1984 Law to Encourage R&D and Technological Innovation in Industry, which give grants and tax incentives to companies that export and innovate. Together with the low competition in many Israeli markets, the Bank of Israel's analysis found that these laws might distort the use of means of production, discouraging investments in non-preferred industries and making the economy as a whole less productive, as well as not significantly increasing investments.<sup>120</sup> The Bank of Israel instead suggested that the role of government should be to make sure the conditions are right for investments, including investing in human capital that can utilize capital investments, thereby encouraging investments; removing barriers to technology and to the adoption of processes that support productivity; and reviewing existing investment incentive structures and adopting them to the current situation.<sup>121</sup>

The OECD's 2020 Economic Survey of Israel echoed this sentiment, though it suggested expenditure-based direct government benefits and tax incentives for R&D and technology adoption in businesses in lagging sectors.<sup>122</sup>

It is beyond the scope of this report to focus on all sectors of the Israeli economy, but here we examine the banking and construction sectors, given their potential to boost investment and the performance of the entire economy, as two crucial enablers to economic activity in the remainder of the economy.

<sup>120</sup> Bank of Israel plan to accelerate growth in the economy: Four strategic channels of action recommended to the government and the fiscal framework to finance them, Bank of Israel, 2021.

<sup>121</sup> Ibid.

<sup>122</sup> OECD Economic Surveys: Israel 2020, OECD, September 2020.

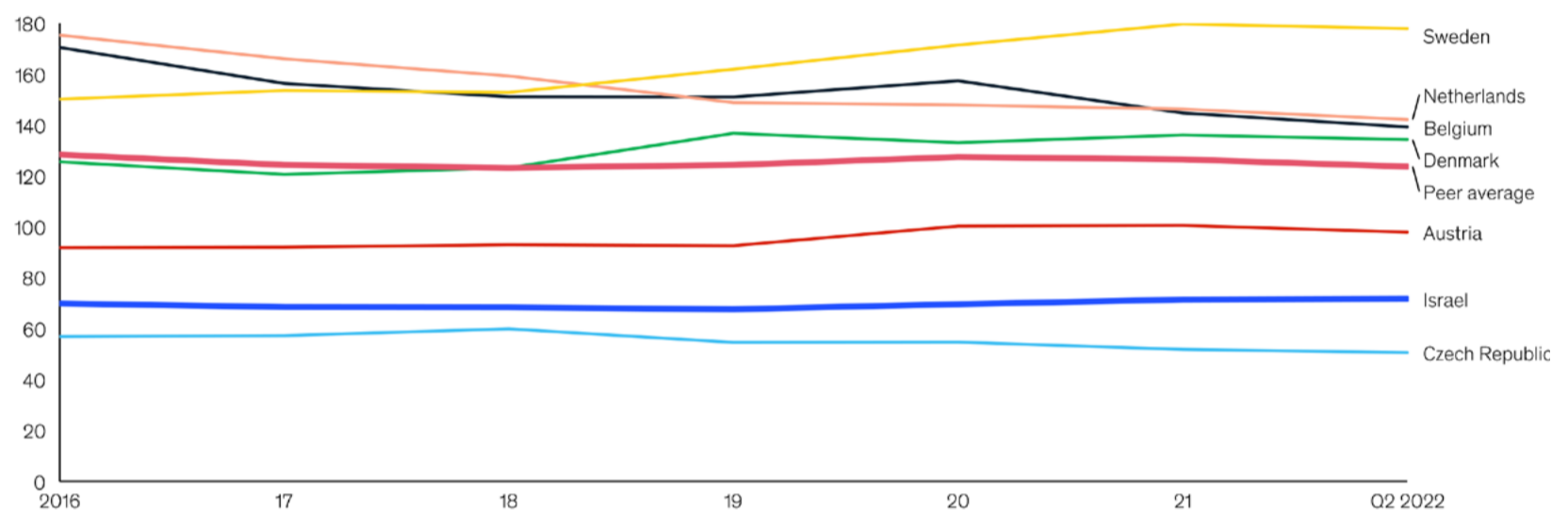
## The banking sector and business credit in Israel

Israeli business credit is low, a major impediment to investment in private capital and likely a contributing factor to Israel's comparatively lower capital stock. Access to credit is crucial for businesses to expand and to invest in new technologies - and thereby increase productivity over time. However, in Israel, credit to nonfinancial corporates is 72 percent of GDP, far below peers, where on average corporate credit amounts to 123 percent of GDP (Exhibit 25).<sup>123</sup>

Exhibit 25

### Israeli corporates have less access to credit than peers

**Total credit to corporations (non-financial)**  
% of GDP



Source: BIS

This difference cannot be attributed to bond issuance by companies. On the contrary, outstanding debt securities of nonfinancial corporations are higher in Israel (20 percent of GDP) than in all peers (8 percent average).<sup>124</sup> Rather, the issue in Israel seems attributable to fewer loans given through banks to businesses as well as insufficient non-bank private credit to the business sector (that is, non-bank credit excluding corporate bonds). The majority of corporate credit comes from banks: of total corporate credit in Israel, 52 percent consisted of bank loans, and the remainder was non-bank credit, including Israel-based bonds (21 percent) and private credit from institutional players, such as insurance and pension funds (8 percent). Other sources, including other private debt, foreign loans, and foreign-based bonds, account for the remainder.<sup>125</sup>

Moreover, Israel corporates' share of debt originating from foreign banks is among the lowest in the OECD at less than 2 percent of GDP, further contributing to the low levels of corporate debt. Factors that could be contributing to this are taxation policy, low or small-scale physical presence of foreign banks,<sup>126</sup> and regulation.<sup>127</sup>

Research and reports have addressed the reasons for Israel's gap in business credit, including findings from the Bank of Israel,<sup>128</sup> the OECD,<sup>129</sup> the Israel Competition Authority,<sup>130</sup> and the Milken Center for Innovation.<sup>131</sup>

It is clear that banks are lending less to businesses, mainly small to medium-size businesses, than is common in peer countries. The banking system is still above the required minimum leverage ratio (average of 5.8 percent in 2021), suggesting there is still capacity for credit issuance in Israel. Similarly, the credit-to-deposit ratio in the Israel banking system was 73 percent in 2020 (when considering total credit), compared to an average of 129 percent for this study's peers.<sup>132</sup> While some of the gap could be attributed to a lack of demand by business for credit, multiple sources suggest that banks are less inclined to lend in Israel than in peer countries.

<sup>123</sup> Analysis of Bank for International Settlements debt securities data, Q2 2021.

<sup>124</sup> Analysis of Bank for International Settlements debt securities data, December 2021, using OECD GDP data.

<sup>125</sup> *Development of non-financial private sector credit in Q4 2021*, Bank of Israel.

<sup>126</sup> Bank of Israel annual report, 2021.

<sup>127</sup> *General criteria and conditions for the permit applicant to control and hold means of control in a banking corporation*, Bank of Israel.

<sup>128</sup> Bank of Israel annual report, 2021.

<sup>129</sup> "Israel," in *Financing SMEs and entrepreneurs 2022: An OECD scoreboard*, 2022.

<sup>130</sup> *General review of bank credit to business*, Competition Authority, 2018.

<sup>131</sup> *Increasing the supply of business credit in Israel*, Milken Innovation Center, Jerusalem Institute for Policy Research, 2021.

<sup>132</sup> *Increasing the supply of business credit in Israel*, Milken Innovation Center, Jerusalem Institute for Policy Research, 2021. Based on ECB data and top five banks' financial reports.

Some of the gap can potentially be attributed to low competitive intensity in the Israeli banking system. While Israel has implemented some steps to increase the competitiveness of the banking sector, such as the creation of a central credit database, the Israeli banking sector remains concentrated, with five major banks holding more than 99 percent of business bank credit.<sup>133</sup> The banking system's HHI ratio, which measures concentration in a given sector, is higher than the figure for peers.<sup>134</sup> Moreover, only two new banks have been opened in the country since 1978.

Other reasons for Israel's business credit gap could also be the scale and growth of the high-tech sector, with very low debt ratios; and laws limiting business concentration, affecting corporates' ability to acquire and merge, thus reducing the need for credit to support leveraged buyouts more common in other markets.<sup>135</sup>

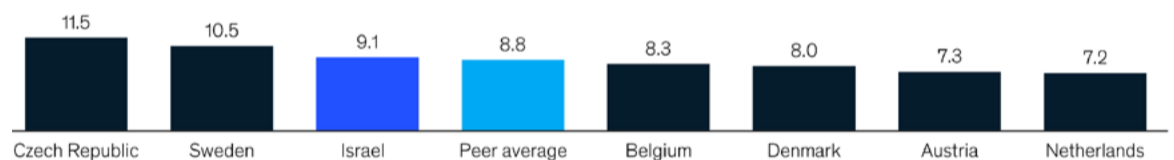
Non-bank credit in Israel is also relatively low, as mentioned. Providers of non-bank credit are regulated differently from banks, which may give them an advantage. Nevertheless, their lack of information about potential borrowers could prevent them from offering favorable terms to more creditworthy borrowers. The Bank of Israel created a Credit Data System following a 2016 law to allow credit providers to gain access to data and make the credit market more competitive; this system has been operational since 2019.<sup>136</sup> While the system increases the potential for competition in the consumer credit segment and for single-person businesses, it is not applicable to corporate credit.<sup>137</sup> Moreover, institutional lending and other non-bank credit are limited by regulation. Institutional players in Israel, including insurance companies and pension funds, have regulatory risk limitations and underwriting requirements that can limit their capacity and profitability from SME lending.<sup>138</sup> Non-bank credit companies, a potential source for credit to SMEs, are also limited by regulation in the amounts they can raise in financial markets, requiring them to finance themselves using bank loans.<sup>139</sup>

In parallel to the business credit gap, the performance of the Israeli banking system itself is lower than its potential, with productivity of the financial services industry 54 percent lower than in peer countries as a share of GDP per hour worked, as previously mentioned.<sup>140</sup> Return on equity has been medium compared to peers in the past five years;<sup>141</sup> Israeli banks have been historically below peers in efficiency and cost to serve, as reflected by the cost/income (C/I)<sup>142</sup> ratio (Exhibit 26).<sup>143</sup> It is noteworthy that these figures rose in 2021 across all countries, partially as a result of post-pandemic effects, which increased the overall average. This was especially pronounced in Israel, which had the highest banking ROE in 2021 among peers.

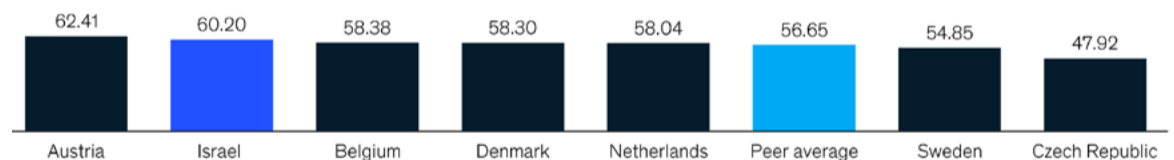
Exhibit 26

**Israeli banks have underperformed peers in C/I ratio and branch efficiency and have medium return on equity and economic profit**

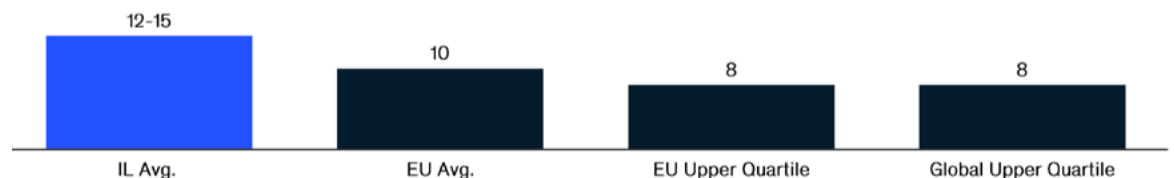
**Banking system average ROE, 2017-2021 average, %**



**Cost to income (C/I) ratio, 2017-2021 average, %**



**Retail branch-based FTEs per branch, 2020, %**



Source: Bank of Israel, Financial reports, expert interviews

<sup>133</sup> Analysis of data from *Israel's banking system, annual survey 2021*, Bank of Israel, 2021.

<sup>134</sup> *Israel's banking system, annual survey, 2021*, Bank of Israel, 2021; *Structural indicators for the EU banking sector*, ECB, 2021.

<sup>135</sup> Bank of Israel annual report, 2021.

<sup>136</sup> Bank of Israel on the Credit Data System, [creditdata.org.il](http://creditdata.org.il).

<sup>137</sup> *Increasing the supply of business credit in Israel*, Milken Innovation Center, Jerusalem Institute for Policy Research, 2021.

<sup>138</sup> *Ibid.*

<sup>139</sup> *Ibid.*

<sup>140</sup> Analysis of OECD added value and employment per industry data.

<sup>141</sup> Part of the reason for the relatively lower return on equity of some of the banks in Israel in recent years was the impact of the recent investigations by the US authorities, which imposed costs that do not represent structural developments at the banks.

<sup>142</sup> Cost/income ratio, referring to the ratio of banks' costs as a share of income.

<sup>143</sup> S&P Global, Central Bank and Bank of Israel data on return on equity and C/I ratio; expert interviews.

To improve business credit availability, Israel could continue its efforts to increase competition in the banking system and increase lending to SMEs. This might include the following steps:

**Evaluate and reduce the quantity of regulation and barriers to entry** for new banks, fintechs, non-banks, and small banks. Indicators necessitating these measures include the lack of new entrants into the banking system since 1978, with the recent exception of Israel's first digital bank, and limited presence of foreign banks, with the last entrant in 2006 and a total of four active<sup>144</sup> international banks. (There are 14 additional representatives<sup>145</sup> of international banks in Israel, but they are not overseen by the Supervisor of Banks in Israel.)

**Offer deposit insurance to safeguard customer deposits in banks to encourage new entrants.** The smaller size of a new banks can deter customers due to fears of bank failure. Deposit insurance does not exist in Israel at this time, and its introduction in other countries has helped allay potential concerns of consumers about using a small bank.<sup>146</sup>

**Digitize back- and front-office activities.** This will increase productivity and allow banks to utilize more talent (some of which will need to be reskilled) to increase the pace of digitization. Banks would likely need to increase investment in cybersecurity in lockstep to protect systems against future cyberattacks.

**Enrich digital offerings beyond daily banking activities.** While Israeli bank customers are adept and frequent users of online banking, Israeli banks have low digital sales penetration. Banks could introduce more automated, data-driven digital offerings to fit customer needs, as offered by global peers.

Important non-bank players in the Israeli financial sectors, such as the institutional players, other non-bank credit players, and the stock exchange, as well as new banking players could all be important catalysts to improving this structural issue in the Israeli economy.

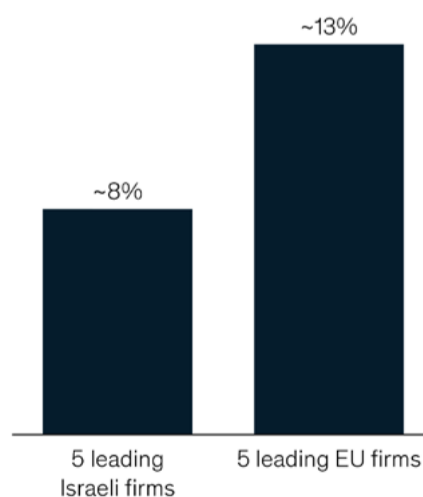
## Modernizing Israel's construction sector

Construction is an important enabler of economic activity, including the above-mentioned need for further infrastructure investment. The Israeli construction sector accounts for 6 percent of Israel's GDP, similar to the peer average.<sup>147</sup> However, Israeli construction companies have lower profits than many of their peers. Our sample of European firms<sup>148</sup> shows that the return on invested capital (ROIC) of Israeli construction companies lags behind that of peers (Exhibit 27). Taking into consideration also the increasing prices of land and real estate in Israel that contribute to the revenues of construction companies, the ROIC gap could be even wider.

Exhibit 27

### Return on Invested Capital is lower in leading Israeli construction firms than among leading European construction firms

Average Return on Invested Capital in leading European and Israeli construction companies, 2021



Source: McKinsey CPA platform, financial reports

<sup>144</sup> *Banking corporations in Israel*, Bank of Israel.

<sup>145</sup> *Representatives of foreign banks in Israel*, Bank of Israel.

<sup>146</sup> Expert interviews.

<sup>147</sup> OECD GDP component data.

<sup>148</sup> McKinsey's CPA Platform, using a sample of leading construction companies across Europe.

In a McKinsey survey of global construction leaders, more than two-thirds of respondents said that, of various factors disrupting the sector, industrialization and digitization will have the highest impact, which will require construction companies to increase their investments in R&D, modern working practices, relevant skills, and up-to-date technology to stay competitive.<sup>149</sup> Historically, the construction sector has one of the lowest R&D investment ratios, with 1.5 percent of revenues allocated to R&D by European construction companies.<sup>150</sup> Compared to peers, it is clear that Israel's R&D investment in construction as a share of GDP is low (Exhibit 28).<sup>151</sup>

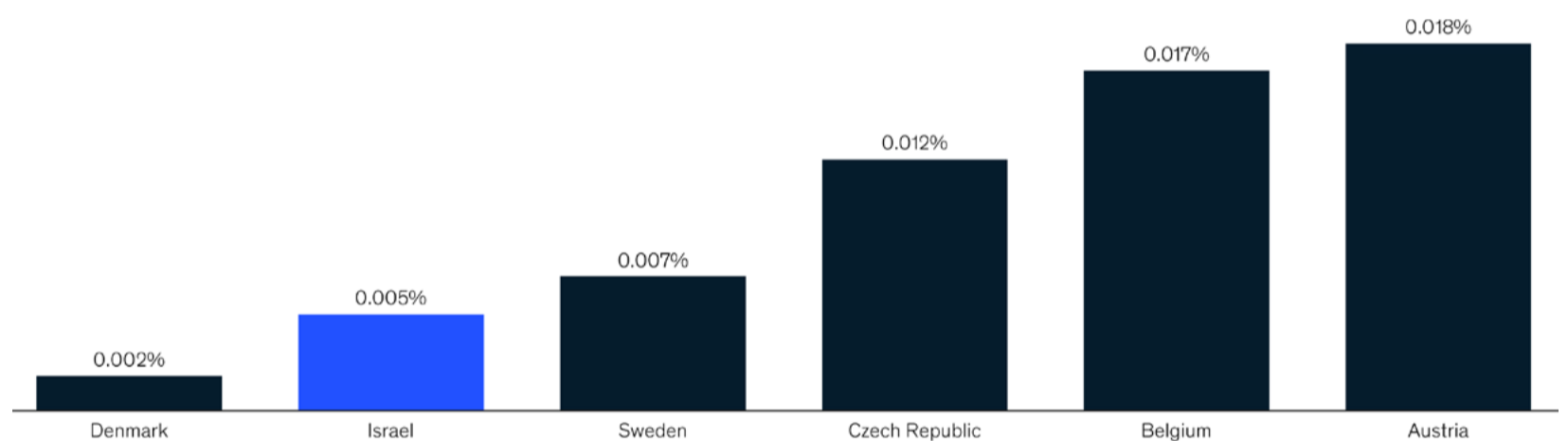
Israeli construction companies lag behind global peers in the adoption of building information modeling (BIM) technology, which helps create and manage information for a built asset. This results in a manual work environment that prevents them from completing projects faster, reducing human labor, quickly responding to and acting on changes on site, and reducing future maintenance costs. Moreover, Israeli construction companies' construction methods tend to be old-fashioned, and modern methods such as modular building are used only in a few, very specific projects.<sup>152</sup>

The low technological adoption and usage of old building methods result in a relatively low output per hour worked.

Exhibit 28

### The R&D intensity of Israel's construction sector is substantially lower than the most peers

R&D in construction as a share of GDP, average 2015 - 2019<sup>1</sup>  
% of GDP



1. An average of years for which there was data availability in each country  
Source: OECD Business enterprise R&D expenditure by industry

There are certain factors that Israeli construction companies cannot change by themselves, such as the small scale of projects compared to other countries, limitations on land use, and regulation. However, to improve performance and succeed in the changing market, Israeli construction companies could focus on:

- Investment in new technology and facilities. For example, increased adoption of BIM technologies as well as best-in-class techniques and machinery could reduce project costs and accelerate delivery. The global construction industry is increasing its emphasis on R&D, and companies that have invested in construction technology and facilities (for example, prefabrication facilities) are succeeding.<sup>153</sup>
- Investment in human resources to better enable employee retraining and ensure continuous learning by the workforce.
- Specialization in end-user segments. This shift is expected to gain further traction as construction processes become standardized and the industry adopts an increasingly product-based approach.

Given the significant carbon footprint of the sector, companies will also need to focus efforts on ways to become more sustainable, as we discuss in the next section.

<sup>149</sup> *The next normal in construction*, McKinsey, 2020.

<sup>150</sup> McKinsey analysis of OECD data.

<sup>151</sup> OECD Business enterprise R&D expenditure by industry.

<sup>152</sup> Interviews with industry experts.

<sup>153</sup> *The next normal in construction*, McKinsey, 2020.

## Seizing the net-zero transition opportunity

McKinsey recently published an extensive report on the climate crisis and the Israeli context. The report addresses the physical risks of climate change, the impact on the global economy from achieving net-zero emissions, and the consequences of this transition on Israel.<sup>154</sup>

Given the large exposure of Israel's economy to the global economy, the country will be significantly affected by the broader worldwide transition to net-zero. While the transition may expose the Israeli economy to risks, it may offer opportunities.

For now, there is an absence of significant investment in climate-related technology in Israel, including by companies. For example, climate change mitigation patents submitted by Israeli scientists are not growing (fewer patents were submitted in 2020 than in 2015), and investments in sustainable technologies such as food, energy, water, and agriculture account for just 3 percent of total investments in Israel.<sup>155</sup> Given growing demand for more transparency about environmental, social, and governance (ESG) actions, especially in Europe, Israeli business will need to respond to avoid becoming less attractive for foreign investors or losing business as suppliers altogether.

McKinsey has estimated that a net-zero transition would require global capital expenditures on physical assets equivalent to an average of 7.5 percent of global GDP to 2050.<sup>156</sup> Along with investment, further innovation is needed to develop technologies that can be scaled and reduced in cost.

By focusing on Israel's comparative advantage in the international tech ecosystem, the country may be able to attract investors, talent, and international collaborations to facilitate the transition. As such, the global net-zero transition holds opportunities for the Israeli economy, especially in renewable energy and innovation.

Within Israel, the key to achieving net-zero lies in the energy sector, which accounts for a significant share of emissions. As of 2021, the total amount of energy produced from sustainable sources (that is, renewable energy sources such as solar and wind) was 8 percent of total production. Government Decision 465<sup>157</sup> set a goal to reach 20 and 30 percent of electricity production from sustainable sources by 2025 and 2030, respectively. To meet the midterm goal for 2025, the Israel electricity authority set a goal to more than double its production of energy from sustainable sources. In order to decarbonize, the power sector would need to phase out fossil fuel-based generation and add capacity for low-emissions power to meet the additional demand arising from economic development and population growth.

**“Israel will be significantly affected by the broad, worldwide transition to net-zero.”**

<sup>154</sup> The net-zero transition refers to achieving an overall balance between greenhouse gas emissions produced and greenhouse gas emissions taken out of the atmosphere. For more information, see the report (in Hebrew), *The climate crisis and the Israeli economy: Challenges alongside opportunities*, McKinsey Israel, 2022.

<sup>155</sup> *Annual innovation report: State of high-tech 2022*, Israel Innovation Authority, 2022.

<sup>156</sup> *The net-zero transition: What it would cost, what it would bring*, McKinsey, January 2022.

<sup>157</sup> Israeli Government Resolution number 465, October 2020. Israel Electricity economy report, Electricity Authority, 2021.



# 4. Closing Israel's human capital gap

Human capital is hugely impactful for productivity. From simple practical skills to designing complex algorithms, an employee's ability to create value and become a productive participant in economic activity is shaped by her or his accumulated knowledge, attributes, skills, and experience.<sup>158</sup> Economic output is the result of human capital using physical capital to create value. And in a digital age, advanced skills and specialization become even more important to productivity growth. Prior McKinsey research shows that human capital represents roughly two-thirds of an individual's lifetime wealth as well as total wealth in the economy, illustrating the vast importance of increasing human capital.<sup>159</sup>

In this chapter, we look at issues relating to human capital in Israel that could lift productivity in the medium to longer term. These are, first, improving the quality of Israel's primary and secondary education system and, second, lifting levels of adult skills and continued education. Both at school and at work, data point to a de facto tripartite system in which: at the top end we find highly productive and highly paid tech workers; a broad non-tech Hebrew-speaking population in the middle that tends to work in low-productivity jobs with commensurate wages, and the Arab and Haredi populations, falling behind both in educational performance and in workforce skills and readiness. A new focus on inclusion will be needed to close these human capital gaps between sections of Israeli society and in comparison to peer countries.

## Improving the quality of Israel's education system

A high-performance education system can play an important role in equipping future generations with the skills they need to thrive in a high-productivity and increasingly digitized world of work. Israel's education system currently falls short, with outcomes lagging behind those of OECD peers, because of a range of factors that may include lower spending on early childhood education and issues with teacher compensation, tenure, and management approaches. The performance of the Haredi and Arab populations in Israel is considerably below the national average. Some of these issues can be addressed with more resources, but others may need more deep-rooted and longer-term solutions.

### Educational outcomes in Israel's school system lag behind those of peers

On the surface, Israel's population enjoys high levels of education. Israelis are ranked 12th in the world in mean years of schooling at about 13 years, and almost half have at least a short-cycle tertiary education—that is, occupation-specific and professional education after high school.<sup>160</sup>

However, on international evaluations such as the OECD's PISA assessment, the average score of 15-year-old Israelis for the reading, mathematics, and sciences sections in 2018 was 465, significantly below the OECD peer average of 499, and the score has declined (Exhibit 29).<sup>161</sup> Israel ranks in the 37th to 42nd position among the 79 PISA participant countries, depending on the skills tested.<sup>162</sup>

<sup>158</sup> In a broader context, human capital also encompasses an individual's physical and mental health, which are major contributors to the ability to live a prosperous life. Indeed, health is a key factor in individuals' and societies' economic outcomes, too, as outlined in *Adding years to life and life to years*, McKinsey Health Institute, 2022. However, in this document, we focus on the education and skills component of human capital.

<sup>159</sup> *Human capital at work: The value of experience*, McKinsey Global Institute, June 2, 2022.

<sup>160</sup> World Bank data on completed short-cycle tertiary education, 2019 or latest year available.

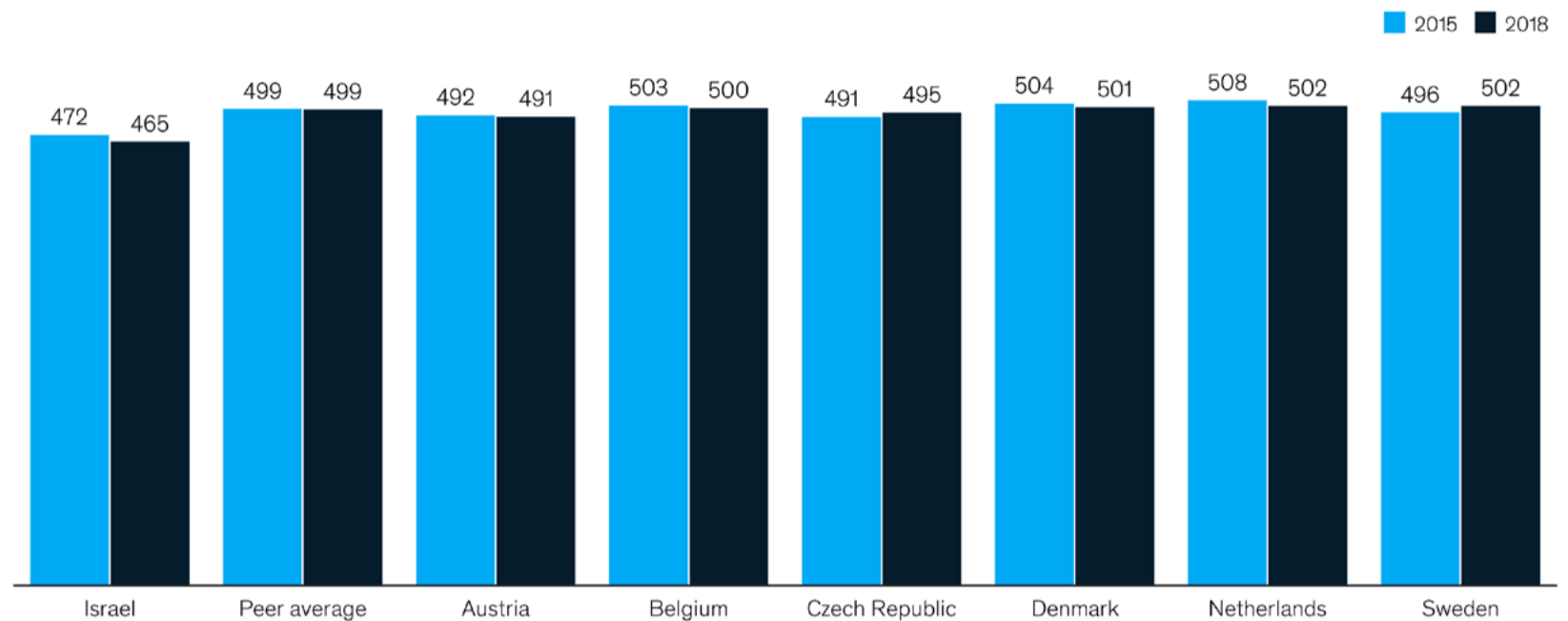
<sup>161</sup> PISA score results. The PISA (Programme for International Student Assessment) test measures 15-year-old students' performance in reading, mathematics, and sciences, and provides a standardized way to compare educational outcomes across 79 countries.

<sup>162</sup> *PISA 2018: Insights and interpretations*, OECD, 2019.

## Israel's education performance lags behind that of peer countries in international tests

### PISA test performance by country

Average performance<sup>1</sup>



1. Score based on average of the 3 PISA tests: Reading, Mathematics and Science performance. While there is no minimum or maximum score, the average score is around 500 in a normal distribution, and two-thirds of OECD countries receive scores between 400 and 600. A score above 800 is extremely rare.

Source: PISA: Programme for International Student Assessment

### Israel's education system is highly unequal, with Haredi and Arab students performing far below the average

The Haredi and Arab populations in Israel each account for 23 percent of students in primary education. Their educational performance is considerably below the average and creates an unequal playing field when it comes to the economic prospects and productivity of different types of workers.

Analyzing PISA scores for different cohorts highlights the impact of internal inequality in Israel. The PISA scores of the Hebrew-speaking population, not including the Arabic-speaking population (and with a low share of Haredim), are about on a par with OECD peer countries, at just under 500 (Exhibit 30). This is in contrast with Israel's Arabic-speaking students, who scored 372 in 2018 (average of reading, mathematics, and sciences), substantially below Israel's 465 score and the OECD's 499, and on a par with average scores in Panama, Indonesia, and Saudi Arabia.<sup>163</sup> The average score of Arabic-speaking pupils in Israel has also declined since 2015.<sup>164</sup>

No separate scores exist for Haredi boys, as the Haredi population was underrepresented in the tests. On the other hand, Haredi girls perform similarly to non-Haredi Jewish students.<sup>165</sup>

The gaps between groups are also evident in educational attainment levels and university enrollment. Less than 40 percent of Haredi 12th-grade students take the matriculation exams (Bagrut), compared to more than 95 percent in the non-Haredi Jewish and non-Jewish (mostly Arab) populations. Most strikingly, only 9 percent of the Haredi population met university requirements, compared to more than 70 percent of the non-Haredi Jewish population and 48 percent of the non-Jewish population.<sup>166</sup>

**“In international evaluations, the average score of 15-year-old Israelis for reading, mathematics, and sciences was significantly below the OECD peer average, and the score has declined.”**

<sup>163</sup> PISA 2018 report, National Authority for Measurement and Evaluation in Education, Ministry of Education.

<sup>164</sup> Ibid.

<sup>165</sup> Ibid.

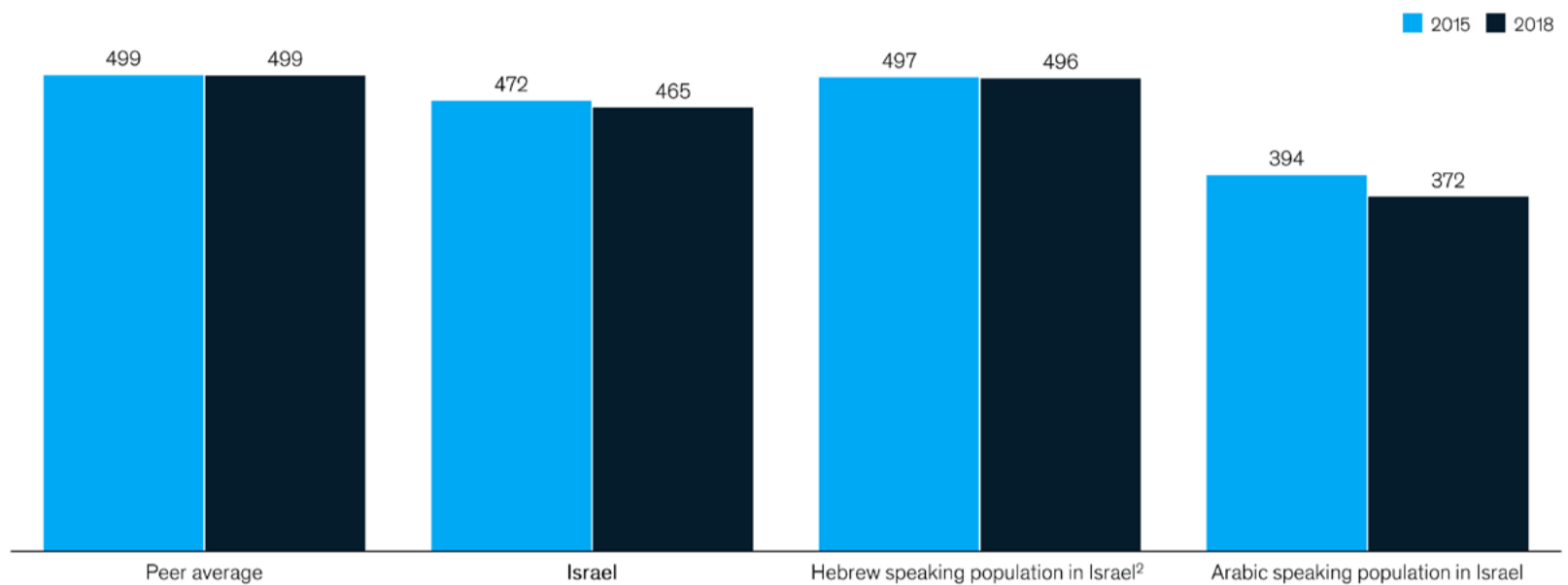
<sup>166</sup> CBS data on primary students and matriculation.

Exhibit 30

**Israel's PISA scores illustrate strongly divergent educational outcomes for different population groups**

**PISA performance by population group, 2018**

Average performance<sup>1</sup>



1. Score based on average of the 3 PISA tests: Reading, Mathematics and Science performance. While there is no minimum or maximum score, the average score is around 500 in a normal distribution, and two-thirds of OECD countries receive scores between 400 and 600. A score above 800 is extremely rare.

2. The Ultra Orthodox population was under-represented, as the test's participation rate was low among ultra-orthodox boys (2% in test vs 9% in population in 2018)

Source: OECD PISA scores, 2018 report of The National Authority of Measurement and Evaluation in Education

**Paths to improving the quality of the formal education system**

We discuss the challenges of achieving greater inclusion later in this chapter. Several other explanations are associated with Israel's low educational outcomes, including relatively low investment in early childhood education, insufficient supply of qualified teachers, issues with teacher compensation, tenure, and management approaches, and a lack of digital tools in the classroom.

**Early childhood education.** For children under five years of age, Israel invests about 6.9 percent of GDP per capita per child, compared with an OECD average of 10.8 percent, about 20 percent in Denmark, Norway, and Sweden, and about 10 percent in the Netherlands and Belgium.<sup>167</sup> Education is compulsory above age three, but only one-quarter of Israeli children under the age of three in 2019 were in supervised educational institutions, and only 40 to 50 percent of costs are subsidized.<sup>168</sup>

Investments in quality early childhood education amongst disadvantaged populations have shown to affect development later in life, according to widely cited research, and likely affect performance in school as well.<sup>169</sup> However, evidence regarding the impact of this investment across populations, is lacking, and considering the scale of investment involved in large scale provision, should be carefully assessed as part of any plan to increase government spending on early childhood education.

**Qualified teachers.** International best practice suggests that the keys to improving education are to get the right people to become teachers, to develop these teachers into effective instructors, and to put in place systems and targeted support to ensure that every child is able to benefit from excellent instruction (Exhibit 32).<sup>170</sup>

However, Israeli school principals report a lack of qualified teachers, including those with competence in teaching students in a multicultural or multilingual setting or from socioeconomically disadvantaged homes.<sup>171</sup> The level of concern registered by education leaders regarding these issues is much higher than those in peer countries (Exhibit 31).

<sup>167</sup> OECD Economic Surveys: Israel 2020, OECD, September 2020; PISA 2018: Insights and interpretations, OECD, 2019.

<sup>168</sup> Annual statistical report, National Council for the Child, 2018; Expansion of free education frameworks for early childhood education and care, Israeli Knesset, 2020.

<sup>169</sup> See, for example, James J. Heckman, "Skill formation and the economics of investing in disadvantaged children," *Science*, June 2006, Volume 312; Sneha Elango et al., "Early childhood education," in *Economics of Means-Tested Transfer Programs in the United States*, Volume 2, University of Chicago Press, 2015.

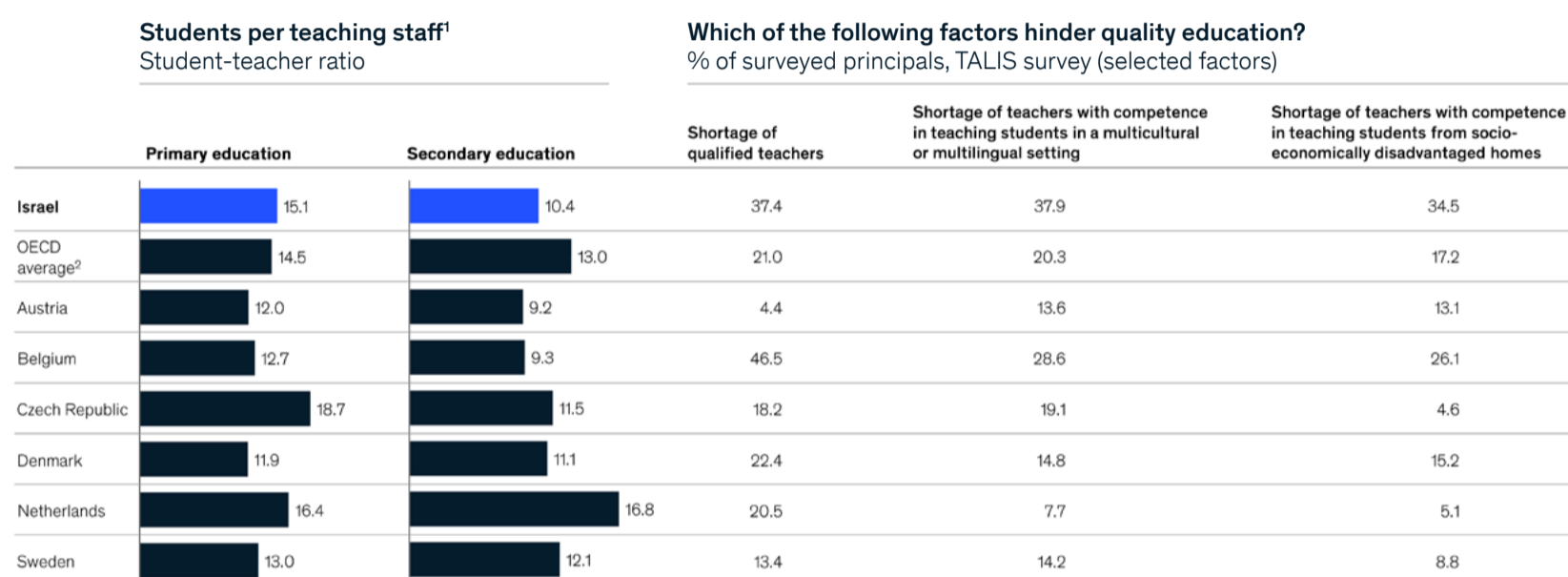
<sup>170</sup> *How the world's best-performing school systems come out on top*, McKinsey, 2007, and *How the world's most improved school systems keep getting better*, McKinsey, 2010.

<sup>171</sup> Teaching and Learning International Survey (TALIS) 2018 Database, Table I.3.63, OECD.

Compensation models are important for attracting talented teachers. Average teachers in Israel earn about 90 percent of the average wage for other employees with tertiary education. This is about 10 percent higher than the same ratio in peer countries and in the OECD more broadly, suggesting that total lifetime compensation for Israeli teachers is competitive.<sup>172</sup> However, the gap between low- and high-tenure teachers in Israel is large, with longtime teachers earning about 75 percent more than less experienced ones. This compares to a gap of about 35 percent in the OECD and peer countries.<sup>173</sup> This relatively low compensation at entry stages could potentially contribute to underperformance in educational outcomes. (going straight to outcomes here seems a bit of a stretch - suggest making sentence read: This relatively low compensation at entry stages may deter some potentially highly talented teachers from joining the profession). A recent agreement increases the future salaries of starting teachers in Israel while maintaining length of service as a main determinant of compensation. A revamped incentive structure that could attract talented teachers into the education system, alongside continuous training for teachers, may help address at least some of the issues outlined above.

Exhibit 31

### Tools to achieve better outcomes in education



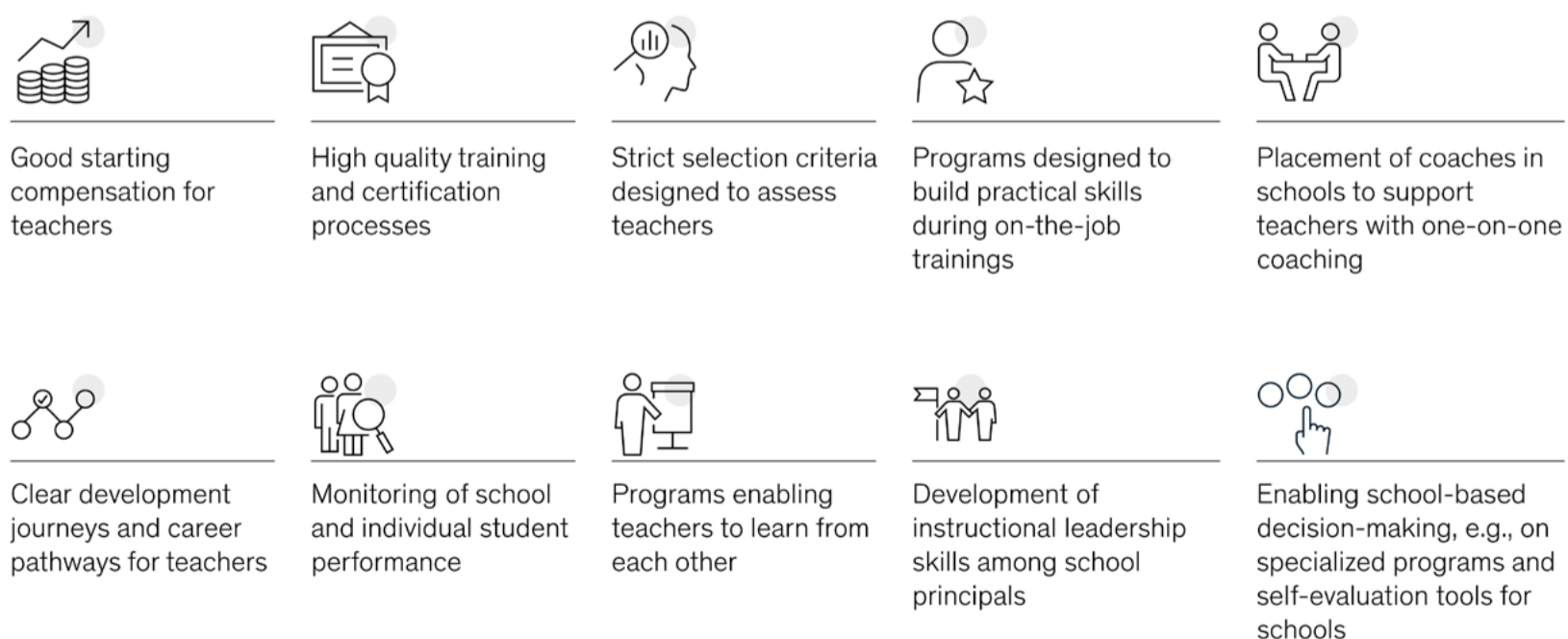
1. Data is for 2019 except for secondary education for Israel (2018)  
2. For the TALIS Survey data, OECD average refers to OECD average-30

Source: OECD education data, OECD TALIS Survey, 2018

Exhibit 32

### According to Israeli school principals, a shortage of qualified teachers decreases quality of learning—more than in peer countries

#### Tools to achieve better outcomes in education



Source: McKinsey

<sup>172</sup> Education at a Glance 2021: OECD Indicators, OECD, 2021.

<sup>173</sup> Structural compensation gaps between teachers in Israel and the OECD, Israeli Knesset, 2022.

**School digitization.** Another factor that could affect future productivity is the relatively low levels of digitization to be found in Israeli schools.<sup>174</sup> McKinsey research shows that digital skills, including understanding of digital systems, software use, digital proficiency, and digital collaboration, are likely to be increasingly associated with higher employment, income, and productivity.<sup>175</sup> Many of these skills are formed at school age, and McKinsey analysis of PISA scores suggests several insights about integration of digital tools within the classroom, which are not necessary intuitive.

First, technological tools in the hands of teachers (for example, projectors) are associated with higher PISA scores than technology in the hands of students. Second, a school system's current performance level matters: in school systems with lower performance, technology is actually associated with worse results. Third, the intensity of use matters: students who use technology intensely or not at all perform better than those with moderate use. Lastly, the type of technological tool also matters: some tools, such as tablets, are actually associated with worse student outcomes.<sup>176</sup> The main implication is that digitization in schools must be done right to be effective.

## Raising the level of adult skills and improving continued education

Adult skills contribute significantly to workforce productivity and to an individual's own earning potential. McKinsey research finds that skills acquired or demonstrated through work experience contribute on average 46 percent of lifetime earnings.<sup>177</sup> Adult skills are a product of many factors including geography, family, education, employment, and organization, and continuously evolve over the course of an individual's lifetime. This means that while adult skills affect the productivity of the workplace, they can also be shaped by work experience and continued education opportunities.

Israel has a significant skills gap, with a shortage of the highly skilled employees needed by the vibrant tech sector, and a workforce that overall scores poorly on international tests measuring adult skills. To address the adult skills gaps, Israel can consider best practice measures, as detailed below.

### Israel has a large adult skills gap

The two-speed economy we noted in the previous chapters is manifest in the labor market, with high demand for high-skill employees in Israel's tech ecosystem that can be hard to fill. Start-ups, large companies, and tech multinationals all compete for talent. Exhibit 33 shows that there are vacancies in many types of professions, especially for software developers, science and engineering professionals, and ICT practical engineers and technicians.<sup>178</sup>

The higher salaries paid by high-tech employers mean that companies in other sectors can have a harder time attracting skilled employees. That risks constraining their digital capabilities, with a knock-on effect on productivity. The Israeli government has recognized this gap, and in 2021 it appointed the National Committee to Increase Human Capital in High-Tech to suggest ways to increase human capital in tech-related professions. The committee found that given current trends in academic and other forms of training, the next five years will see a gap of 100,000 skilled workers. In addition, the committee found large gaps in high-tech-related levels of skills as well as low participation in high-tech work among the Arab and Haredi populations.<sup>179</sup>

To close this gap, the committee suggested initiatives that include increasing the number of high school pupils learning high-level mathematics, English, physics, and computing as well as "power skills" such as communication and teamwork; growing the number of students in tech-related university paths and increasing their inclusivity; running specialized practical engineering training programs; ensuring inclusivity in technological programs in the military; and enabling voluntary national service in tech-related environments for populations that do not serve in the military.<sup>180</sup>

<sup>174</sup> *Integration of digital tools in the education system*, Aaron Institute for Economic Policy, 2021

<sup>175</sup> Marco Dondi, Julia Klier, Frédéric Panier, and Jörg Schubert, "Defining the skills citizens will need in the future world of work," McKinsey, June 25, 2021.

<sup>176</sup> *New global data reveal education technology's impact on learning*, McKinsey, 2020.

<sup>177</sup> *Human capital at work: The value of experience*, McKinsey Global Institute, June 2022.

<sup>178</sup> CBS data on supply and demand in Israel's labor market for 2021.

<sup>179</sup> *Interim report*, High-Tech Human Capital Committee, July 2022.

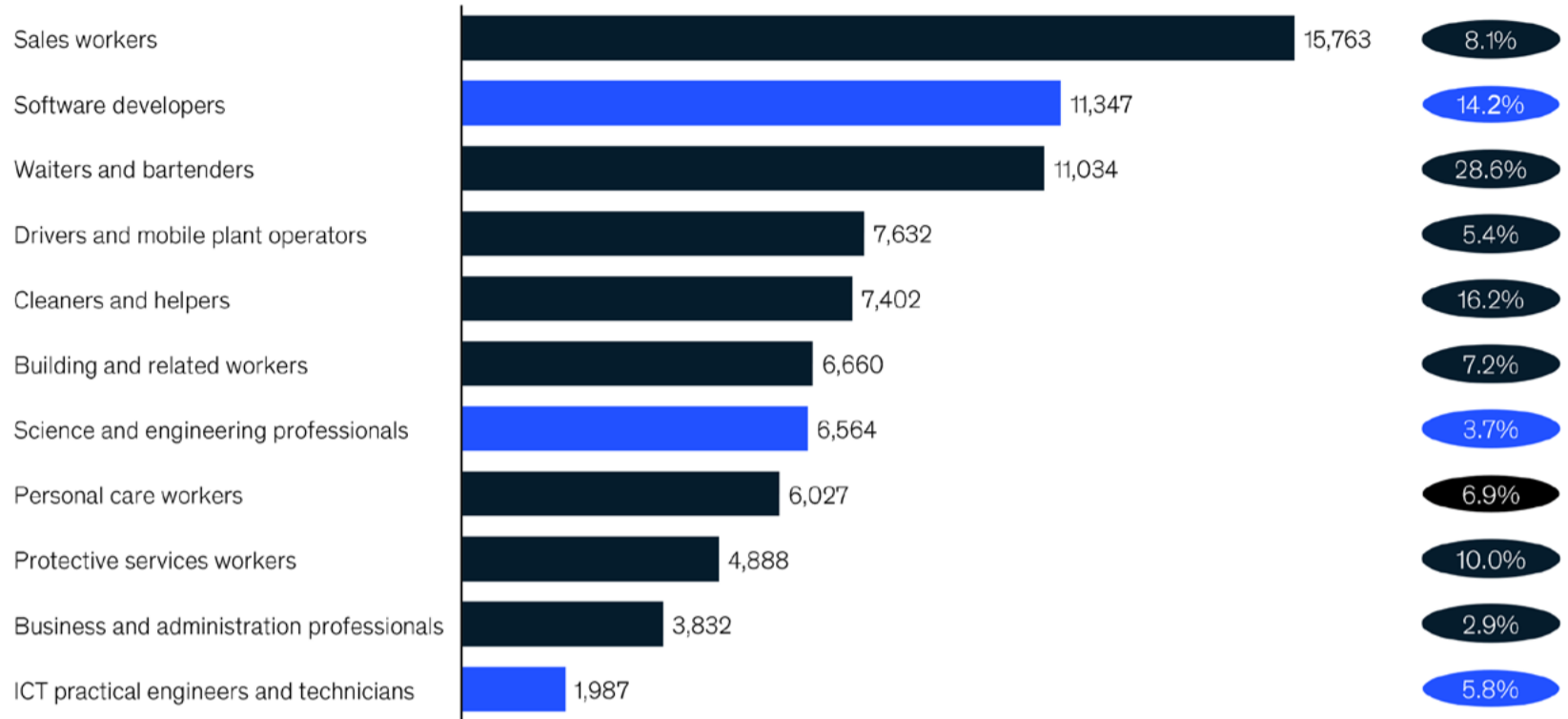
<sup>180</sup> *Ibid.*

Exhibit 33

**Israel has a large shortage of skilled talent**

**Job vacancies in Israel, April – June 2022**

Number of open positions, select professions



Source: CBS vacancies survey and workforce survey

**Israel scores poorly in international tests measuring adult skills**

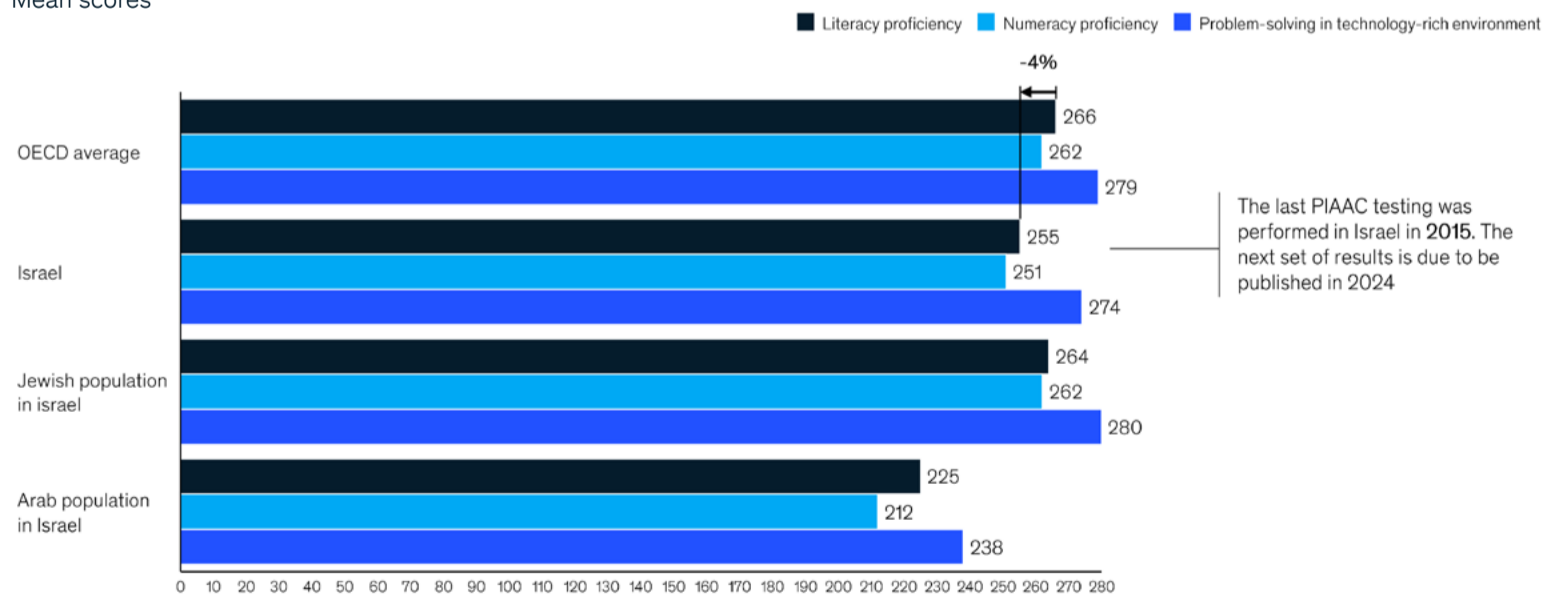
The OECD’s Programme for the International Assessment of Adult Competencies (PIAAC) measures adult literacy capabilities, numeric capabilities, and problem-solving capabilities in a technology-rich environment. The test was last administered in 2015 in more than 40 countries. Israel ranks below the OECD average in all areas tested. As with PISA scores, the Arab population in Israel scored much lower than Jewish Israelis and OECD averages (Exhibit 34).<sup>181</sup>

Exhibit 34

**Israel has low scores in international tests measuring adult skills**

**Scores of OECD Adult Skills survey (PIAAC), last round<sup>1</sup>**

Mean scores



1. The last PIAAC testing was held in Israel in 2015. The next cycle of results is set to be published in 2024. Scores range from 0 to 500

Source: OECD, CBS

<sup>181</sup> OECD PIAAC adult skills database; *Adult skills in Israel, 2014–2015*, CBS and National Authority for Measurement and Evaluation in Education.

Other international comparisons are also revealing. For example, only 38 percent of Israeli adults report participating in adult learning in the past 12 months, compared to a peer average of 48 percent and more than 54 percent in Denmark, the Netherlands, and Sweden.<sup>182</sup> This is likely to be a major drag on productivity and wages, given our previous observation of the importance of lifelong learning for accumulating individuals' human capital.

Israel's military has built-in adult education in both soft skills like leadership, communication, and resilience, and visible workplace skills, including digital literacy and project management - especially for soldiers past the age of compulsory service. However, most members of the Haredi and Arab populations do not enter the military, and access to these skills varies widely between different units and workforce skills employed, contributing to the divergence within Israel's economy and its two-speed nature.

### Employment rates for the Haredi and Arab populations consistently lag behind the rest of the population, most starkly in high-tech

All groups in Israel have experienced increasing employment rates since 2010 (and earlier), fueling some of Israel's recent economic growth.<sup>183</sup> However, the lack of equality in the education system is mirrored in workforce participation: Haredi and Arab populations have much lower employment rates than the rest of the population (Exhibit 35). Employment rates of Arab women are 46 percentage points below those of non-Haredi Jewish women, and employment rates of Haredi men are 40 percentage points below those of non-Haredi Jewish men. The gap is much lower for Arab men and Haredi women.

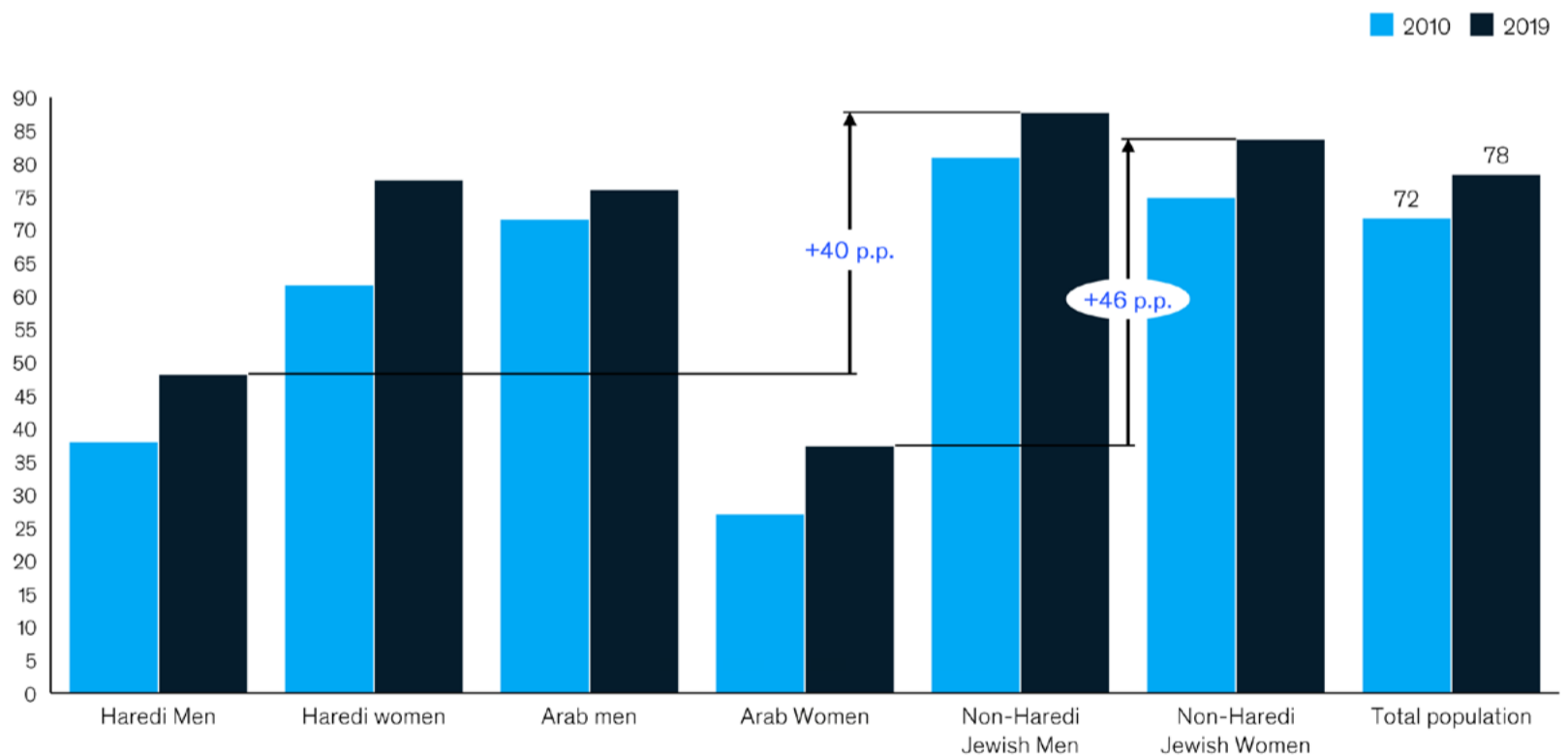
These differences are particularly large in Israel's high-tech sector, underscoring the two-speed nature of the economy. Haredi employees represent only 3 percent of Israel's high-tech workforce, far below their 13 percent share in the population. For the Arab population, this gap is even starker, with an employment share in the high-tech sector of only 2 percent compared with a 21 percent share in the population.<sup>184</sup>

Exhibit 35

### Despite increased employment rates, there is still a large employment-rate gap among minorities in Israel

#### Employment rates by population group and gender

Percent of relevant population<sup>1</sup>



1. Age of population in source is unspecified; due to other data sources, age of calculated population is likely 25-64

Source: Bank of Israel, 2019 report; IMF Israel: 2022 Article IV Consultation-Press Release and Staff Report, March 2022, based on OECD employment database and Israel economic survey 2020

<sup>182</sup> OECD Skills Outlook 2021: Learning for life, OECD, 2021.

<sup>183</sup> Bank of Israel annual report, 2019.

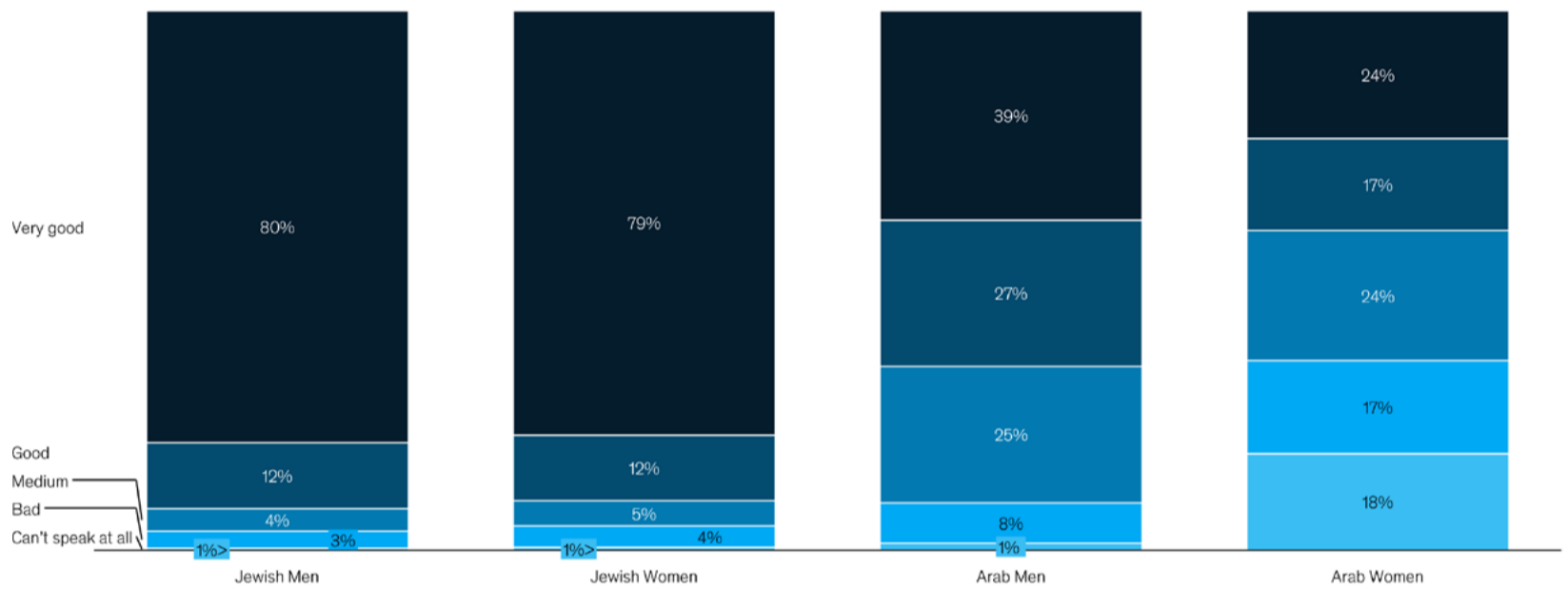
<sup>184</sup> Annual innovation report: State of high-tech 2022, Israel Innovation Authority, 2022 (based on CBS data). Population group data is based on CBS population data and National Economic Council population data.

Among other notable gaps that accentuate the two-speed nature of the Israeli economy are language gaps. Most Israeli workplaces and higher education opportunities require some knowledge of Hebrew, but only two-thirds of Arab men and 41 percent of Arab women have good or very good Hebrew fluency<sup>185</sup>. Knowledge of the English language, which can help people succeed in a high-productivity export-oriented workplace, is also lacking in the same populations (Exhibit 36). Improving English language fluency would also benefit the productivity of the Jewish population, with only 33 percent having very good fluency.<sup>186</sup>

Exhibit 36

**Israel's Arab population has lower fluency in the Hebrew language than other groups, an obstacle to full workplace inclusion**

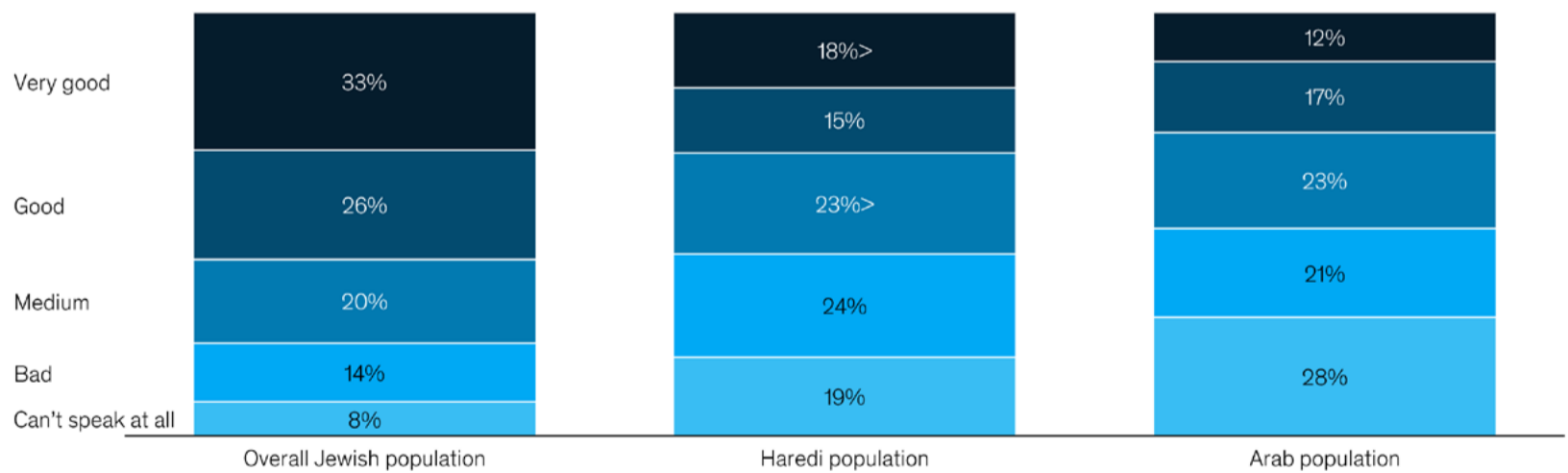
**Hebrew fluency by population group in Israel, 2020<sup>1</sup>**  
% of surveyed



1. Ages 20+;  
2. Low confidence data point  
Source: CBS Social Survey 2020

**Despite the importance of knowledge of the English language, there is wide divergence within Israel in English fluency.**

**English fluency by population group in Israel, 2014-15<sup>1</sup>**  
% of surveyed



1. Ages 16-65  
Source: Analysis of CBS data

<sup>185</sup> CBS Social Survey, 2020.  
<sup>186</sup> CBS data on Survey of Adult Skills in Israel.

## Israel's private sector and government can lean on best practice elsewhere as they seek paths to close the adult skills gap

Israeli governments have acted in recent years to reduce the skills gaps, including with plans to increase the number of students in high-tech-related studies and to grow academic staff in high-tech studies.<sup>187</sup> Private-sector employers and the government can take a number of steps to go further, including bolstering workplace training programs, emulating some best practices from elsewhere.

Prior McKinsey research has found that employers can attract and retain the best talent by providing training opportunities; evaluating employees and candidates not only for their knowledge and skills but also for their potential and capacity to learn; by embracing mobility; by considering candidates with different backgrounds and histories; and by creating both upward and lateral career paths within the organization so that employees can gain more varied experience.<sup>188</sup> One study found that upskilling and retraining workers is a win-win: the employee accumulates human capital while the employer benefits by reducing recruitment costs and securing a more productive workforce.<sup>189</sup>

Other best practices include:

**Provide incentives to encourage corporate investment in human capital.** A Brookings Institution study of California's Employment Training Panel, an initiative that reimburses employers for investing in approved training, found that the program had positive and significant effects on the sales and growth of participating companies.<sup>190</sup> Israel could give greater attention to funding programs that improve skills in non-high-tech sectors.

**Enable nationally recognized credentials that verify workforce education and skills.** To encourage acquiring skills in the workplace and create continuity in adult education, individuals could earn verifiable skill credentials throughout their career, through job experience and training programs. The government can play a role in documenting and verifying them to ensure that these skills are respected across places of employment.

**Assess whether the Israeli labor market enables healthy worker mobility.** Fluid labor markets minimize constraints on job switching, while rigid ones make seamless transitions to new opportunities more difficult. Regulation could be periodically reassessed to ensure that it supports a healthy dynamic and reflects current realities. When many vocations have licensing requirements or industries impose noncompete contracts, this raises barriers to workforce mobility and hinders the matching process between job seekers and vacancies.

**Convene coalitions including employers, industry groups, educational institutions, unions, community organizations, and the social sector to work together on improving workforce skills.** Both the European Commission—with its 2020 Pact for Skills, which envisions €7 billion in annual private and public investment—and nonprofits in the United States such as the Markle Foundation, which launched the Rework America Alliance, have brought together broad coalitions to focus on skills.<sup>191</sup> Such programs can jointly create a clearer understanding of the skills gap and implement initiatives to close it.

**“Employers can attract and retain the best talent by evaluating employees and candidates not only for their knowledge and skills but also for their potential and capacity to learn.”**

<sup>187</sup> Israeli Government Resolution number 455, October 2020.

<sup>188</sup> *Human capital at work: The value of experience*, McKinsey Global Institute, June 2, 2022.

<sup>189</sup> *The economic case for reskilling in the UK*, McKinsey, 2020.

<sup>190</sup> Marian Negoita and Annelies Goger, *State-level policies to incentivize workplace learning: Impacts of California's incumbent worker training program*, Brookings Institution, July 2020.

<sup>191</sup> *The Pact for Skills: Mobilizing all partners to invest in skills*, European Commission, November 2020; Markle Foundation website.



# 5. The Israel of tomorrow

Israel faces a choice for the next decade: to follow a business-as-usual scenario, leading to continuing modest growth in GDP per capita, or to follow a more aspirational scenario that would see it close its productivity gap and give a substantial lift to prosperity. The difference in outcome between the two is very large: a potential 25 percent gap in real GDP per capita by 2035, and a 3,500 NIS gap the average monthly in wages.

Taking the first path, the country would most likely maintain above-average growth, driven mainly by population growth. By embracing the second path and closing its productivity gap, Israel could potentially unleash economic growth that increases its prosperity to unprecedented levels, benefiting a broader swath of its population, and lifting GDP per capita on a purchasing power parity basis to the level of the most prosperous advanced economies.

## **Consider the following ambitious—but possible—scenario:**

By 2035, efforts have been made to improve productivity growth in all sectors of the economy by adopting the best practices that have brought Israel's tech industry to its current leading position and incorporating them into the broader Israeli ecosystem. By focusing on increasing competitive intensity and transforming low-productivity sectors, Israel is taking steps to end the two-speed economy and evolve its economy to be on a par with leading countries.

Compared to the previous business environment, the newly advanced one benefits from better regulation, with an enabling environment that opens the Israeli market to international companies while providing domestic companies with greater access to global markets, suppliers, and partners. In this context, companies capitalize on their comparative advantages and leverage Israel's capabilities to facilitate growth. It is now easier to open a new business, as seen by a surge in start-ups not just in high-tech, to engage in trade activities, and to innovate even in traditional sectors.

Newly digitized and sustainable business practices are being implemented and are enabling companies to perform robustly and offer attractive value propositions internationally. Management practices are best-in-class.

Infrastructure projects are well executed and efficiently deploy government and private funding. A more sophisticated and comprehensive infrastructure network is taking shape, including quick and effective delivery of tried-and-true methods of transportation, such as underground metro and fast trains, developed in an effective and timely way.

As a result of collective action among involved stakeholders, private and public investments in net-zero transition initiatives are catalyzing effective capital reallocation. There are now widespread efforts to decarbonize and to increase foreign investment in Israeli companies, and Israel is a leader in sustainability technology innovation.

Increased attention to improving the performance and participation of human capital, including for minority groups, is leading to a more inclusive and diverse labor force facilitating higher integration of different segments of Israel's society into a more unified labor force. Haredi and Arab employees are increasingly integrated into Israel's high-tech and other newly productive industries with workforce participation rate gradually approaching that of the rest of the population. More qualified and diverse human capital provides the business ecosystem with the digital and other advanced skills it has craved ever since the development of the tech and tech-enabled industries.

None of the assumptions in the aspirational scenario for Israel 2035 are out of reach, but to achieve them, Israelis will need to align on a concerted nationwide improvement effort, with the joint participation of all key stakeholders across business, civil society, and government. The productivity-boosting aspirational scenario will come with some dislocations for individuals as jobs change. But training programs aiming to equip workers with new skills and growing demand in the domestic economy can help mitigate and dampen these negative effects.

\*\*\*

The potential obstacles are numerous, including recent volatility in the global economy; Israel has so far managed to shelter its economy from these headwinds but will need to become even more resilient to continue doing so. Certainly, the challenges are large—but so are Israel's strengths: its entrepreneurial spirit, robust academic institutions, technological readiness, talent base, and stable economy.

Raising productivity can be an effective solution for much of what is holding Israel's economy back from achieving its true potential—and ensuring more broad-based prosperity in the future.

McKinsey Israel

January 2023

© McKinsey & Company