

THE GREEK LABOUR MARKET BEFORE AND AFTER THE PANDEMIC: SLACK, TIGHTNESS AND SKILLS MISMATCH

Christos Antonopoulos
Bank of Greece, Economic Analysis and Research Department

Sofia Anyfantaki
Bank of Greece, Economic Analysis and Research Department

Hiona Balfoussia
Bank of Greece, Economic Analysis and Research Department

Theodora Kosma
Bank of Greece, Economic Analysis and Research Department

Evangelia Papapetrou
Bank of Greece, Economic Analysis and Research Department,
and National and Kapodistrian University of Athens, Department of Economics

Filippos Petroulakis
Bank of Greece, Economic Analysis and Research Department

Pavlos Petroulas
Bank of Greece, Economic Analysis and Research Department

Pinelopi Zioutou
Bank of Greece, Economic Analysis and Research Department

ABSTRACT

The Greek labour market recorded a significant improvement during the first half of 2022. This is encouraging and reflects, inter alia, output growth, the government support measures during the pandemic and the implementation of important structural reforms during the previous decade. However, in the current inflationary environment, the question that arises is whether the labour market is slack or tight and whether wage pressures may be emerging. This article draws on diverse sources of information on the labour market, in an attempt to shed some light on this question and examine how the Greek labour market evolved before and after the pandemic. In sum, unemployment remains high in Greece, well above the euro area average, and labour market slack is still evident by most measures. However, pockets of tightening are beginning to emerge at the sectoral level. Moreover, slack is declining at a fast pace, much faster than in the euro area, as suggested by the drop in unemployment over the past three years. The high share of long-term unemployment and the rather elevated estimates of efficient unemployment presented in this article also point in the same direction. Given the recent strong employment growth and the prospect of a significant need for additional labour over the coming years due to the implementation of the NextGenerationEU plan, labour market tightness could increase further. This concern is further compounded by extensive survey evidence of skills mismatches in the Greek labour market, which are known to adversely affect allocative efficiency and, thus, productivity. Looking ahead, it is important to pursue labour market policies aimed at increasing participation rates and upskilling or reskilling the labour force, including in particular the long-term unemployed.

Keywords: labour market; unemployment; Beveridge curve; tightness; slack

JEL classification: E24; J08; J21; J24; J31

DOI link: <https://doi.org/10.52903/econbull20225602>

Η ΕΛΛΗΝΙΚΗ ΑΓΟΡΑ ΕΡΓΑΣΙΑΣ ΠΡΙΝ ΚΑΙ ΜΕΤΑ ΤΗΝ ΠΑΝΔΗΜΙΑ: ΧΑΛΑΡΟΤΗΤΑ, ΣΤΕΝΟΤΗΤΑ ΚΑΙ ΑΝΑΝΤΙΣΤΟΙΧΙΑ ΔΕΞΙΟΤΗΤΩΝ

Χρήστος Αντωνόπουλος

Τράπεζα της Ελλάδος, Διεύθυνση Οικονομικής Ανάλυσης και Μελετών

Σοφία Ανυφαντάκη

Τράπεζα της Ελλάδος, Διεύθυνση Οικονομικής Ανάλυσης και Μελετών

Χιόνα Μπαλφούσια

Τράπεζα της Ελλάδος, Διεύθυνση Οικονομικής Ανάλυσης και Μελετών

Θεοδώρα Κοσμά

Τράπεζα της Ελλάδος, Διεύθυνση Οικονομικής Ανάλυσης και Μελετών

Ευαγγελία Παπαπέτρου

Τράπεζα της Ελλάδος, Διεύθυνση Οικονομικής Ανάλυσης και Μελετών,
και Εθνικό και Καποδιστριακό Πανεπιστήμιο Αθηνών, Τμήμα Οικονομικών Επιστημών

Φίλιππος Πετρουλάκης

Τράπεζα της Ελλάδος, Διεύθυνση Οικονομικής Ανάλυσης και Μελετών

Πάυλος Πέτρουλας

Τράπεζα της Ελλάδος, Διεύθυνση Οικονομικής Ανάλυσης και Μελετών

Πηνελόπη Ζιούτου

Τράπεζα της Ελλάδος, Διεύθυνση Οικονομικής Ανάλυσης και Μελετών

ΠΕΡΙΛΗΨΗ

Η ελληνική αγορά εργασίας κατέγραψε σημαντική βελτίωση κατά το πρώτο εξάμηνο του 2022. Αυτή η τάση αντικατοπτρίζει, μεταξύ άλλων, τον αυξημένο ρυθμό οικονομικής μεγέθυνσης, τα μέτρα στήριξης που έλαβε η ελληνική κυβέρνηση κατά την πανδημία και την εφαρμογή σημαντικών διορθωτικών μεταρρυθμίσεων κατά την προηγούμενη δεκαετία. Ωστόσο, στο τρέχον πληθωριστικό περιβάλλον, το ερώτημα που τίθεται είναι αν υπάρχει στενότητα (tightness) ή χαλαρότητα (slack) στην αγορά εργασίας και αν ενδέχεται να εμφανιστούν μισθολογικές πιέσεις. Το παρόν άρθρο αντλεί πληροφορίες για την αγορά εργασίας από διάφορες πηγές, σε μια προσπάθεια να διερευνήσει αυτό το ερώτημα και να εξετάσει πώς εξελίχθηκε η ελληνική αγορά εργασίας πριν και μετά την πανδημία. Εν ολίγοις, η ανεργία παραμένει υψηλή στην Ελλάδα, πολύ πάνω από το μέσο όρο της ζώνης του ευρώ, και εξακολουθεί να διαπιστώνεται χαλαρότητα στην αγορά εργασίας με βάση τα κύρια μεγέθη. Ωστόσο, αρχίζουν να παρατηρούνται κάποιες ενδείξεις στενότητας σε κλαδικό επίπεδο. Επιπλέον, η χαλαρότητα στην αγορά εργασίας μειώνεται με γρήγορους ρυθμούς, πολύ ταχύτερα από ό,τι στη ζώνη του ευρώ, όπως υποδηλώνει η πτώση της ανεργίας τα τελευταία τρία χρόνια. Το υψηλό ποσοστό της μακροχρόνιας ανεργίας και οι μάλλον αυξημένες εκτιμήσεις για την “αποτελεσματική ανεργία” (efficient unemployment) που παρουσιάζονται σε αυτό το άρθρο αποτελούν ενδείξεις προς την ίδια κατεύθυνση. Δεδομένης της πρόσφατης σημαντικής αύξησης της απασχόλησης, καθώς και της προοπτικής δημιουργίας νέων θέσεων εργασίας τα επόμενα χρόνια λόγω της εφαρμογής του σχεδίου NextGenerationEU, η στενότητα στην αγορά εργασίας ενδέχεται να αυξηθεί περαιτέρω. Η αναντιστοιχία δεξιοτήτων που διαπιστώνεται στην ελληνική αγορά εργασίας επιτείνει τον ως άνω προβληματισμό. Συνάγεται ότι είναι σημαντικό να επιδιωχθούν πολιτικές που στοχεύουν στην αύξηση του ποσοστού συμμετοχής στην αγορά εργασίας και στην εκπαίδευση ή επανειδίκευση του εργατικού δυναμικού, συμπεριλαμβανομένων ιδίως των μακροχρόνια ανέργων.

THE GREEK LABOUR MARKET BEFORE AND AFTER THE PANDEMIC: SLACK, TIGHTNESS AND SKILLS MISMATCH*

Christos Antonopoulos

Bank of Greece, Economic Analysis and Research Department

Sofia Anyfantaki

Bank of Greece, Economic Analysis and Research Department

Hiona Balfoussia

Bank of Greece, Economic Analysis and Research Department

Theodora Kosma

Bank of Greece, Economic Analysis and Research Department

Evangelia Papapetrou

Bank of Greece, Economic Analysis and Research Department,
and National and Kapodistrian University of Athens, Department of Economics

Filippos Petroulakis

Bank of Greece, Economic Analysis and Research Department

Pavlos Petroulas

Bank of Greece, Economic Analysis and Research Department

Pinelopi Zioutou

Bank of Greece, Economic Analysis and Research Department

I INTRODUCTION

The Greek labour market recorded a significant improvement during the first half of 2022. Aggregate employment increased by 9% year-on-year (y-o-y), while dependent employment increased by 12%. Almost all sectors recorded positive employment growth rates and especially the tourism, retail, manufacturing and construction sectors. Moreover, the unemployment rate declined to 11.8% in September, a level not seen since 2010, though still well above the euro area average.

This recent strong performance follows a period of notable labour market resilience during the pandemic. While many firms were forced to suspend their operation in 2020, triggering a deep recession, the number of persons employed declined by much less than economic activity or hours worked, and less than in the euro area, largely due to the generous support measures of the Greek government.

In sum, recent labour market developments are encouraging and reflect, inter alia, output growth, the pandemic-related support measures and the implementation of important structural reforms during the previous decade. However, in the current inflationary environment, the question that arises is whether the labour market is slack or tight and whether wage pressures may be emerging. This article draws on diverse sources of information on the labour market, in an attempt to shed some light on this question and examine how the Greek labour market evolved before and after the pandemic.

Delving deeper into the recent sharp decline in unemployment, in Section 2 we show that it is not driven by lower labour force participation. The participation of workers aged 15-74

* The views expressed in this article are of the authors and do not necessarily reflect those of the Bank of Greece. The authors are responsible for any errors or omissions.

has risen over the past decade and is as high now as it was in 2010. This increase is not merely a cyclical phenomenon but rather a larger trend, underpinned by the rising participation of women and workers above prime age. The employment-to-population ratio is also on the rise. However, it should be noted that the labour force participation has been growing at a slower pace over recent years and, in 2022, remains almost 5 percentage points lower than the euro area average, suggesting that, recent improvements notwithstanding, the Greek labour market is still some way away from fully utilising its human capital.

Labour market slack, as measured by the fraction of the extended labour force not fully utilised in the labour market, but willing to offer more, improved the most in Greece among euro area countries following the pandemic, as outlined in Section 3, declining from 24.3% in the fourth quarter of 2019 to 18% in the second quarter of 2022. Nonetheless, it remains the third highest in the euro area on account of Greece's high unemployment rate, indicating the lingering presence of slack in the labour market.

Similarly, the job vacancy rate, a measure of labour market tightness which is discussed in Section 4, declined in Greece before the pandemic and has been increasing since the first quarter of 2021. A similar pattern was recorded in the euro area, where the pandemic prompted a sharp temporary fall in job vacancy rates. By this measure, there has been a tightening in the Greek labour market in recent years. Still, the job vacancy rate in Greece remains much lower than that of the euro area, indicating, yet again, that the Greek labour market is less tight than the euro area average.

On the other hand, it is notable that Greece has the highest long-term unemployment rate among euro area countries, standing at 7.8% in the second quarter of 2022 compared to a 2.7% euro area average, with 63% of all unemployed in Greece being long-term unemployed. While a substantial decline in the long-term

unemployment rate has been achieved in recent years, the high share of long-term unemployed and the known difficulty in re-employing this cohort imply that slack in the Greek labour market may effectively be lower, and closer to the euro area average, than indicated by some of the aforementioned metrics.

Turning to a more model-based analysis in Section 5, an examination of the Greek Beveridge curve from 2009 onwards reveals similar patterns to those reported in the literature, namely an increase in tightness (the ratio of vacancies to unemployment) as unemployment declines. However, in the case of Greece, there doesn't seem to be evidence of a concurrent decrease in labour market efficiency, i.e. an outward shift of the Beveridge curve, as is often the case following a recession. Indeed, the improvement in the Greek labour market is a result of both a decrease in the separation rate and an increase in the job finding rate. This may reflect the positive impact of the structural labour market reforms undertaken over the past decade. Higher tightness with broadly constant labour market efficiency could also reflect an increase in productivity, which is known to induce firms to increase vacancies and hence employment. While higher productivity could imply an upward pressure on wages, it would allow for wage gains without disrupting employment gains.

As a follow-up, we explore the novel notion of efficient unemployment, which has not previously been considered for Greece. It is defined as the rate of unemployment which minimises the sum of unemployment and vacancy creation, subject to the Beveridge curve, to acknowledge that it is not possible to reduce both unemployment and vacancies to zero at the same time. We estimate the slope of the Greek Beveridge curve under alternative assumptions and use its elasticity to calculate efficient unemployment for Greece for the period from 2010 to date. We show that, at the current juncture, efficient unemployment is below, but close to, the current value of headline unemployment for all plausible values of

the Beveridge elasticity, indicating that there still exists slack in the labour market, albeit fast declining.

Turning to sectoral micro-level evidence in Section 6, the ERGANI data indicate that the post-COVID period of 2021 has been characterised by robust employment growth across most major sectors. For most sectors, the wages of new hires and their relative wages compared to those of incumbent workers do not show any significant upward trend. Thus, on balance, wage growth data do not show signs of a general tightness in the labour market. The Construction, Hotels & Restaurants and Other Services sectors are exceptions, exhibiting an upward trend in wages of new hires as well as in employment flows, which may be indicative of emerging market pressures.

Finally, a discussion of labour market developments would be incomplete without considering skills availability and mismatch. As discussed in Section 7, an efficient allocation of workers across tasks is particularly important when the aggregate skills supply is relatively limited, as is the case with Greece. Persistent skill gaps and mismatches come at economic and social costs, while skills constraints can negatively affect labour productivity and hamper the ability to innovate and adopt technological advances. We find that overskill mismatch plays an important role for productivity, and overskilling in professional occupations, where Greece scores especially poorly, is a major drag.

To sum up, unemployment remains high in Greece, well above the euro area average, and labour market slack is still evident by most measures. However, pockets of tightening are beginning to emerge at the sectoral level. Moreover, slack is declining at a fast pace, much faster than in the euro area, as suggested by the drop in unemployment over the past three years. In addition, long-term unemployment in Greece is high, suggesting that, at some point, it may become difficult to reduce

the unemployment rate below the level of long-term unemployment, which currently stands at about 7%. Subtracting long-term unemployment from the measure of slack suggests that slack in Greece may be closer to the euro area average than indicated by the baseline measure. Estimates of efficient unemployment are also high, hovering around 8-10%. With unemployment currently below 12%, this means that the unemployment gap, i.e. the distance to equilibrium unemployment, is closing. Given the recent strong employment growth and the prospect of a significant need for additional labour due to NextGenerationEU (whose implementation will require a projected additional 200,000 jobs by 2026, according to the National Recovery and Resilience Plan), labour market tightness could increase significantly over the coming years.

This analysis has important policy implications. Notably, looking ahead, it is particularly important to pursue labour market policies aimed at increasing participation rates and upskilling or reskilling the labour force, including in particular the long-term unemployed. The ongoing adverse demographic developments and the recent exodus of young highly skilled workers following the sovereign debt crisis also underline the pivotal role of active labour market policies. Carefully designed policies to enhance education and skills acquisition would ensure that workers are equipped with the right skills and that businesses can flexibly deploy workers to meet changing labour market needs. The implementation of such policies will help ensure that technology adoption has a positive impact on productivity, output growth and employment.

In this spirit, the National Recovery and Resilience Plan includes reforms which will foster labour market activation and upskilling. Moreover, the timely absorption of the NextGenerationEU funds and the full implementation of the planned investments and structural reforms will enhance the economy's innovation capacity and create new high-skilled jobs, hopefully contributing to a reversal of the

previous decade's brain drain. In light of the analysis presented in this article, optimising the use of the NextGenerationEU funds and designing targeted labour market policies will be key to ensuring robust employment growth, high labour force participation and, ultimately, strong and sustainable economic growth over the medium-term horizon.

2 RECENT DEVELOPMENTS AND LONG-RUN TRENDS IN THE GREEK LABOUR MARKET

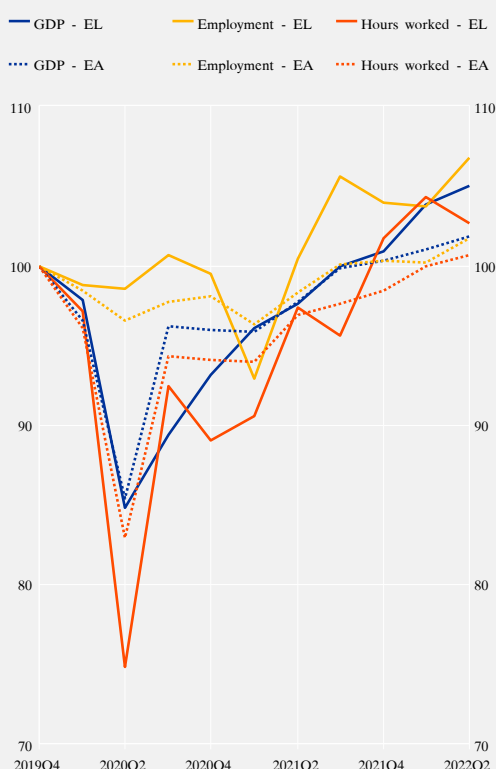
2.1 EMPLOYMENT AND UNEMPLOYMENT

The COVID-19 pandemic led to a significant recession in 2020, as many firms, especially in the tourism sector, suspended their operation. However, due to the support measures of the Greek government, the number of persons employed declined much less compared to economic activity and hours worked. Chart 1 shows the evolution of economic activity, aggregate employment and hours worked in Greece and the euro area. In the second quarter of 2020, when the first lockdown occurred, both GDP and hours worked declined more in Greece compared to the euro area, while aggregate employment dropped comparatively less. Since the second quarter of 2021, when most of the COVID-19 containment measures were lifted, employment growth has been strong and has reverted to pre-pandemic levels by achieving higher growth rates compared to the euro area. To a large extent, the strong rebound of the labour market after the lifting of the majority of COVID-19-related measures is likely due, among other things, to the implementation of important structural reforms during the previous decade, which made the labour market more flexible.¹

During the first half of 2022, the labour market improved significantly as the strong demand for tourism services led to increased hirings in Hotels & Restaurants. As a result, aggregate employment increased by 9.0% y-o-y in the first half of 2022, while dependent employment increased even more, by 12.0% y-o-y. Almost all

Chart 1 Evolution of GDP, employment and hours worked in Greece and the euro area

(index: 2019:Q4=100, people aged 15-74, seasonally adjusted)



Source: Eurostat.
Note: EL = Greece, EA = euro area.

sectors recorded positive employment growth rates and especially the tourism sector, retail trade, manufacturing and construction. In addition, the unemployment rate declined to 13.1% from 16.5% in the first half of 2022, and to 11.8% in September 2022, reaching a level not seen since 2010.

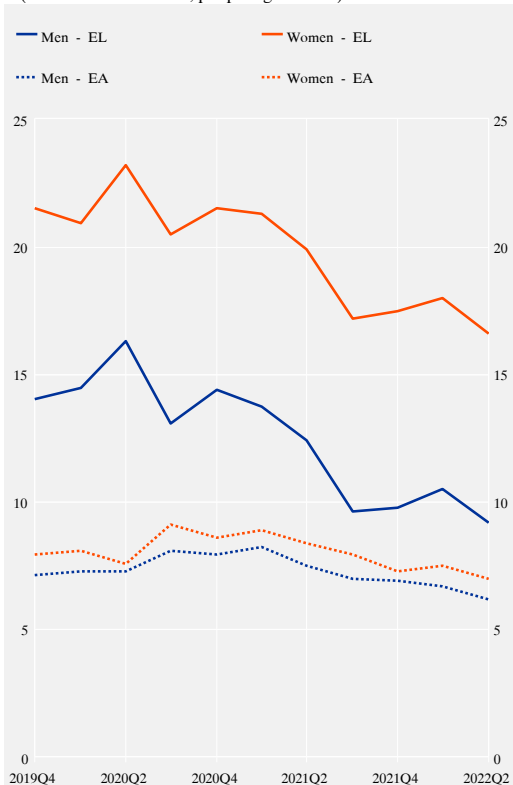
The drop in unemployment (Chart 2) was more significant for the most vulnerable social groups, especially for young people² and for

¹ The extensive 2010-2014 labour market structural reforms, including provisions concerning collective dismissals, the institutional framework for unions and collective agreements, the promotion of flexible forms of employment, the decentralisation of the wage setting process, as well as the statutory minimum wage reductions, raised flexibility, contributed to the strong moderation of wage costs and increased the resilience of employment to adverse economic shocks.

² 30.4% in the first half of 2022 compared to 39.0% in the first half of 2021 for people aged 20-24, and 20.4% in the first half of 2022 compared to 29.1% in the first half of 2021 for people aged 25-29.

Chart 2 Unemployment rate in Greece and the euro area by gender

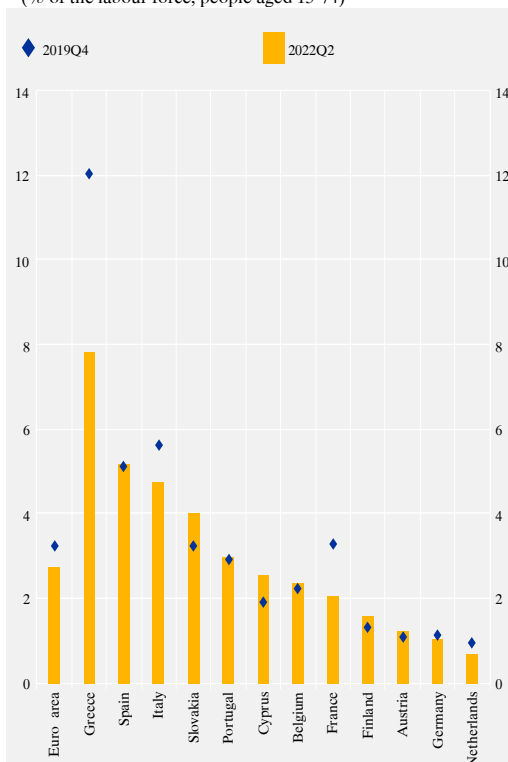
(% of the labour force, people aged 15-74)



Source: Eurostat.
Note: EL = Greece, EA = euro area.

Chart 3 Long-term unemployment rate in the euro area

(% of the labour force, people aged 15-74)



Source: Eurostat.
Note: Only Member States with available data for 2022:Q2 are presented.

women.³ At the same time, the labour force increased significantly (4.9% y-o-y in the first half of 2022), as people who were reluctant to enter the labour force due to health concerns and the need to take care of their vulnerable relatives were again available in the labour market.

Nevertheless, while the unemployment rate has declined for both men and women, the distance from the euro area average remains large. The persistently high unemployment in recent years, despite a long-term decline from its peak, is likely to have exacerbated the problem of mismatch between jobs demanded and offered, as a significant part of the workforce has lost some of its skills.⁴ In addition, factors such as population ageing, retirement of workers and labour migration during the crisis years have led to shortages of both low- and high-skilled workers.

It is notable, however, that Greece has the highest long-term unemployment rate (ratio of persons unemployed over 12 months to labour force) among euro area countries, standing at 7.8% in the second quarter of 2022, compared to 2.7% on average in the euro area (see Chart 3), despite the large improvement since 2019.⁵

2.2 PARTICIPATION RATES

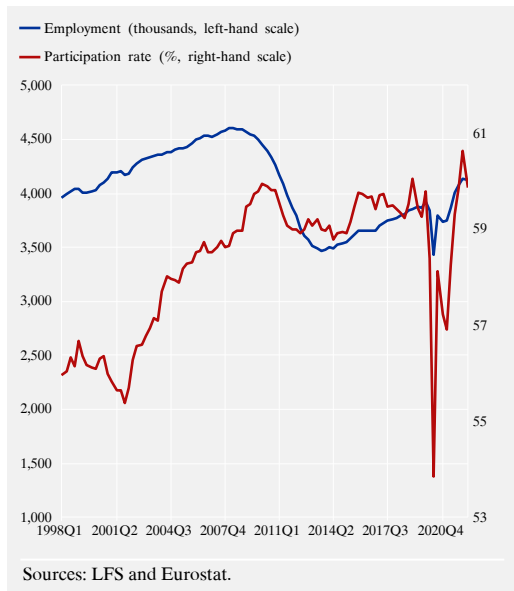
The recent sharp decline in unemployment is not simply due to lower participation, as one could have feared due to the pandemic, and as was the case in other countries (e.g. in the

³ 17.3% in the first half of 2022 compared to 20.6% in the first half of 2021.

⁴ See Section 6 for a thorough analysis of mismatch in the Greek labour market.

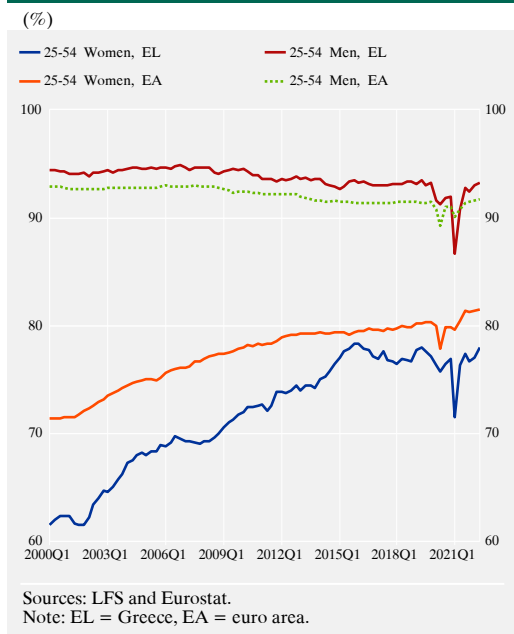
⁵ Long-term unemployment amounts to 62.6% of total unemployment in Greece compared to 41.7% in the euro area.

Chart 4 Employment and participation rate in Greece



the outset of the pandemic, it continued its upward trajectory, reaching 60.2% (for the 15-74 age group) in the third quarter of 2021, an all-time high. As a result, total employment passed the 4 million mark in the third quarter of 2021 for the first time since 2011.

Chart 5 Prime-age participation rate in Greece and the euro area



The gains in participation have come primarily from two sources: higher participation of workers above prime age and women. As is common in other advanced economies, the participation of prime-age (aged 25-54) men has fallen slightly over the past two decades (Chart 5), by approximately one percentage point. By contrast, the participation of prime-age women has kept rising and is now at 78%, over 15 percentage points higher than in the early 2000s. This likely reflects a combination of demographic and social factors, as younger women, with a much higher tendency to work outside the home, replace older cohorts. The participation of prime-age women seems to have plateaued in recent years, and the pandemic does not seem to have changed this. Interestingly, participation of prime-age men in Greece has been consistently slightly higher than in the rest of the euro area for the past two decades; for women, it has been lower, possibly reflecting, inter alia, the relative inadequacy of support measures for motherhood, though the difference has shrunk in recent years.

United States and the United Kingdom, though not in the EU). The participation of workers aged 15-74 (Chart 4) is as high now as it was in 2010; following a predictable fall at

As for older workers (aged 55-74), gains have been more modest but are just as important. The participation of the 55-74 age cohort has risen from 27% in 2008 to 34% in 2021 (Chart 6). The gains are similar for both men and women, though for men participation is almost twice as high for this cohort. It is likely that participation gains for this group are the result of the various reforms that took place, which discourage early retirement; participation for these groups is likely to increase further, as cohorts benefitting from early retirement policies are replaced by younger ones. Newer policies, which substantially lower pension reductions for working pensioners, are expected to further fuel this trend. On the other hand, the pandemic may have

also hastened retirement for these workers, as was the case in other countries, so perhaps these trends may have been delayed. The increase in the participation rate, particularly because it is not merely a cyclical phenomenon but rather part of a larger trend, is encouraging regarding the growth potential of the labour market. The participation of older men was higher than in the rest of the euro area until the crisis, perhaps due to the higher rate of self-employment, falling substantially below at the onset of the crisis due to early retirements. Participation of older women, however, remains substantially lower.

Finally, Chart 7 shows the employment-to-population ratio for the 15-74 age group, a reasonably model-free metric of tightness of the labour market. It has risen substantially from its low of the previous decade and has resumed its pre-pandemic trend as of 2022. On the other hand, it is still below its pre-crisis level, suggesting that further gains may be possible due to the various reforms enacted during the sovereign debt crisis to raise participation, coupled with rising longevity and reductions in early retirements.

As such, even though the working age population and the labour force may have shrunk over the past fifteen years, the higher participation rate means that the new equilibrium may allow for a higher employment-to-population ratio. All in all, this graphical evidence suggests that, despite having improved, the Greek labour market is still some way away from fully utilising its human capital.

Furthermore, the aforementioned analysis notwithstanding, the overall labour force participation rate in 2022 remained almost 5 percentage points lower than the euro area average (Chart 8). This is a perennial problem of the Greek economy as the lack of support measures for motherhood discourages women from entering the labour market, while the family support net in the Greek society is a disincentive for young people to seek a job. On this front, active labour market policies

Chart 6 Participation rates for workers aged 55-74 in Greece and the euro area

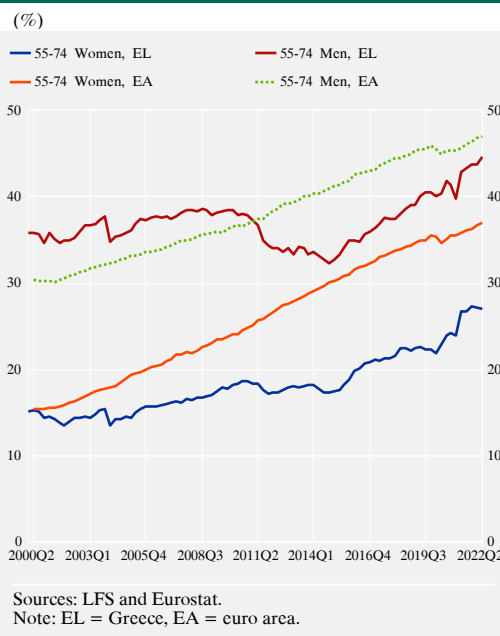
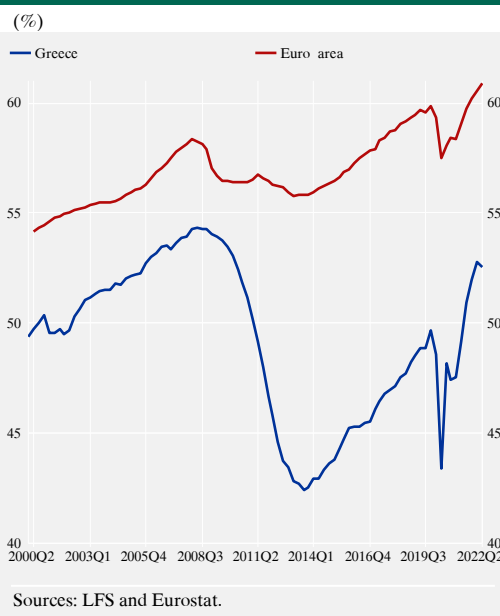


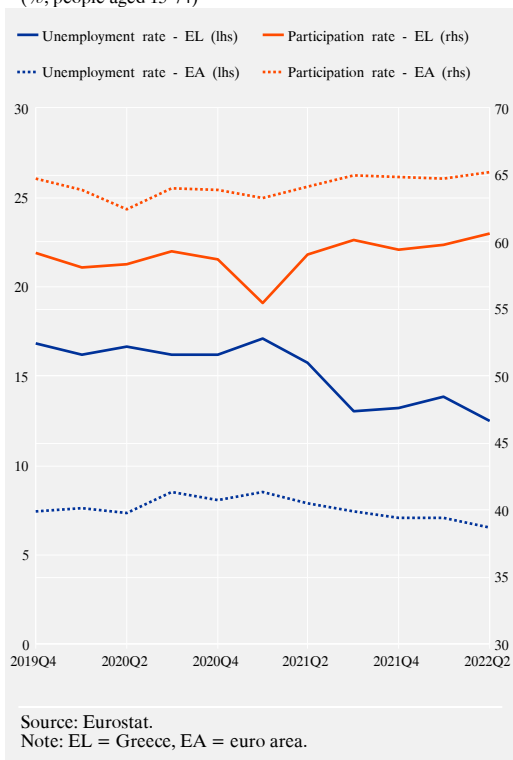
Chart 7 Employment-to-population ratio in Greece and the euro area



that would support employment, increase skills and enhance the experience of workers, especially those most vulnerable, would increase attachment to the labour market and

Chart 8 Unemployment rate and labour force participation rate

(%, people aged 15-74)



eventually result in higher employment and participation rates. In light of the adverse demographic developments and the exodus of young skilled workers with enhanced human capital, especially after the recent economic crisis, the role of active labour market policies along with labour market reforms seems to be crucial.

3 LABOUR MARKET SLACK IN THE GREEK ECONOMY

Further to the unemployment rate, another indicator that is widely used to examine slack in the labour market is related to a wider notion of underutilisation. Indeed, to better reflect the unmet need for employment, labour market slack consists of all people who are not fully utilised in the labour market, but express their willingness to offer more. Following Eurostat, there are four different groups that belong to the above definition:⁶

- unemployed people;
- underemployed part-time workers who want to work more;
- people who are available to work but are not looking for work;
- people who are looking for work but are not available for work.

The first two groups belong to the definition of the labour force, but the last two belong to the definition of inactive persons and are outside the labour force. For the analysis of labour market slack, we use the “extended labour force”, which is the sum of labour force plus the two last groups.

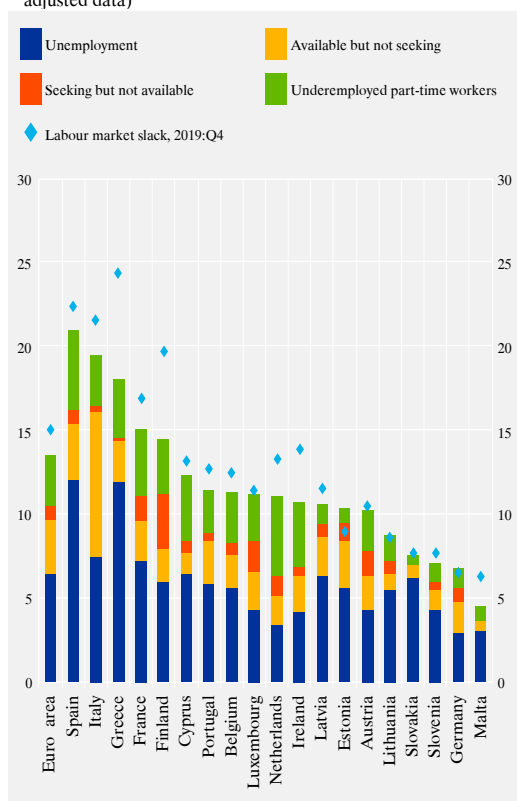
Chart 9 shows labour market slack as a share of the extended labour force for the euro area Member States and its decomposition for the second quarter of 2022. In addition, the aggregate share for the fourth quarter of 2019 (the last quarter before the outbreak of COVID-19 pandemic) is presented.

In the second quarter of 2022, euro area labour market slack, as measured by the same metric, stood at around 13.5% of the extended labour force compared to 15.0% before the outbreak of the pandemic. Unemployment accounts for half of this percentage, while the rest is divided between people who are available but not seeking a job and people who are seeking a job but are not available. Greece had the third largest share, mainly due to the high unemployment rate (11.8% of the extended labour force), behind Spain and Italy, while in the fourth quarter of 2019 it registered the highest rate. The second largest contributor was underemployed part-time workers (3.4% of the extended labour force), as many employees work part-time, while they

⁶ According to Eurostat, “persons seeking work but not immediately available, consists mostly of people who do not qualify as unemployed because of their limited availability to start in a new job, despite their being jobseekers”. For more details, see <https://op.europa.eu/en/publication-detail/-/publication/30df990e-7eea-4dbb-8846-7e9808e3bb65>.

Chart 9 Labour market slack in the euro area (2022:Q2)

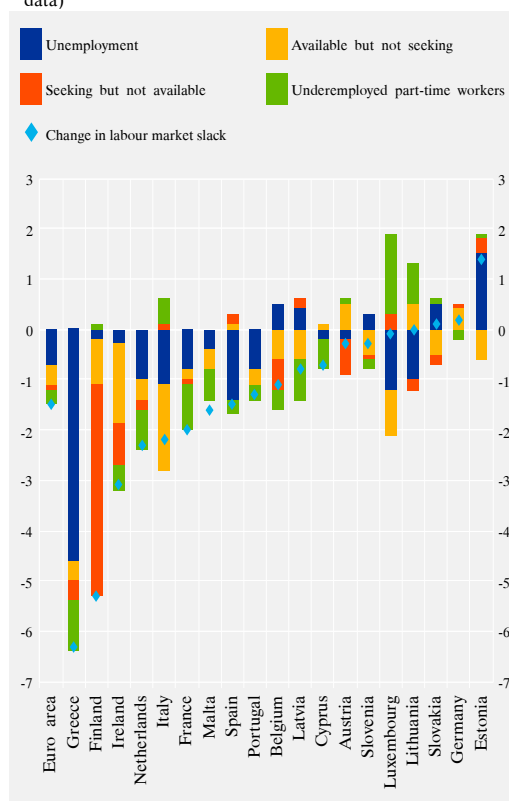
(% of the extended labour force, people aged 15-74, seasonally adjusted data)



want to work more hours and increase their income. The third largest category is people who are available to work but are not seeking employment (2.5% of the extended labour force); these people are usually those discouraged from a long absence from the labour market and are not actively searching for a new job. The long absence from the labour market often leads to a deterioration of their skills. If we examine the share of people who are available but not seeking a job over time, the highest rates were observed during the periods of lockdown, i.e. in the second quarter of 2020 (4.6% of the extended labour force), in the fourth quarter of 2020 (5.1% of the extended labour force) and in the first quarter of 2021 (6.4% of the extended labour force), as they probably had to take care of the children who were attending school at home and elderly people.

Chart 10 Change in labour market slack in the euro area (2019:Q4-2022:Q2)

(percentage points, people aged 15-74, seasonally adjusted data)



Labour market slack improved in almost all Member States (with the exception of Estonia, Slovakia and Germany) after the pandemic. The most significant improvement was realised in Greece, as this share of the extended labour force declined from 24.3% in the fourth quarter of 2019 to 18.0% in the second quarter of 2022. Chart 10 shows the differences between the two periods. Labour market slack declined by 6.3 percentage points in Greece, compared to 1.5 percentage points in the euro area; all four components contributed to the decline, though the drop in the unemployment rate was the main factor.

Excluding the unemployment rate, the remaining three components comprise the potential additional labour force (Chart 11). In this case, the share of Greece is lower relative to the euro area average (6.2% compared to 7.1% in

Chart 11 Shares of the potential additional labour force in the euro area (2022:Q2)

(% of the extended labour force, people aged 15-74, seasonally adjusted data)

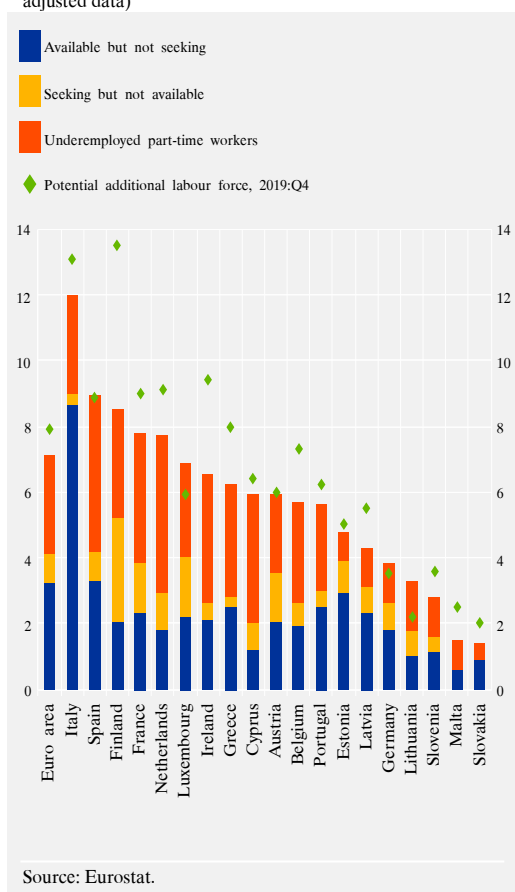
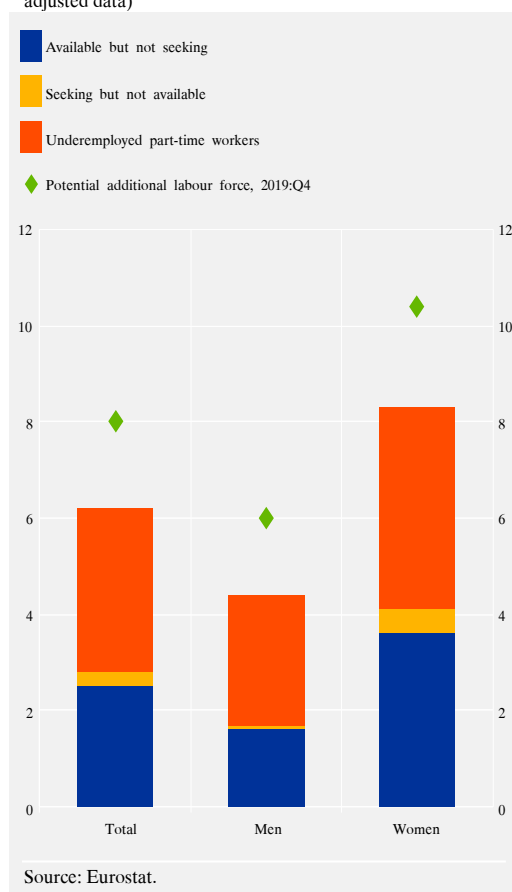


Chart 12 Shares of the potential additional labour force in Greece by gender (2022:Q2)

(% of the extended labour force, people aged 15-74, seasonally adjusted data)



the euro area). In addition, the share of people who are seeking a job, but are not available, is the third lowest across euro area Member States.

The share of potential additional labour force is almost double for women (8.3% of the extended labour force) compared to men (4.4% of the extended labour force) (Chart 12). Even though this share has declined compared to the fourth quarter of 2019, it remains high. The share of available but not seeking women (discouraged workers) is more than double compared with the share of men. Additional reforms and the implementation of more targeted measures to increase female participation and attachment to the labour

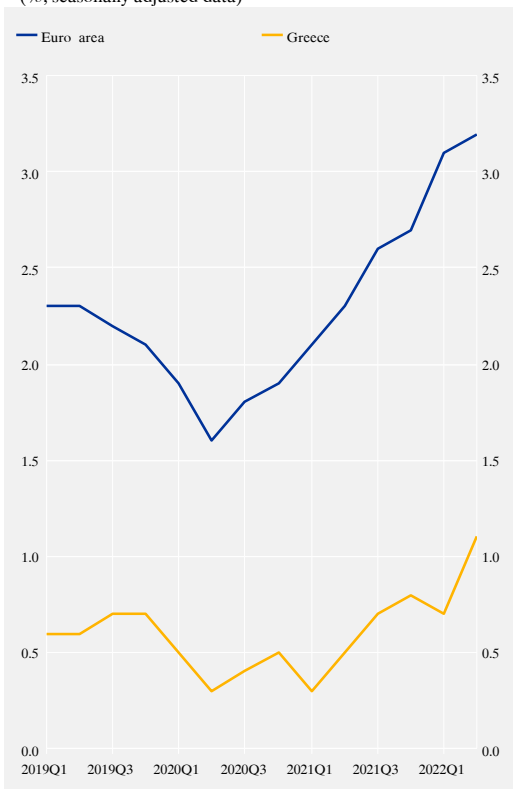
market should be considered. These include easier access to nurseries for young children and care homes for the elderly, subsidies for hiring women, (re)training programmes and policies for enhancing their skills. Such policies would encourage women to join the labour force and increase their activity rates and thus, subsequently, total labour force participation.

4 TIGHTNESS IN THE GREEK LABOUR MARKET: JOB VACANCY RATES AND UNEMPLOYMENT

Labour market tightness reflects the relative abundance of vacancies as compared to those seeking for a job. The pandemic resulted in a

Chart 13 Job vacancy rates

(%, seasonally adjusted data)

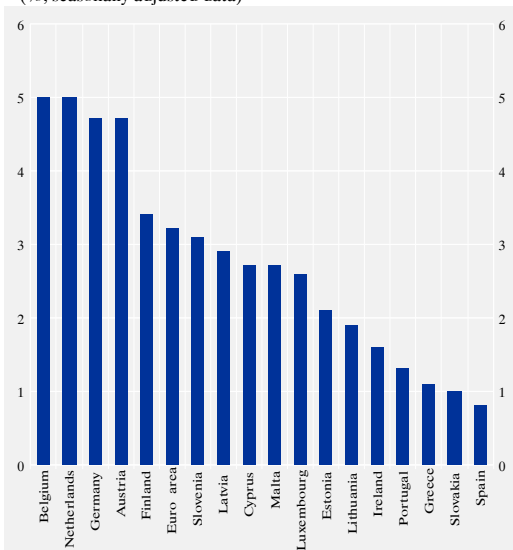


Source: Eurostat.

Note: Job vacancy rates cover NACE Rev. 2 sections B to S.

Chart 14 Job vacancy rates in the euro area (2022:Q2)

(%, seasonally adjusted data)



Source: Eurostat.

sharp fall in job vacancy rates⁷ in the euro area, followed by a recovery. In Greece, despite lower job vacancy rates compared to the euro area, the job vacancy rate declined before the pandemic, while it increased from the first quarter of 2021, reaching 1.1% in the second quarter of 2022 (Chart 13).

Among the euro area Member States for which comparable data are available,⁸ there are countries with a high job vacancy rate, a few countries with a low rate, while the majority of them are at a medium level (Chart 14). In the first group belong the Netherlands (5.0%), Belgium (5.0%), Germany (4.7%) and Austria (4.7%). Greece is among the countries with the lowest job vacancy rate, along with Spain (1.1% and 0.8%, each).

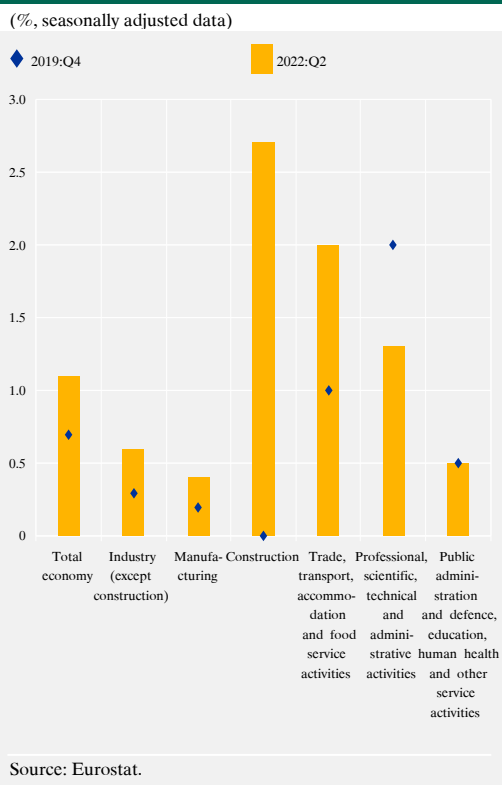
However, compared with the fourth quarter of 2019 (the last quarter before the outbreak of COVID-19), Greece's job vacancy rate has increased by 0.5 percentage points, albeit to a lesser extent than the euro area average (1.1 percentage points). In the majority of the countries, the job vacancy rate increased, with changes ranging between 0.1 and 1.7 percentage points. The largest increases were observed in the Netherlands (1.7 percentage points), Austria, Belgium and Germany (1.6 percentage points, respectively).

The analysis of job vacancy rates by sector of economic activity raises important issues regarding the presence of heterogeneity in this respect in the Greek labour market. In particular, in the second quarter of 2022 there were sectors that reported high vacancy rates such as construction and trade, transport and accommodation (2.7% and 2.0%, respectively), presenting at the same time the highest rate of change compared to the last quarter of 2019.

⁷ The job vacancy rate (JVR) measures the proportion of total job posts that are vacant, expressed as a percentage, i.e. $JVR = (\text{number of job vacancies}) \div (\text{number of occupied posts} + \text{number of job vacancies}) \times 100$.

⁸ Data for France and Italy are not strictly comparable. Particularly in France, only business units with 10 employees or more are surveyed. Moreover, in the case of Public Administration, Education and Human Health (NACE Rev. 2 sections O, P and Q, respectively), public institutions are not covered in France and Italy.

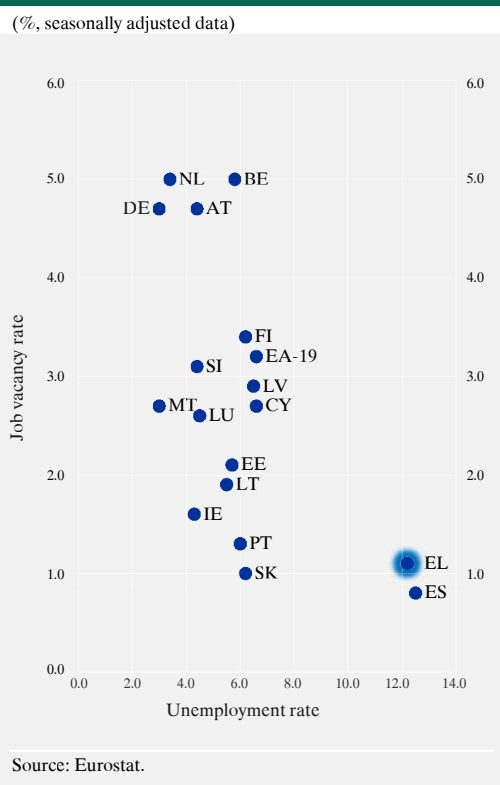
Chart 15 Job vacancy rates by sector in Greece (2019:Q4-2022:Q2)



In particular, tourism-related activities showed a sharp increase of the job vacancy rate, reaching 8.5% in the second quarter of 2022 from 2.9% in the fourth quarter of 2019. On the other hand, there were sectors like manufacturing and industry which, despite starting from low job vacancy rates, recorded mild increases. In contrast, in services, i.e. the public administration, education and health sectors, the job vacancy rates remained flat compared to the fourth quarter of 2019. Overall, the labour market appears to be tighter than before the pandemic, with industry, trade, tourism and construction revealing higher tightness compared to services (Chart 15).

Important issues of heterogeneity across euro area Member States appear when analysing the job vacancy rate in combination with the unemployment rate. Particularly, there are countries with a low unemployment rate and a high job vacancy rate, such as Germany,

Chart 16 Job vacancy and unemployment rates in the euro area (2022:Q2)

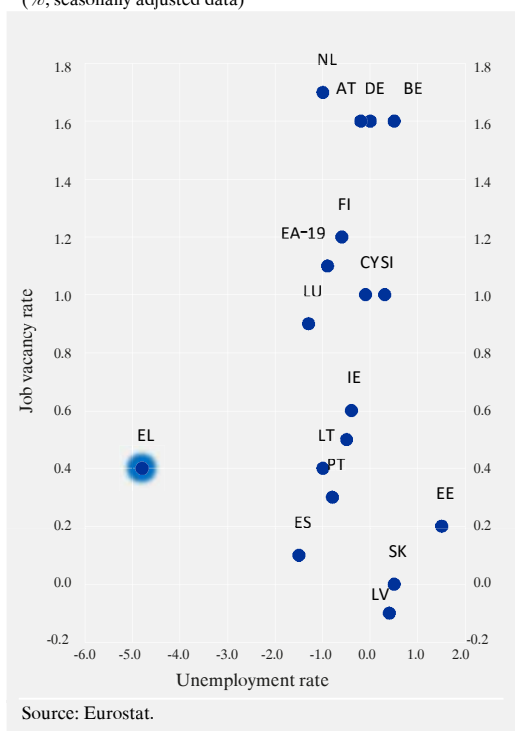


Belgium, the Netherlands and Austria, while others show the opposite picture. Greece, with an unemployment rate of 12.2% in the second quarter of 2022 and a job vacancy rate of 1.1%, belongs to the group of countries with a high unemployment rate and a low job vacancy rate, pointing to labour market slack (Chart 16).

However, looking at the evolution of the labour market during the pre- and post-COVID-19 periods, Greece has made significant progress, as it recorded the largest reduction in the unemployment rate (-4.8 percentage points), while in the majority of the euro area countries the unemployment rate decreased by less than 1 percentage point, with a simultaneous increase in the job vacancy rate (Chart 17). This suggests that after the pandemic Greece is characterised by remaining labour market slack and an increase in labour market tightness.

Chart 17 Changes in job vacancy rates and unemployment rates in the euro area (2019:Q4-2022:Q2)

(%, seasonally adjusted data)



5 INSIGHTS FROM THE BEVERIDGE CURVE

5.1 THE GREEK BEVERIDGE CURVE

To delve deeper into the relationship between job vacancies and unemployment and its evolution over time, one needs to consider the Beveridge curve.⁹ The Beveridge curve is an empirical relationship between the vacancy (v) and unemployment rates (u); a negative slope of the curve in the v - u space is a robust empirical feature of market economies, and useful for drawing conclusions about labour market tightness. It is an integral part of standard macroeconomic analyses of the labour market, principally the search and matching framework (see Pissarides et al. 2000).¹⁰

Intuitively, when the vacancy rate is low, demand for new workers is low relative to the labour force, so it is harder for unemployed workers to find jobs. In a dynamic labour mar-

ket with constant churn of workers, this means that unemployment is higher. As vacancies increase, the unemployment rate will decrease. The higher the economy is on the v - u space, the tighter the labour market is; $\theta = v/u$ is labour market tightness. In tight labour markets, it is harder for firms to fill vacancies, and so vacancies will remain unfilled for longer. As the search for workers is costly, a high θ is typically thought of as a useful summary statistic of the labour market situation.¹¹

While movements along the Beveridge curve reflect changes in tightness, shifts in the Beveridge curve reflect changes in matching efficiency, ε . The rate of matches in the labour market is determined by the matching function, $m(\theta, \varepsilon)$; m is falling in θ , as fewer matches per vacancy are made in tight labour markets, and rising in ε . A less efficient labour market will have fewer matches for each level of tightness; put another way, it implies a higher number of vacancies to sustain a given unemployment rate. As such, a shift out of the Beveridge curve is associated with a less efficient labour market. Labour market efficiency can depend on a variety of factors, most prominently frictions in the allocation of workers and the matching process itself (how easy it is to access vacancies, screen candidates, etc.), as well as search effort and the propensity of firms to fill vacancies. The two main forces behind the Beveridge curve, efficiency and tightness, are depicted in Chart 18.

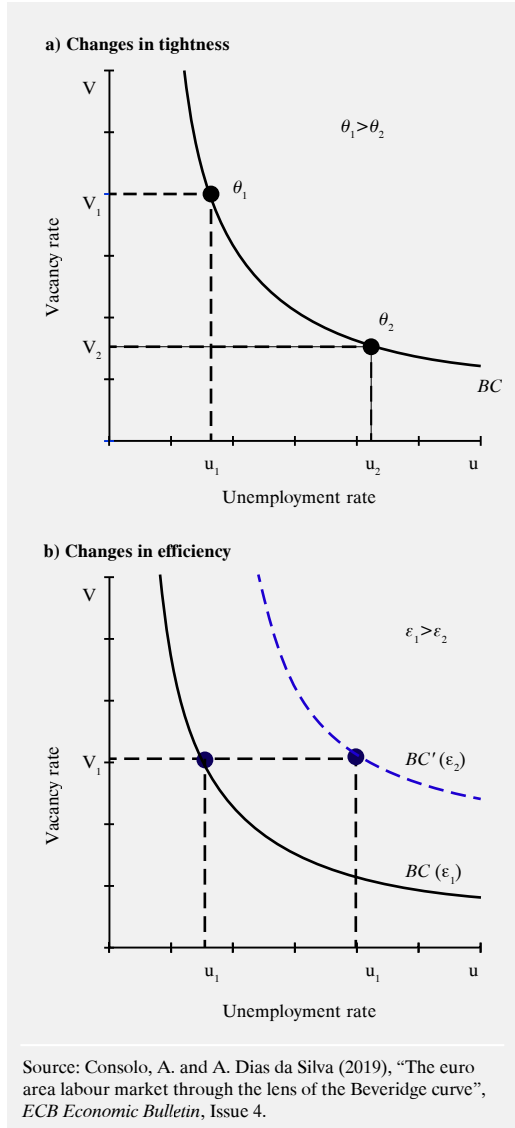
Labour market efficiency typically falls after recessions. The Beveridge curve shifts out when unemployment reaches its local maximum; vacancies naturally precede job fillings as firms start to look for workers more intensively, so the reduction in unemployment will lag the rise in vacancies. As the economy improves and unemployment falls, labour mar-

⁹ Note the different definitions of the vacancy rate. In the US it is defined as vacancies over employment, and in Europe as vacancies over the labour force (unemployed and occupied posts).

¹⁰ Pissarides Committee, “Development Plan for the Greek Economy”, 2020.

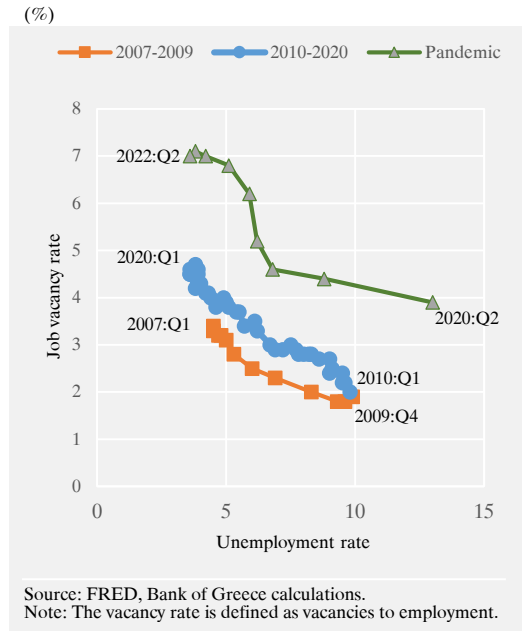
¹¹ If search were costless, firms could post high numbers of vacancies irrespective of labour market conditions, making v/u an inappropriate measure of tightness.

Chart 18 Movements along and shifts in the Beveridge curve



ket efficiency is gradually restored and the curve shifts in. This cyclical relationship between vacancies and unemployment gives rise to a banana-shaped chart in the $v-u$ space and provides a good representation of advanced economy labour markets during the 2010s recovery. Chart 19 depicts this pattern for the US for illustration purposes. The banana-shape formed by the blue and orange segments of the US Beveridge curve never fully closes, indicating that pre-crisis efficiency was

Chart 19 The Beveridge curve in the United States



never attained again. The euro area Beveridge curve shows a similar relationship.¹²

The Beveridge curve for the Greek labour market followed similar dynamics during and following the financial crisis. This is shown in Chart 20, separately for all firms in the business sector (excluding the primary sector and households) and firms with over 10 employees.¹³ There was a steep movement along the Beveridge curve while unemployment was rising, until around 2013. As unemployment stabilised, vacancies started to rise, but it took some time for unemployment to start falling, leading to a temporary shift out. Interestingly though, the recovery was not followed by movements along a new, less efficient, curve, as was the case in the US or the rest of the euro area.

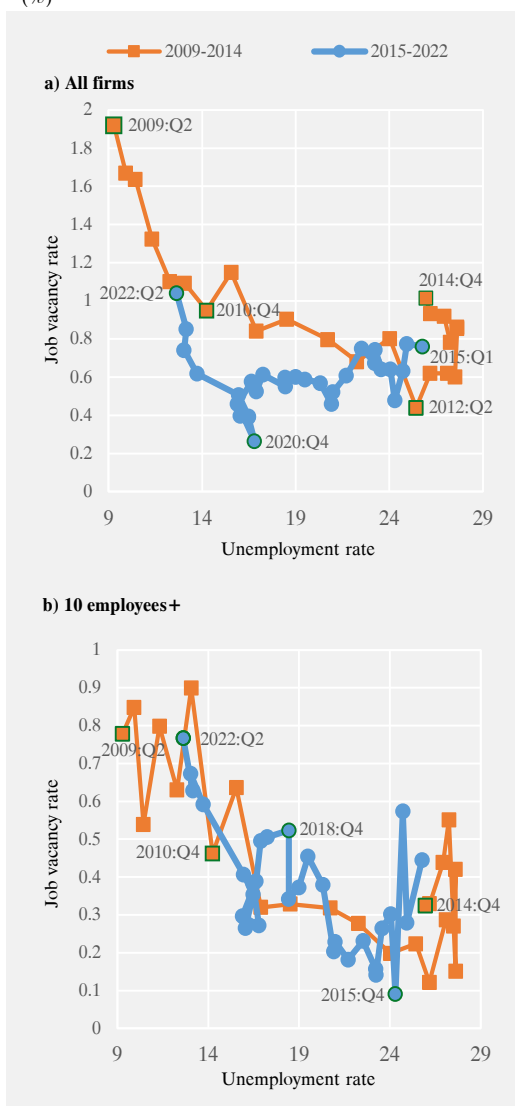
The picture is somewhat different depending on the data used. With vacancy data for all

¹² Consolo, A. and A. Dias da Silva (2019), "The euro area labour market through the lens of the Beveridge curve", *ECB Economic Bulletin*, Issue 4.

¹³ The vacancy rate has been seasonally adjusted by Bank of Greece staff, as the official seasonally adjusted series is much shorter. A non-seasonally adjusted Beveridge curve gives a very similar result qualitatively.

Chart 20 The Beveridge curve in Greece

(%)



Sources: LFS, Eurostat and Bank of Greece calculations.
 Note: The vacancy rate is defined as vacancies to the sum of vacancies and occupied positions. The top panel shows vacancies for all firms; the bottom panel shows vacancies for firms with over 10 employees. The unemployment rate is defined as a percentage of the total labour force.

firms, unemployment fell alongside a relatively flat vacancy rate, a development which has persisted even through the pandemic. This is in stark contrast to the dramatic increase in vacancies recorded in the US following the COVID-19 outbreak, as depicted in Chart 19 by the green segment of the Beveridge curve.¹⁴ When considering firms with over 10 employ-

ees, instead, the curve is steeper and has not changed relative to the pre-crisis period.

As one would probably expect, a shift out during the recovery could be considered evidence of improved efficiency, controlling for the cycle, arguably a result of the structural labour market reforms undertaken over the past decade. Similarly, while both charts indicate an increase in tightness (the ratio of vacancies to unemployment), the increase in the bottom panel is much stronger.

The improvement in the Greek labour market is a result of both an increase in the finding rate and a decrease in the separation rate (Chart 21). This is common for continental European countries, and unlike Nordic or Anglo-Saxon countries, where movements in the finding rate drive the majority of the cycle. In fact, the finding rate stalled somewhat in the last few quarters before the pandemic, but has risen substantially since.

Putting these charts together, we have clear evidence of improvements in the labour market, though with unclear relative magnitudes regarding efficiency and tightness. Depending on the vacancy measure, there is either mildly increasing efficiency and rapidly increasing tightness, or vice versa. The large reduction in unemployment, together with the extensive set of labour market reforms during the crisis years, make both cases likely. Indeed, the increase in efficiency due to the reforms is the reason why, in the Greek Beveridge curve, we do not observe the banana-shaped recovery, common in other advanced economies.

It is not possible to analyse these implications further, in particular with regard to wages,

¹⁴ The pandemic seems to have dealt a strong blow to the efficiency of the US labour market, by shifting out the Beveridge curve greatly. It has been argued, however, that in the present context of the Great Resignation and the increased job-to-job transition rates, looking at only unemployment may be misleading about the level of tightness in the labour market. In particular, to the extent that a significant number of new jobs are taken by already employed individuals, then just comparing vacancies with unemployment will tend to underestimate the level of interested workers per vacancy, and hence overestimate both tightness and inefficiency.

Chart 21 Job finding and separation rates in Greece



Sources: LFS, Eurostat and Bank of Greece calculations.
 Notes: Finding and separation rates are calculated using the procedure of Shimer, R. (2012), “Reassessing the Ins and Outs of Unemployment”, *Review of Economic Dynamics*, 15(2), 127-148; and the refinement of Elsby, M., B. Hobijn, and A. Şahin (2013), “Unemployment Dynamics in the OECD”, *Review of Economics and Statistics*, 95(2), 530-548.

without a model. Either case is consistent with a combination of productivity and efficiency shocks, as well as (to a lesser extent) bargaining shocks. Establishing which shocks dominate is beyond the scope of this article, whose intent is to lay out the different scenarios. In particular, in a standard search and matching framework, the difference depends on the relative size of shocks.¹⁵ In both cases, the results are consistent with an increase in productivity (profitability), which would induce firms to increase vacancies and hence employment, as well as to offer higher wages, given the assumed higher productivity. Higher efficiency and moderately increasing tightness (i.e. an inward shift of the curve, as in the top panel of Chart 20) may additionally reflect higher bargaining power, which would explain why firms might avoid posting more vacancies per unemployed worker. Instead, higher tightness but mostly constant efficiency (i.e. a movement along the curve, as in the bottom panel of Chart 20) is consistent with a larger role for productivity; higher productiv-

ity raises tightness for given bargaining power and efficiency.¹⁶

Either of these two scenarios implies higher wages. Moreover, the larger the role for productivity, the more likely it is that further wage gains may occur (e.g. when bargaining power improves), without disrupting employment gains. However, an inward shift of the Beveridge curve without an increase in the vacancy rate is less empirically plausible, and so the second case, with a larger role for productivity gains, seems more likely. That said, establishing the relative statistical significance of each of the aforementioned shocks in driving recent developments in the Greek labour market is an empirical matter which remains to be addressed.

5.2 EFFICIENT UNEMPLOYMENT

The literature typically measures the unemployment gap by comparing actual unemployment with trend unemployment or NAIUR. A fundamental problem with both these measures is that, because they are latent, they are calculated using unobserved components models, which are known to be particularly problematic in end-points and hence real-time estimation. A second problem has to do with the interpretation of the measures; the trend measure may make little sense in an economy with as large shocks as the Greek one, while NAIUR can also be a poor measure of slack at a time of large supply shocks, such as the current episode.

A new alternative measure, proposed by Michaillat and Saez (2021),¹⁷ is theoretically grounded and is designed to account for the fact that unemployment is itself wasteful, as willing workers remain idle, but the recruiting process is also wasteful, as hiring committees

¹⁵ For a deeper discussion of the framework, see Consolo, A. and A. Dias da Silva (2019), “The euro area labour market through the lens of the Beveridge curve”, ECB, *Economic Bulletin*, Issue 4.

¹⁶ The rise is higher with lower worker bargaining power, but this is an unlikely scenario at the current juncture.

¹⁷ See Michaillat, P. and E. Saez (2021), “Beveridgean unemployment gap”, *Journal of Public Economics Plus*.

need to expend valuable resources in non-productive activities. This gives rise to the notion of “efficient unemployment”, the rate of unemployment which minimises the sum of unemployment and vacancy creation, subject to the Beveridge curve, which recognises that it is not possible to reduce both unemployment and vacancies to zero at the same time. Frictions in the labour market imply that vacancies are needed to reduce unemployment, and that lower vacancies will raise unemployment.

Michaillat and Saez (2021) end up with a sufficient statistic formula composed of three parameters: the slope of the Beveridge curve, the cost of recruiting, and the value of non-employment. We estimate the slope of the Beveridge curve with Greek data, taking into account structural breaks around turning points in the cycle. The elasticity is estimated to be between 1.4 and 2, depending on the sample and definition used (excluding outliers).¹⁸ This is substantially higher than the value of around 1 reported for the US, which is reasonable given the much lower levels of trend unemployment in the US.¹⁹ Given model and estimation uncertainty, we consider levels of u^* for values of the elasticity α from 1.4 to 2. In our baseline estimates, we use the same value of non-labour ζ as Michaillat and Saez (2021) at 0.26 (especially given that the US values have a very large confidence interval), while we assume the cost of recruiting κ is at 2, double the US value.²⁰

The estimates are shown in Chart 22. We plot, in dark blue, actual headline unemployment, together with efficient unemployment under four different levels of the Beveridge elasticity, from 1.4 to 2. As expected, the value of efficient unemployment is a key predictor of the Beveridge elasticity; moreover, the higher unemployment is, the larger the discrepancy of u^* across different measures. Focusing on the current juncture, we see that for all values of the Beveridge elasticity, u^* is comfortably below the current value of headline unemployment of 11.8% (September 2022); with an elasticity of 2, u^* is 10.1%, indicating that there

Chart 22 Efficient unemployment in Greece



still exists slack in the labour market. Note that slack in this context refers to underutilisation of resources below their efficient level and does not imply the existence of price pressures, as does its more common interpretation in a NAIRU/Phillips curve framework.

The 10% value is likely a conservative estimate. It assumes that u^* is essentially at the same level as in 2010, despite a very expansive set of reforms that took place during the crisis years. It is also based on conservative assumptions about the cost of recruiting and the value of

¹⁸ The procedure involves regressing log vacancies on log unemployment, for each segment of the Beveridge curve, to take into account the breaks in the relationship at turning points of the business cycle. There are several breaks whose identification is required. Michaillat and Saez (2021) use the Bai-Perron procedure, and that same approach is followed here as well. The estimation is conducted separately in each segment. See Michaillat, P. and E. Saez (2021), “Beveridgean unemployment gap”, *Journal of Public Economics Plus*.

¹⁹ The specific features of the Greek labour market, where informal networks are likely more important than in the US or other EU countries, may mean that firms post fewer vacancies for given labour needs. However, the survey asks firms about positions they create and take steps to fill; it does not require that a formal vacancy is posted.

²⁰ Sensitivity checks have been performed and are available upon request.

non-labour. Sensitivity checks show that less conservative values, especially for the cost of recruiting, give larger values of slack.²¹ With the baseline calibration, a value of the Beveridge elasticity α of 1.8 gives u^* equal to 9%. Note that, while efficient unemployment remains well below headline unemployment, irrespective of the calibration used, there is clearly a rapid narrowing of the distance between actual and efficient unemployment in Chart 22. Not only has actual unemployment fallen in recent years, but efficient unemployment has also risen, as a result of higher vacancy creation. This suggests that, while still slack, the Greek labour market could tighten over the medium term, if current trends persist.

6 WAGES AND EMPLOYMENT FLOWS: INSIGHTS FROM THE ERGANI INFORMATION SYSTEM

This section focuses on the evolution of employment flows and wages across major sectors of activity, with the general aim of identifying common trends and indications of market tightness. Our analysis of employment developments is based on data for the period from January 2016 to December 2021 from the ERGANI information system, an administrative database covering the whole population of employees working under private law contracts in Greece.²² The data used in this section are micro-aggregated data from the ERGANI monthly flows as well as the ERGANI annual accounts. The information available to us refers to monthly employment flows (i.e. hires, fires and voluntary exits/resignations) and their respective wage. We also use annual wages for the employment stock as obtained from the ERGANI annual accounts, which are extrapolated to a monthly frequency for comparability. In particular, we have the above information across the following worker, employer and job characteristics, respectively: (i) worker gender, age and occupation; (ii) region, main sector of establishment activity, firm size (in number of employees); (iii) type of job contract (open-ended or fixed-term) and type of employment (full-time, part-time or intermittent).²³

The analysis is limited to full-time jobs, which ensures comparability of wages. For concreteness we also focus our analysis on the sectoral and skill dimension of the data by aggregating appropriately the relevant information.

We will proceed by presenting net employment flows (hires-fires-voluntary exits) and the respective wage of the new hires in order to see whether any significant common trends emerge (see Chart 23). Moreover, to see how the wage of newcomers compares to the wage of those already employed, we also analyse the evolution of the wage of newcomers in relation to the wage of the relevant employment stock. Usually, the wages of the incumbent workers benefit from a tenure-related premium, which reflects the firm-specific human capital that has been acquired through the years. If the wage of newcomers comes closer to the wage of incumbent workers, i.e. their relative wage comes closer to one, there are indications of wage pressures as the newcomers get a premium in order to accept the job offer, which reduces the wage differential relative to incumbents.

Most major sectors exhibit positive net employment flows in the years following the COVID-19 outbreak, with the exception of Utilities and the Primary sector, the net flows of which are mostly in negative territory. The Manufacturing, Construction, Trade, Transportation & Storage (T&S in Chart 23) and Other Services sectors are characterised by significant net employment flows that are above those of the pre-COVID period.

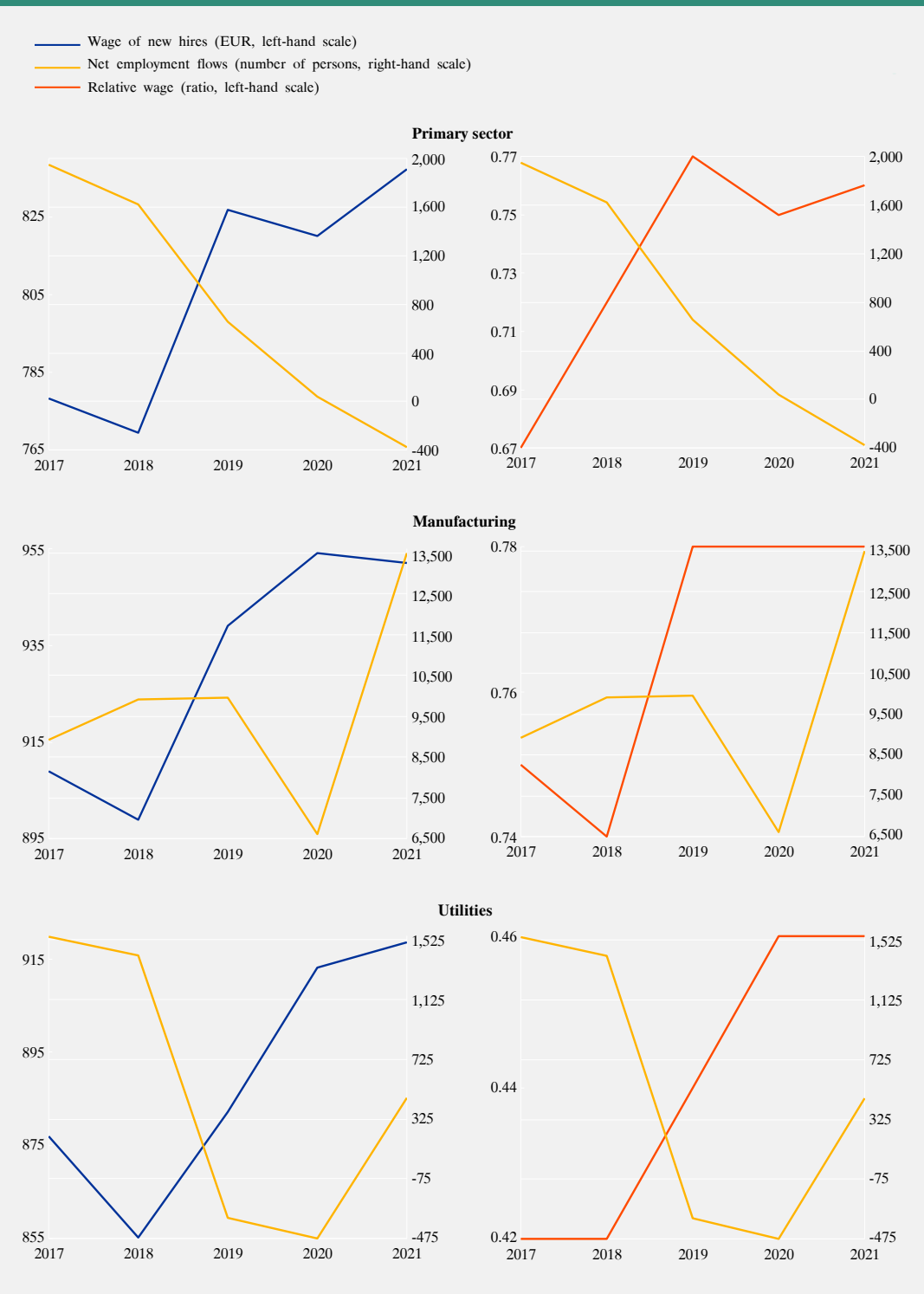
Hotels & Restaurants also exhibits significant positive net employment flows following the

²¹ Available upon request.

²² This database includes information submitted by all private sector employers and serves as a detailed registry of the employment in the private sector. Employees working in public sector entities, whose contracts are governed by private sector labour laws are also registered in this database. The information collected is at the job-employment position level.

²³ This information is available at the level of 89 2-digit NACE sectors of activity, 7 age categories, 46 occupation categories, 12 firm size categories, 13 NUTS-2 regions (for a description of the data dimension, see Kosma, T., P. Petroulas and E. Vourvachaki (2020) "What drives wage differentials in Greece: workplaces or workers?", Bank of Greece, *Economic Bulletin*, 52, pp. 69-72, December).

Chart 23 Net employment flows and wage developments for new hires in main sectors of activity

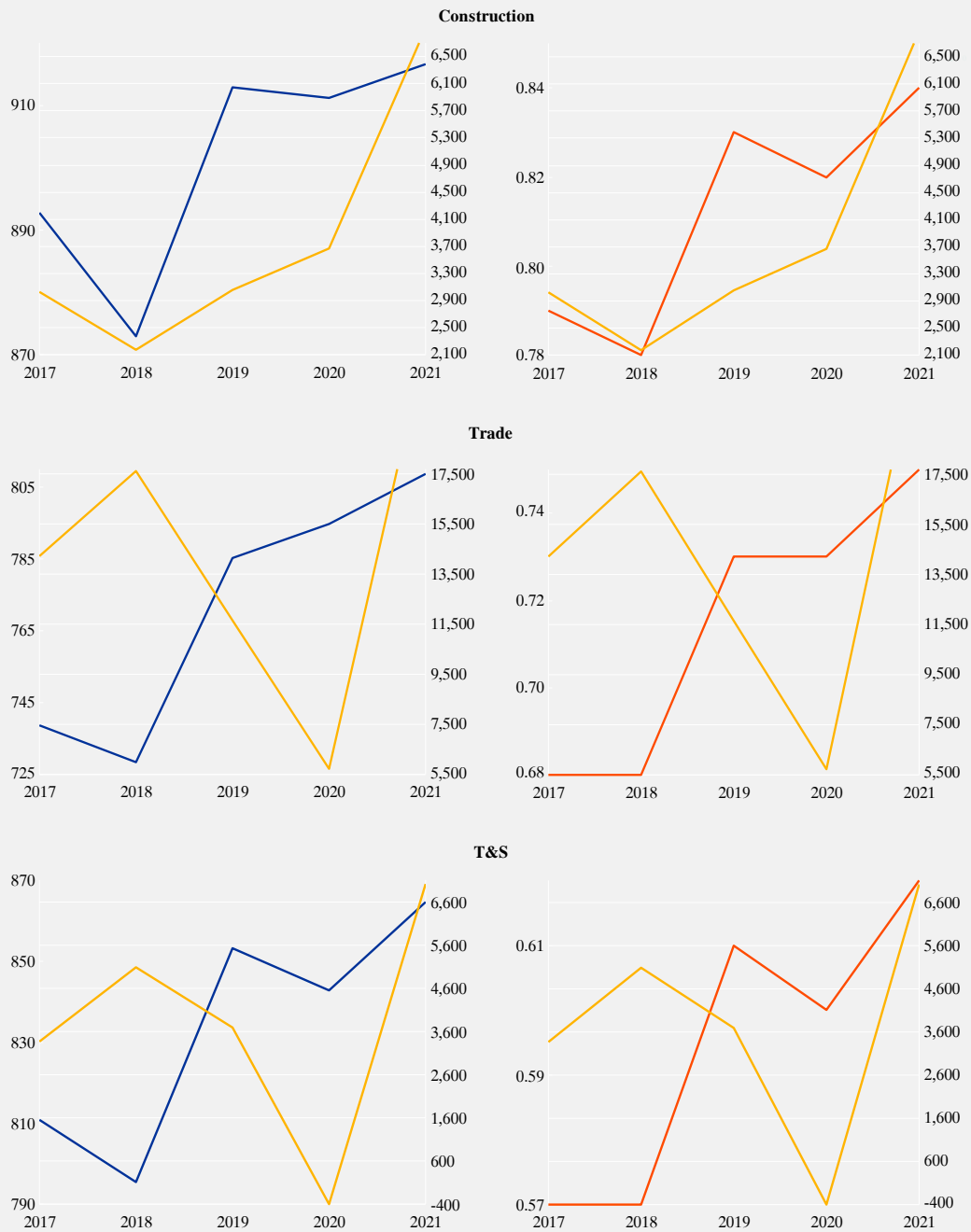


Source: ERGANI and Bank of Greece calculations.
 Note: Net employment flows are total flows in the year (sum of monthly net flows) to address seasonality. The wages of newcomers are year averages based on monthly data. The relative wage is the ratio of the wage of newcomers to the respective wage of the employment stock obtained from the annual ERGANI accounts referring to November in each year.

Chart 23 Net employment flows and wage developments for new hires in main sectors of activity

(continued)

— Wage of new hires (EUR, left-hand scale)
 — Net employment flows (number of persons, right-hand scale)
 — Relative wage (ratio, left-hand scale)

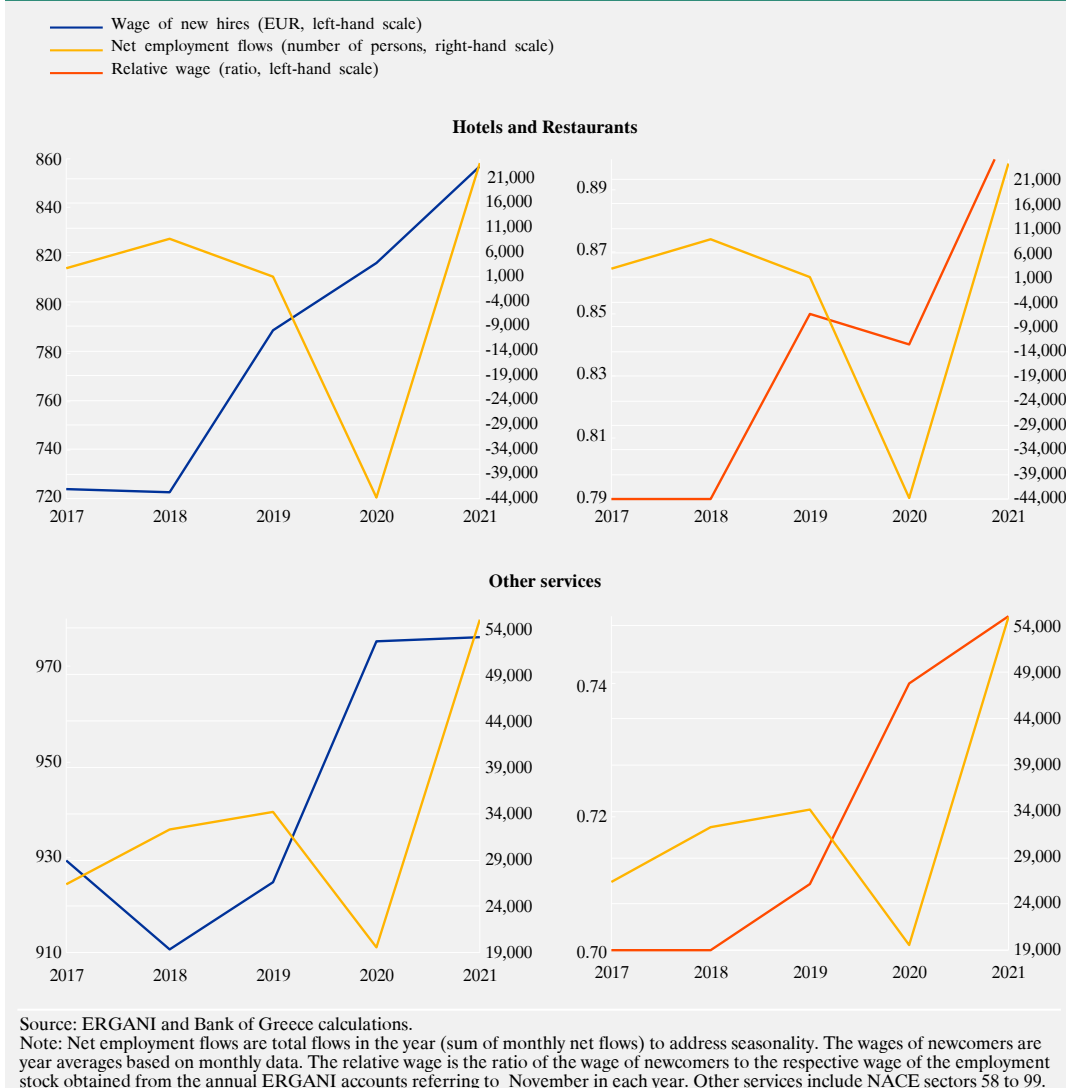


Source: ERGANI and Bank of Greece calculations.

Note: Net employment flows are total flows in the year (sum of monthly net flows) to address seasonality. The wages of newcomers are year averages based on monthly data. The relative wage is the ratio of the wage of newcomers to the respective wage of the employment stock obtained from the annual ERGANI accounts referring to November in each year.

Chart 23 Net employment flows and wage developments for new hires in main sectors of activity

(continued)



remarkable decline in net flows after the adoption of the social distancing measures. Actually, Hotels & Restaurants is the only major sector with significant negative net employment flows in 2020, which do not seem to have been counterbalanced yet by the consecutive positive net employment flows in 2021. Specifically, while we observed declines of a magnitude of about 43,000 positions cumulatively in 2020, the corresponding increase in 2021 is about 24,000 positions. However, it is not feasible to infer from our data whether this was due to the social distancing measures remaining in 2021

(i.e. demand effects due to partial reopening of the sector) or due to labour supply effects. Even so, it seems that the “lost” flows of the hospitality sector have moved to the Other Services sector which overperformed in terms of new hires. Specifically, in 2021 new hires stood at around 35,000 positions above the corresponding 2020 level and about 20,000 positions above the 2019 level. We can also note that the Other Services sector has a somewhat higher average wage for new hires, i.e. around €980 compared to €850 in the Hotels & Restaurants sector, and significantly less sea-

sonality in employment. In this respect, there are strong indications that during the COVID-19 period workers shifted jobs from the hospitality sector to Other Services for both a better pay and more “constant” employment.

In sum, whereas the post-COVID period of 2021 has been characterised by robust employment dynamics across most major sectors, the question is whether they have been followed by any significant wage increases. For most sectors, the wages of new hires and their relative wages compared to those of incumbent workers do not depict any significant upward trend.²⁴ Other Services, Hotels & Restaurants, and Construction are the three sectors with an upward trend in wages of new hires as well as in employment flows. The combination of the two could be indicative of some emerging market pressures. However, the upward trend in wages for Other Services is more modest and the wages of new hires are still well below those of incumbents (at 75%). By contrast, the upward trend in relative wages of new hires is more pronounced, reaching 85% for Construction and almost 90% for Hotels & Restaurants on average in 2021.²⁵ Thus, in what follows we delve deeper into the employment and wage dynamics of these two sectors.

We decompose employment flows in the Construction and Hotels & Restaurants sectors by four skill categories: high-skilled white collar, low-skilled white collar, high-skilled blue collar and low-skilled blue collar, to observe whether the above developments are driven by any particular skill category.²⁶

In the Construction sector, in terms of employment, all segments, both blue and white collar workers as well as high- and low-skilled workers have seen a strong increase in net employment flows in the post-COVID period. Moreover, for blue collar workers in particular there was no strong decline of employment flows during the pandemic. For new hires, blue collar workers (both high- and low-skilled) have seen a significant increase in wages. Wage pressures in the blue collar segment of Con-

struction seem to be present as well. In particular, the wages of new blue collar hires are fast approaching those of incumbents being about 90%. By contrast, for white collar workers, new hires do not exhibit an upward trend in wages if they are high-skilled, or are far below the wages of incumbents if they are low-skilled. In this respect, the data show that wage and employment pressures in the Construction sector are mainly driven by the blue collars’ market segment.

For Hotels & Restaurants, the main contributor to the developments in this sector is the low-skilled white collar segment. In particular, we can note the sheer size of outflows during the pandemic, which reached a total of 34,000 in 2020, while the subsequent increase barely reached a total of 19,000 positions in 2021. Moreover, the relative wage of new hires versus incumbents has reached high levels of above 95% in 2021 (up from about 84% in 2017), on average. For the low-skilled blue collar segment, similar developments are observed, albeit at significant lower magnitudes. For both these categories a non-negligible tightness in their respective sectoral labour market is indicated by the data.

On balance, the ERGANI data indicate that there is no general tightness in the labour market. That is, the wages of new hires are not increasing significantly, in tandem with strong employment developments. However, there are some specific sectors and worker types for which the respective segments of the labour market indicate some tightness.

In particular, for Construction, we can note that it is a sector which has seen a significant

²⁴ One could note, though, an upward shift in wages in the trade sector at the beginning of 2019, which can be related to the minimum wage increase in February 2019.

²⁵ In Hotels & Restaurants we observe relative wages which are close to 90%, indicating a high premium for the new hires. However, a specificity of this particular sector should be noted at this point. This is a sector with high seasonality where hires and layoffs may refer to the same employee. Therefore, the same employee is hired at the beginning of the tourist season with a wage similar to that of the previous year and is laid off at the end of the tourist season.

²⁶ Charts are not presented for space considerations but are available upon request.

decline in the level of activity during the last decade and where a significant share of the labour pool has disappeared. In this respect, the Construction sector is expected to continue having a tight labour market in the foreseeable future. For Hotels & Restaurants, there are indications that the outflow of labour during the pandemic has to a large extent been absorbed by the Other Services sector. If this is the case, we can note that the wage for a new hire in Other Services is approximately 15-20% higher (depending on the skill category) than in Hotels & Restaurants. Moreover, Other Services does not have the same seasonality in employment (and hence income) as Hotels & Restaurants. Thus, from an employee's perspective, if they have switched sectors, they may have experienced both a higher and more steady income. In this respect, it will be difficult to attract them back to the Hotels & Restaurants sector.

7 A SNAPSHOT OF SKILLS AND SKILLS MISMATCH

7.1 SURVEY EVIDENCE

Turning to more qualitative evidence of labour market mismatch, a common finding reported in business surveys is that of limited availability of skilled labour. Indeed, on the labour demand side, skill shortages have been consistently high in Greece. According to the Survey on the Access to Finance of Enterprises (SAFE),²⁷ the second most pressing problem for Greek SMEs in the second half of 2021, following the cost of production or labour, is the availability of skilled staff and/or experienced managers (reported by approximately 18%). Data from the EIB Investment Survey 2021²⁸ show that the limited availability of skills has increasingly become a concern for firms: 73% of Greek firms reported the limited availability of staff with the right skills as an impediment to long-term investment. Moreover, according to the latest Manpower Talent Shortage Survey²⁹ (which covers more than 40 countries globally), in Greece talent shortages

reached a 10-year high in 2022, as 78% of Greek firms report talent shortages,³⁰ i.e. they cannot find employees with the blend of technical skills and human strengths they need. Especially in Attica, 61% of employers state that they face relative difficulty in searching for talent, 18% a lot of difficulty and 19% none. As for response variation by company size, 23% of very small businesses, 17% of small businesses, 16% of medium-sized businesses and 14% of large businesses have a lot of difficulty filling positions. Accordingly, 54% of very small businesses, 63% of small businesses, 58% of medium-sized businesses and 65% of large businesses experience relative difficulty. Greater difficulty is found in the manufacturing sector, with 30% of employers reporting that they are having a very difficult time filling positions due to a lack of talent and 63% reporting relative difficulty. Most employers (23%) report that it is more difficult to find talent in Human Resources (with small businesses facing a more acute problem), followed by IT/Data and manufacturing.

However, the problem existed even before the pandemic. In fact, according to the European Company Survey 2019,³¹ 66% of Greek firms indicated that they have difficulty in finding employees with the right skills (EU average: 76%). When asked what percentage of their employees have skills that are about right to do the job, only 33% reported a percentage of 80% or more (one of the lowest percentages).

To date, most EU Member States, including Greece, have responded to the challenges posed by demand for higher skills by seeking to increase skills supply, mostly through raising educational attainment. Notably, according to the latest OECD education data, in Greece,

²⁷ https://www.ecb.europa.eu/stats/ecb_surveys/safe/html/index.en.html.

²⁸ <https://www.eib.org/en/publications/econ-eibis-2021-eu>.

²⁹ https://go.manpowergroup.com/hubfs/Talent%20Shortage%202022/MPG_2022_TS_Infographic-Greece.pdf.

³⁰ 60% of employers state that they face relative difficulty in filling positions due to a lack of talent, 18% a lot of difficulty and 20% none.

³¹ <https://www.eurofound.europa.eu/surveys/2019/european-company-survey-2019>.

in 2021, 44% of 25-64 year-olds had attained tertiary education, against 33% in 2011.³² This is in line with projections of future skills demand shifting towards more highly skilled economic activities, as around half of all job openings over the next decade are expected to require a high qualification.³³ However, there are concerns that the Greek education and training system is not sufficiently aligned with labour market needs. In fact, university education is frequently criticised for not conferring upon its graduates the cutting-edge skills that their future employers are likely to seek.

In the Global Talent Competitiveness Index 2022, Greece ranked 40th out of a sample of 133 countries. The country's main strength relates to retaining talent (mainly thanks to the lifestyle offered) and the quality of the talent (mainly thanks to the availability of high-level skills and professionals). The greatest scope for improvement, meanwhile, is in vocational and technical skills, and in attracting talent.³⁴ Greece had one of the lowest overall scores in the European Skills Index survey for 2022, only marginally improving its performance relative to 2020 (achieving a score of 23 from 20), pointing to a relatively weak skills system in Greece on multiple fronts.³⁵ Greece ranked 41st out of 141 countries in the skills sub-pillar of the Global Competitiveness Index 4.0 published by the World Economic Forum in 2019 (up from 36th in 2017).³⁶

Because of structural digitalisation trends and the recent rapid change in labour markets following the COVID-19 outbreak, digital skill needs have grown. CEDEFOP's second European Skills and Jobs Survey (ESJS2) shows that the health crisis affected the employment of one in three EU+ workers (33%), with younger and lower-educated workers most negatively affected.^{37,38} In Greece, 48% of adult employees had to learn to use new digital technologies to do their main job in 2020-21. Moreover, most EU+ adult workers use a computer device (a desktop computer, laptop or notebook, tablet or smartphone) as part of their work, and more than eight in ten EU+ jobs

(87%) require at least basic digital skills. The need to learn to work with new computer technologies challenges individuals to update, upgrade or learn new digital skills; in the short to medium term this can cause imbalances between digital skills demand and supply. Greece ranks 25th among EU-27 countries as regards the Digital Economy and Society Index for 2022. As regards human capital, in 2021, 52% of the Greek population was equipped with basic or above basic digital skills (very close to the EU average of 54%). However, the share of ICT specialists in total employment barely reached 2.8%, i.e. the second lowest among EU-27 countries (EU-27: 4.5%), despite some progress in the past three years.

At the same time, according to data from the OECD Survey of Adult Skills (PIAAC), only about one in 20 adults in Greece attains the highest levels of proficiency in literacy, compared with around one in ten adults (10.6%) on average across OECD countries, and similarly for numeracy. Moreover, only 2.5% of adults in Greece attain the highest proficiency level in problem-solving in technology-rich environments. This is the fourth lowest percentage among all participating countries and significantly lower than the OECD average of 5.4%.

The low skills level of the Greek economy means that employers may be unable to fill vacant positions because of skills gaps or shortages (lack of employees with suitable skills or qualifications), making this mismatch between the supply of and demand for skills a significant impediment to potential growth. How-

³² <https://www.oecd-ilibrary.org/docserver/3197152b-en.pdf?expires=1667392434&id=id&accname=ocid177073a&checksum=8B310EE22CEC9AE099EB8DD5FDC15B73>.

³³ CEDEFOP (2020), Skills forecast 2020: Greece, CEDEFOP skills forecast.

³⁴ <https://www.insead.edu/sites/default/files/assets/dept/fr/gtci/GTCI-2022-report.pdf>.

³⁵ A score of 23 suggests that the country has reached 23% of the ideal performance and that there is still 77% room for improvement. A score of 100 corresponds to achieving the "frontier": <https://www.cedefop.europa.eu/en/tools/european-skills-index>.

³⁶ https://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf.

³⁷ EU Member States plus Norway and Iceland.

³⁸ https://www.cedefop.europa.eu/files/9173_en.pdf.

ever, data from PIACC also suggest that Greece suffers from a high level of mismatch between the skills workers possess and those demanded of their jobs. Around 28% of workers are more proficient in literacy than their job requires (overskilled), the largest proportion across all participating economies and much higher than the OECD average of 10.8%. Moreover, almost four out of ten workers in Greece are either over- or underqualified for the work they are doing. As for field-of-study mismatch, which measures the extent to which workers, typically graduates, are employed in an occupation that is unrelated to their principal field of study, almost one in two workers (41.4%) is employed in a different field than the one in which they earned their highest educational qualification. Most graduates in the areas of Arts and Humanities (80%) and ICT (more than 70%) are employed in jobs that do not match their sector of specialisation.

To add to the above evidence, Eurostat's experimental indicators on skills mismatches provide information on vertical skills mismatches (overqualification rates) and horizontal skills mismatches (job mismatch by field of education).³⁹ For Greece, there has been a 10.3% increase between 2008 and 2020 in the overqualification rate (i.e. % of people aged 20-64 with tertiary education and working in ISCO 4-9). At the same time, the horizontal skills mismatch rate was 26.4% for the age group 15-34 and 30% for the age group 25-34 in 2020.

An efficient allocation of workers across tasks is particularly important when the aggregate skills supply is relatively limited, as is the case with Greece. Persistent skill gaps and mismatches come at economic and social costs, while skills constraints can negatively affect labour productivity and hamper the ability to innovate and adopt technological advances. Education, skills and labour market policies should ensure that workers are equipped with the right skills and that businesses can flexibly deploy workers to meet changing labour mar-

ket needs. To steer technological development, vocational education and training (VET) should enable those exposed to technological innovation to reduce their digital skill gaps. The implementation of these policies will help ensure that technology adoption has a positive impact on both productivity and workers.

7.2 AN EMPIRICAL EXPLORATION⁴⁰

In line with theoretical predictions, mismatch has been shown to be significantly negatively related to labour productivity.⁴¹ Chart 24 shows that Greece has by far the highest professional overskill mismatch (i.e. those working in highly skilled jobs are more proficient in literacy than their job requires) compared with all other countries in the sample. Most surprisingly, while in virtually all countries overskill mismatch is much lower for professional occupations than for lower-skilled jobs, the opposite holds for Greece. Moreover, even for lower-skilled jobs, overskill mismatch in Greece is high compared with other EU countries, although it is much closer to the sample average. Similar results are obtained when using skills mismatch in numeracy and controlling for sector and firm effects.

Given the above evidence of high mismatch in professional occupations in Greece, it is interesting to examine the importance of overskill mismatch in professional occupations relative to others combining PIACC and Orbis data.⁴²

³⁹ More information on these experimental indicators is available at <https://ec.europa.eu/eurostat/web/experimental-statistics/skills>

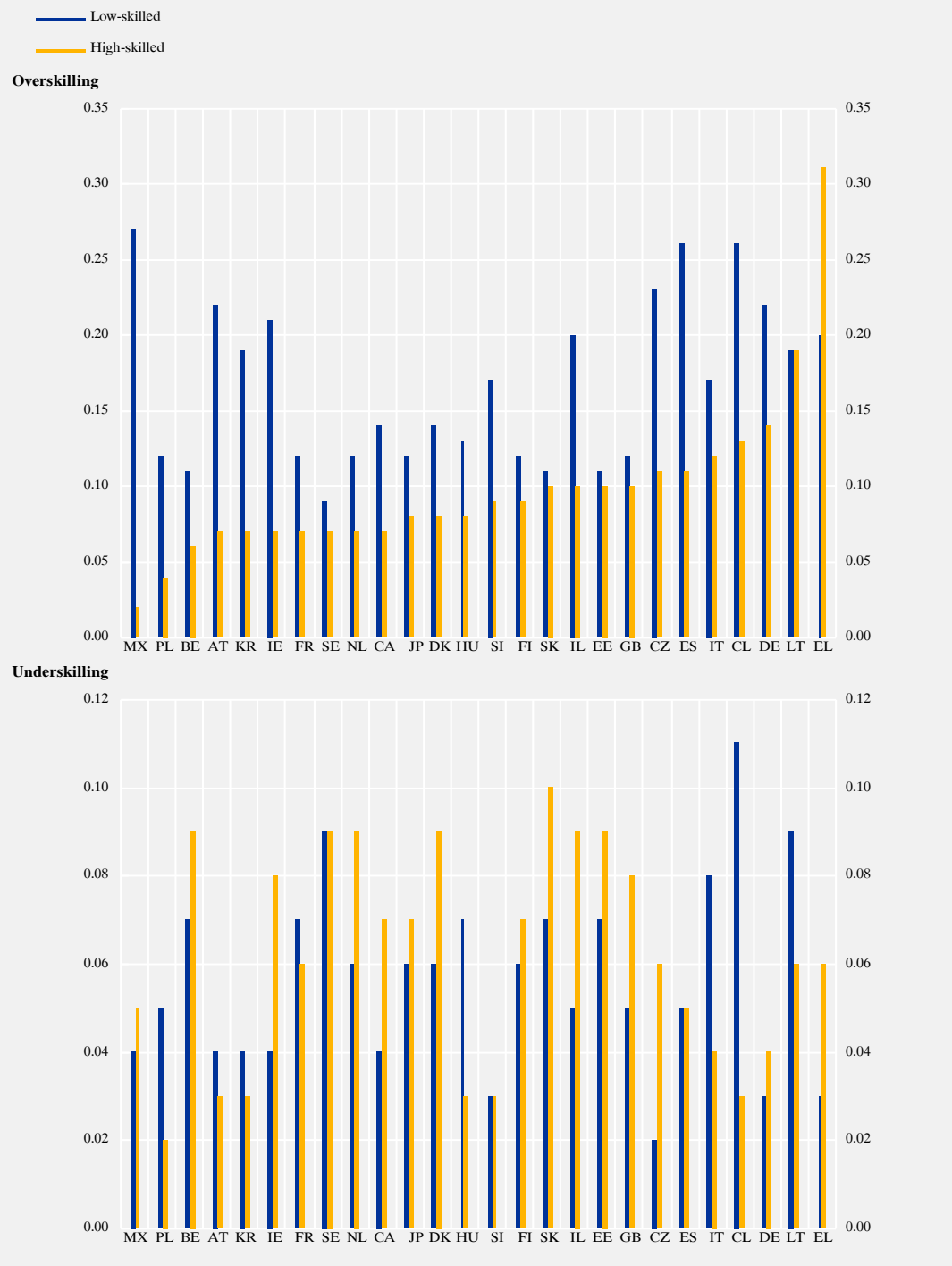
⁴⁰ For a more in depth analysis, see Anyfantaki, S., Y. Caloghirou, K. Dellis, A. Karadimitropoulou and F. Petroulakis (2022), "Skills, management practices and technology adoption in Greek manufacturing firms", Bank of Greece, *Economic Bulletin*, 55.

⁴¹ See, among others, Decker, R.A., J. Haltiwanger, R.S. Jarmin and J. Miranda (2017), "Declining dynamism, allocative efficiency, and the productivity slowdown", *American Economic Review*, 107(5), 322-326; Hsieh, C.T. and P.J. Klenow (2009), "Misallocation and manufacturing TFP in China and India", *The Quarterly Journal of Economics*, 124(4), 1403-1448.

⁴² Data for productivity from Orbis include 17 countries (Austria, Belgium, Germany, Denmark, Estonia, Spain, Finland, France, United Kingdom, Greece, Hungary, Italy, Japan, Korea, Latvia, Sweden and Slovenia). All measures are averaged for each sector across 2009 and 2013 to improve reliability. Sectors covered are: manufacturing; electricity, gas, steam and air conditioning supply; water supply; construction; wholesale and retail trade; transportation and storage; accommodation and food service activities; information and communication technologies; professional, scientific and technical activities; administrative and support service activities.

Chart 24 Skills mismatch for high- and low-skilled occupations

(share of employment)



Source: OECD, Survey of Adult Skills (PIACC).

Note: Overskilled workers are those whose proficiency score is higher than that corresponding to the 95th percentile of self-reported well-matched workers – i.e. workers who neither feel they have the skills to perform a more demanding job nor feel the need of further training in order to be able to perform their current jobs satisfactorily – in their country and occupation. Underskilled workers are those whose proficiency score is lower than that corresponding to the 5th percentile of self-reported well-matched workers in their country and occupation. High-, medium- and low-skilled occupations are ISCO occupational groups 1 to 3, 4 to 8 and 9, respectively. Literacy proficiency is the proxy for skills.

Adalet McGowan and Andrews (2015)⁴³ split aggregate productivity in each sector into a within-firm component and an allocative efficiency component. Allocative efficiency requires that resources flow to their more productive uses. As such, if more productive firms are larger, then the allocative efficiency term is positive. The effect of mismatch on productivity can be estimated through linear regression models, separately for the three productivity measures (aggregate sectoral, allocative efficiency and average firm) on under- and over-skill mismatch indicators at the sectoral level. In fact, when the aggregate sectoral productivity is the dependent variable, the coefficient of overskilling is negative and highly significant; it is also negative for underskilling, although not significant. The economic magnitude of the relationship is quite sizeable: a one standard-deviation increase in overskilling, at the expense of well-matched workers, holding constant the share of underskilled workers, reduces weighted sectoral productivity by almost 10%.⁴⁴ Overall, the results corroborate the findings of Adalet McGowan and Andrews (2015): overskilling has a negative effect on productivity. Although regression analysis is only meant to be indicative, given the small cell sizes especially for the professional occupations, the upshot is that overskill mismatch plays an important role for productivity, and overskilling in professional occupations, where Greece scores especially poorly, is a major drag.

Overall, the analysis suggests that there is a need to improve the alignment of workers' skills with the needs of industry, in terms of enhancing both skills endowment and the allocation of current skills to jobs. The key message is that the various policies should be closely coordinated for both higher education as well as vocational education and training (VET). More specifically, concrete strategic initiatives should be carefully designed and implemented. These could include: (a) establishing and promoting university-industry cooperation schemes; (b) maintaining a balance between formal education, in-firm training and lifelong learning; (c) maintaining a bal-

ance between the formal and tacit curricula in Greek universities; and (d) upgrading secondary and upper-secondary technical-vocational education and training.

8 CONCLUSIONS

Euro area labour markets are much tighter than they were before the pandemic, with unemployment at a record low and vacancies rising across sectors. Conversely, in Greece, the labour market is still not tight overall. Unemployment is nearly double the euro area average and, although the job vacancy rate increased after the pandemic, it remains relatively low. However, there is heterogeneity at the sectoral level, with construction and trade, transport and accommodation presenting high job vacancy rates, and the tourism subsector in particular showing the greatest tightness by this measure. Similarly, while wage growth data do not show signs of generalised tightness, the Construction, Hotels & Restaurants and Other Services sectors exhibit an upward trend in the wages of new hires and in employment flows, which may reflect emerging labour market pressures.

Furthermore, it is notable that, while the unemployment rate in Greece remains high, it declined rapidly in recent years, reflecting government support measures during the pandemic, the implementation of important labour market reforms in the previous decade and robust real GDP growth. This sharp decline, in combination with the high share of long-term unemployment and the rather elevated estimates of efficient unemployment presented in this article, suggests that labour market slack may in fact be less than indicated by the baseline measure. Given recent strong employment growth and the prospect of a significant need for additional labour over the coming years

⁴³ Adalet McGowan, M. and D. Andrews (2015), "Skill mismatch and public policy in OECD countries", OECD Economics Department Working Paper No. 1210.

⁴⁴ See Anyfantaki et al. (2022), *op. cit.*, for a description of the methodology and detailed results.

due to the implementation of the NextGenerationEU plan, labour market tightness could increase significantly over the coming years. This concern is further compounded by extensive survey evidence of skills mismatches in the Greek labour market, which are known to adversely affect allocative efficiency and, thus, productivity.

It follows that, from a policy perspective, it is particularly important to pursue labour market policies aimed at increasing participation rates and upskilling or reskilling the labour force, including in particular the long-term unemployed. This need is all the more pressing in light of the adverse demographic trends and the recent exodus of young highly skilled workers following the sovereign debt crisis. Such active labour market policies would sup-

port employment, increase skills and enhance the experience of workers, especially the more vulnerable ones, thereby increasing attachment to the labour market and eventually resulting in higher employment and participation rates. As regards skills mismatch in particular, redesigning training programmes and educational curricula to be more closely linked to the needs of the labour market, as well as strengthening the digital literacy of workers would help reduce the mismatch between the job skills demanded by firms and those on offer, thus boosting productivity and potential output. In this regard, the measures included in Greece's National Recovery and Resilience Plan to foster labour market activation and upskilling through redesigning and strengthening active labour market policies are well-timed and crucially important.