

LABOUR MARKET TIGHTNESS IN THE POST-COVID-19 ERA

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ABSTRACT

Since 2020, the labour market in advanced economies has shown resilience against successive supply-side shocks. High job vacancy rates and historically low unemployment, despite a recent weakening of economic growth, imply a lower sensitivity of the labour market to changes in the business cycle, underscoring the need to re-evaluate labour market tightness, as it could increase the risks of wage-price spirals and a more restrictive monetary policy. In the present paper, we analyse the degree of labour market tightness and its implications for wages, inflation and monetary policy in two large open economies, the US and the euro area, and in a small open economy, Greece, that has undergone substantial labour market reforms, to explore whether post-pandemic labour market developments have common or idiosyncratic features. We find that policy support measures to address the pandemic and the energy crisis have decoupled unemployment from cyclical fluctuations, with the gap narrowing in 2023. Labour market tightness in the post-pandemic era has mainly been driven by a robust increase in labour demand, while labour supply has reverted to or exceeded pre-pandemic levels in the US, the euro area and Greece. Real compensation per employee lags labour productivity levels in all three economies, whereas it remains below its pre-pandemic level in the euro area and Greece. This suggests that the economies in question could tolerate some further catch-up in real wages in the short term without experiencing inflation.

Keywords: labour market tightness; wage dynamics; inflation; Okun's Law; Beveridge curve

JEL classification: E24; J21; E32; E52

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Η ΣΤΕΝΟΤΗΤΑ ΤΗΣ ΑΓΟΡΑΣ ΕΡΓΑΣΙΑΣ ΣΤΗ ΜΕΤΑΠΑΝΔΗΜΙΚΗ ΕΠΟΧΗ

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ΠΕΡΙΛΗΨΗ

Από το 2020 η αγορά εργασίας στις προηγμένες οικονομίες έχει δείξει ανθεκτικότητα σε διαδοχικούς κλυδωνισμούς από την πλευρά της προσφοράς. Τα υψηλά ποσοστά κενών θέσεων εργασίας και η ιστορικά χαμηλή ανεργία, παρά την πρόσφατη εξασθένηση της οικονομικής ανάπτυξης, υποδηλώνουν χαμηλότερη ευαισθησία της αγοράς εργασίας στις μεταβολές του οικονομικού κύκλου, γεγονός που υπογραμμίζει την ανάγκη επανεκτίμησης της στενότητας της αγοράς εργασίας, καθώς θα μπορούσε να επιτείνει τους κινδύνους διαδοχικών αυξήσεων σε μισθούς και τιμές και πιο περιοριστικής νομισματικής πολιτικής. Στο παρόν άρθρο αναλύουμε το βαθμό στενότητας της αγοράς εργασίας και τις επιπτώσεις του στους μισθούς, τον πληθωρισμό και τη νομισματική πολιτική σε δύο μεγάλες ανοικτές οικονομίες, των ΗΠΑ και της ευρωζώνης, και σε μια μικρή ανοικτή οικονομία, της Ελλάδος, όπου έχουν γίνει σημαντικές μεταρρυθμίσεις της αγοράς εργασίας, για να διερευνήσουμε αν οι εξελίξεις στην αγορά εργασίας μετά την πανδημία έχουν κοινά ή ιδιοσυγκρασιακά χαρακτηριστικά. Διαπιστώνουμε ότι τα μέτρα στήριξης για την αντιμετώπιση της πανδημίας και της ενεργειακής κρίσης έχουν αποσυνδέσει την ανεργία από τις κυκλικές διακυμάνσεις, με τη μεταξύ τους απόκλιση να μειώνεται το 2023. Η στενότητα της αγοράς εργασίας στη μεταπανδημική εποχή οφείλεται κυρίως στη σταθερή αύξηση της ζήτησης εργασίας, ενώ η προσφορά εργασίας έχει επανέλθει στα προπανδημικά επίπεδα ή τα έχει υπερβεί στις ΗΠΑ, την ευρωζώνη και την Ελλάδα. Οι πραγματικές αμοιβές εργασίας ανά εργαζόμενο υστερούν του επιπέδου παραγωγικότητας της εργασίας και στις τρεις οικονομίες, ενώ παραμένουν κάτω από τα προπανδημικά τους επίπεδα στην ευρωζώνη και την Ελλάδα. Αυτό υποδηλώνει ότι στις οικονομίες αυτές θα μπορούσε να γίνει ανεκτή κάποια περαιτέρω αναπροσαρμογή των πραγματικών μισθών βραχυπρόθεσμα χωρίς να αντιμετωπίσουν πληθωρισμό.

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I INTRODUCTION

The labour market in advanced economies has shown resilience against the successive disruptions caused by the pandemic and the energy crisis, partly due to fiscal policy measures supporting incomes and growth. In the post-pandemic period, unemployment reached historically low levels, and employment remained robust, despite the economic slowdown that started in 2021 amid heightened uncertainty, high inflation and a globally synchronised cycle of monetary policy tightening.

Labour shortages in many sectors following the pandemic may initially be attributed to the reopening of the economy and, particularly, the pent-up demand for contact-intensive services. However, high job vacancy rates and historically low unemployment in the current period of subdued economic growth could indicate a potentially lower sensitivity (or an increased resilience) of the labour market to changes in the business cycle. This underscores the need to re-evaluate the factors influencing labour market tightness in many advanced economies, as it could exert inflationary pressures through higher nominal wage growth. Large increases in nominal wages that are not in line with the average rise in labour productivity raise the risk of successive wage and price hikes (wage-price spiral), necessitating a more restrictive monetary policy stance.

The aim of this paper is to analyse the degree of labour market tightness and its implications for wages, inflation and monetary policy in two large open economies, namely the US and the euro area, as well as in a small open economy, Greece. We seek to shed light on the similarities and differences between the US and the euro area, but also to compare them with a

small euro area economy that has undergone substantial labour market reforms since 2010, in order to understand whether post-pandemic labour market developments have common or idiosyncratic features.

Against this backdrop, first, we assess labour market developments, proxied by the unemployment rate, in relation to shifts in the business cycle during the post-pandemic era. This can indicate whether the behaviour of the labour market is consistent with historical elasticities and in line with other global crises, such as the 2007-2009 global financial crisis. Second, we investigate the main factors driving labour demand and labour supply, which may elucidate the resilience of labour markets at the current economic juncture and offer valuable insights into the labour market outlook and wage dynamics. This task is challenging as labour market conditions in recent years have been influenced by various factors, including policy support measures and structural changes in consumer, worker and firm preferences, as well as in production patterns. Finally, we discuss the implications of labour market tightness for inflation and the ensuing challenges for the implementation of monetary policy.

This paper mainly relates to the literature on search and matching models of the labour market (see, among others, Diamond 1982; Pissarides 2009), which asserts that unemployment should be considered in conjunction with other metrics, like job vacancies, to assess labour market tightness. It is also associated with the body of literature examining the consequences of

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labour market tightness for wages (Hagedorn and Manovskii 2013; Jäger et al. 2020), the impact of the COVID-19 pandemic on the labour market (Anderton et al. 2020) and the ongoing policy debate on the relationship between labour market tightness and inflation, and its implications for monetary policy (Ball et al. 2022; Kiss et al. 2022; Doornik et al. 2023).

Several findings stand out from our analysis. *First*, policy support measures to address the economic shocks triggered by the COVID-19 pandemic and the energy crisis have decoupled unemployment from cyclical fluctuations, rendering it a less appropriate measure of labour market tightness. Only recently, in 2023, have the shifts in unemployment in relation to the business cycle become more aligned with pre-pandemic historical regularities in the US, the euro area and Greece.

Second, by certain metrics, such as the job vacancy rate, the labour market has recently shown signs of easing in the US and the euro area, whilst it has been tightening in Greece. This stems from idiosyncratic features of the economies, including more favourable growth prospects for the Greek economy compared to the euro area average. Moreover, the recent upward shift of the Greek Beveridge curve may indicate some signs of weaker job-matching efficiency compared to pre-pandemic.

Third, post-pandemic labour market tightness in all three economies under examination has primarily been driven by a surge in labour demand, more so in Greece where this increase compared to pre-pandemic levels has been double that of the US and the euro area. Several factors, such as labour hoarding, medium-term staff reskilling needs in light of the green and digital transitions, and the decreased cost of posting job vacancies can explain the robust increase in labour demand. By contrast, labour supply, as captured by the labour force participation rates, after dropping sharply during the pandemic, has rebounded to pre-pandemic levels in the US and at record highs in the euro area and Greece.

Fourth, despite significant rises, nominal compensation per employee growth has not kept pace with inflation post-pandemic, resulting in real wage declines and loss of purchasing power. However, since mid-2023, real compensation per employee growth has turned positive in all three economies, mainly reflecting a moderation in inflation. Interestingly, at the end of 2023, real compensation per employee lagged labour productivity levels in all three economies, whereas it remained below its pre-pandemic level in the euro area and Greece. This suggests that the economies in question could tolerate some further catch-up in real wages in the short term without experiencing inflation. Meanwhile, the lower costs of intermediate inputs and the sizeable profit margins accumulated post-pandemic create the space for firms to absorb part of the wage hikes, mitigating the second-round effects of wages on inflation. Overall, in the absence of new external shocks, a wage-price spiral seems less likely in the US, the euro area and Greece, as economic activity softens, inflation dissipates and the labour market rebalances.

The rest of the paper is structured as follows: Section 2 assesses the degree of labour market tightness using various metrics. Section 3 puts into perspective the labour demand and supply determinants that have shaped labour market conditions in the post-pandemic era. Section 4 outlines the implications of labour market tightness for wage growth, inflation and monetary policy, and Section 5 concludes.

2 INDICATORS OF LABOUR MARKET TIGHTNESS

A preliminary step in understanding labour market developments is to define labour market tightness. For the purpose of this analysis, we adopt a broad definition, whereby the labour market is considered tight when there is excess demand for labour. This section delves into the level of tightness in two large open economies, namely the US and the euro area, as well as in a small open economy, Greece. This examination is based on a series

of indicators that track the evolution of both labour supply and demand.

2.1 LABOUR MARKET AND THE BUSINESS CYCLE

A frequently used indicator of labour market tightness is the *unemployment rate* as a percentage of the labour force.¹ However, in recent years, in many advanced economies, the response of the unemployment rate to changes in the economic cycle has diverged from the historical negative relationship between unemployment and economic growth (referred to as Okun's Law) observed prior to the COVID-19 pandemic.²

The Okun coefficient that relates changes in the unemployment rate to changes in real GDP can be estimated using a simple regression model:

$$\Delta unemp_t = \beta_0 + \beta_1 \Delta GDP_t + e_t \quad (1)$$

where $\Delta unemp$ is the change in the unemployment rate, ΔGDP is output growth, β_1 measures the sensitivity of the unemployment rate to changes in real GDP (i.e. the Okun coefficient), and e_t is the error term capturing other factors influencing changes in unemployment, which are not accounted for in the model.³ By estimating the coefficient β_1 through a linear regression analysis, we provide insights not only into the extent to which the labour market has responded to recent fluctuations in economic activity, but also into the strength of the relationship.⁴

Estimates of the Okun coefficient may vary depending on the time period considered and the estimation approach. According to the Bank for International Settlements (Doornik et al. 2023), a 1 percentage point (pp) increase in the rate of economic growth in advanced economies is estimated to correspond to a 0.3 percentage points (pps) decrease in the unemployment rate, compared to a 0.15 pps decrease observed in previous economic crises.

We estimate equation (1) for the US, the euro area and Greece over the pre-pandemic period

2006 Q1 to 2019 Q4. The table below summarises the Okun's Law estimates for the three economies. The Okun coefficient is statistically significant for all economies, while the size of the coefficient, notably for the euro area and Greece, is broadly in line with recent estimates of Doornik et al. (2023) for advanced economies.

Chart 1 depicts the estimated change in the unemployment rate based on equation (1) and the actual change in unemployment for the US and the euro area (panel a) and for Greece (panel b). In 2020, the sensitivity of unemployment to the economic cycle was influenced by differences across countries in the policy

Okun's Law estimates for the US, the euro area and Greece

	(1) US	(2) Euro area	(3) Greece
Output growth	-0.64*** (0.06)	-0.39*** (0.04)	-0.49*** (0.09)
Constant term	1.09*** (0.20)	0.34** (0.12)	-0.20 (0.38)
Adjusted R ²	0.72	0.73	0.66
No. of observations	56	56	56

Notes: The dependent variable is the change in the unemployment rate. Heteroscedasticity and autocorrelation robust standard errors are reported in parentheses. *, **, *** denote statistical significance at 10%, 5% and 1%, respectively.

- 1 Shifts in unemployment need to be assessed in conjunction with more complex indicators as they lag economic activity developments.
- 2 The theoretical foundations of Okun's Law stem from the concept of the production function, in which labour plays a critical role. When real GDP increases, more goods and services are being produced, requiring a higher level of labour input. Firms tend to hire more workers to meet the increased demand, leading to a decline in the unemployment rate. Conversely, during economic downturns, real GDP contracts, signalling a decrease in the demand for goods and services. As a result, firms may reduce their production levels and cut back on labour to adjust to lower demand, leading to higher unemployment.
- 3 An alternative specification would be to regress the deviation of the unemployment rate from the natural rate of unemployment (NAIRU) on the output gap. Equation (1) implicitly assumes a constant equilibrium unemployment rate and constant potential growth.
- 4 The elasticity of unemployment to shifts in output is commonly based on linear analyses. However, recent studies corroborate the idea that a non-linear empirical framework may more properly capture asymmetries in the unemployment-output relation. See, among others, Valadkhani and Smyth (2015) for the US, Christopoulos et al. (2023) for the euro area and Koutroulis et al. (2016) for Greece.

support measures aimed at mitigating the economic impact of the COVID-19 pandemic. According to our estimates of the Okun coefficient, the annual increase in the unemployment rate for 2020 is estimated at 2.7 pps in the euro area and 2.5 pps in the US, while it is more pronounced, namely at 4.3 pps, in Greece.

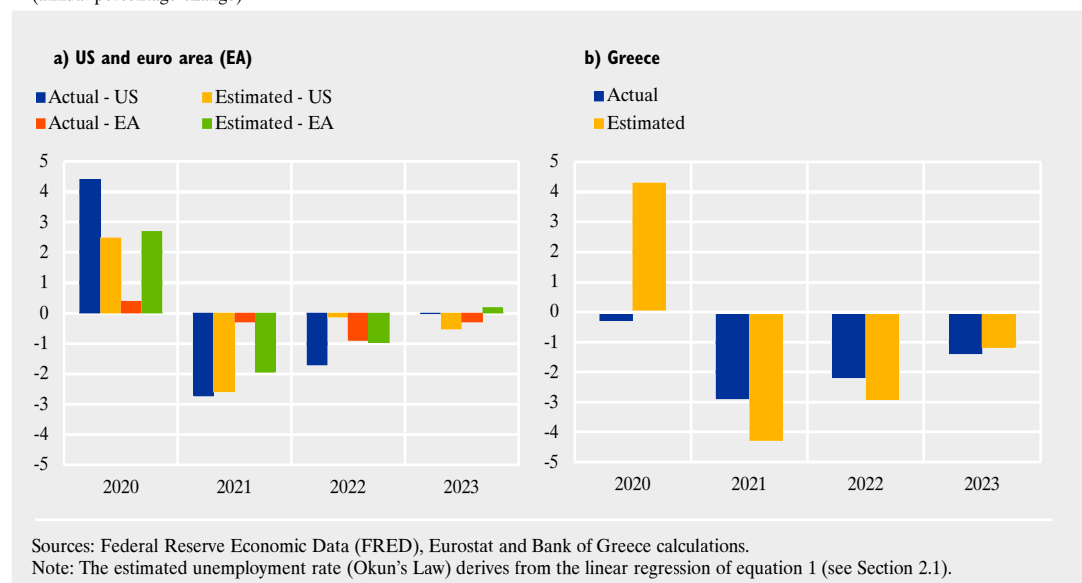
However, the actual response of the unemployment rate to the business cycle deviated from the estimated elasticities based on pre-pandemic data. In the US, direct income support, generous unemployment benefits and the relatively lower cost of temporary layoffs compared to Europe led to a 4.4 pps increase in the unemployment rate in 2020, despite a smaller annual GDP decline (-2.2%). By contrast, in the euro area, the unemployment rate in 2020 increased only by 0.4 pps, notwithstanding a deeper economic recession (-6.1%), thanks to the extensive implementation of job retention schemes. Indeed, the actual change in the unemployment rate was notably lower in the euro area and significantly higher in the US compared to long-run elasticities. In Greece, the unemployment rate in 2020 fell marginally,

although the economy contracted by 9.3% on an annual basis, probably reflecting past robust economic growth and government schemes to support employment.

In the euro area, actual changes in unemployment remained below estimates until 2022, partly due to the gradual adjustment of the labour market through increased working hours, while the unemployment rate continued to decline to historically low levels. By contrast, the decline in the US unemployment rate has been larger than expected based on pre-pandemic data, which can be explained by greater labour market flexibility and a job-rich recovery. In 2023, the unemployment rate remained historically low at 6.5% in the euro area, despite monetary policy tightening and subdued economic growth, and at 3.6% in the US (an all-time low since 1969), underscoring the resilience of the labour market in both economies. In Greece, the actual response of the unemployment rate to cyclical fluctuations had been more muted until 2022 compared to the Okun estimate (see Chart 1, panel b), which is in line with the pattern observed for the euro area, partly due to government sup-

Chart 1 Unemployment rate: actual and estimated based on Okun's Law

(annual percentage change)



port schemes aimed at protecting headcount employment.⁵ However, unemployment in Greece stood at a high level (11.1%) in 2023, indicating a less tight labour market compared to the euro area on average.

Overall, the shifts in unemployment vis-à-vis the business cycle seem to have become more aligned to pre-pandemic historical regularities in all three economies in 2023. Looking ahead, this suggests that a gradual unwinding of the labour market tightness should be expected on the back of growth moderation, notably in the euro area.

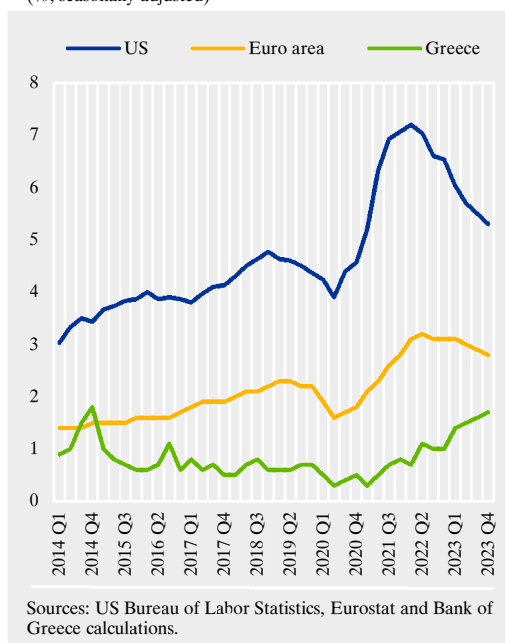
2.2 OTHER INDICATORS OF LABOUR MARKET TIGHTNESS

A more complex indicator of labour market tightness is the *vacancy-to-unemployment ratio*. A higher ratio indicates greater labour demand compared to supply and, thus, a tighter labour market. In 2019, both in the US and in the euro area, this indicator had already reached historically high levels, reflecting increased tightness. Although it significantly declined in the first half of 2020 due to the COVID-19 pandemic's impact, it remained higher than that during the 2007-2009 global financial crisis, indicating tighter labour markets during the pandemic compared to other global crises. Post-pandemic, job vacancies per unemployed person have rebounded strongly to historically high levels in both economies, largely due to the spike in job vacancies following the economies' sizeable and fast recovery.

Similarly, post-pandemic developments in the *job vacancy rate* in the US and the euro area also point to increased labour demand (see Chart 2). After peaking in the first quarters of 2022, it has gradually decelerated, though remaining historically high, which suggests a partial easing of the labour market, particularly in the US. In the euro area, the vacancy rate in the services sector is higher compared to other sectors, indicating greater labour shortages in services. By contrast, in Greece, the job

Chart 2 Job vacancy rates

(%, seasonally adjusted)



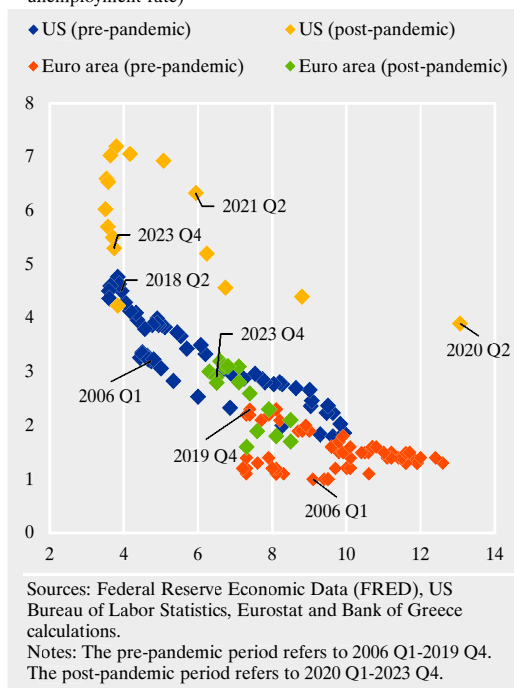
vacancy rate had been on a slight downward trend broadly until early 2021 and has been rising since, reaching historically high levels in 2023 Q4.

The increased labour demand in the Greek economy can be attributed to robust economic growth (higher than the euro area average) and strong tourism demand, as well as more favourable growth and employment prospects, partly supported by NextGenerationEU financing and the economy's return to investment grade. The steeper upward trend of the job vacancy rate as of mid-2023 could indicate rising potential mismatches between workers' skills and employers' requirements, which could weigh on firms' productivity and competitiveness. Qualitative evidence of labour market mismatch based on business survey data shows limited availability of skilled labour in the Greek labour market (Antonopoulos et al.

5 Bournakis and Christopoulos (2017) find that the growth-unemployment relationship in Greece is non-linear, namely the elasticity of unemployment is estimated at 1.5% when the economy grows at a rate above 1%, while unemployment falls by 1.2% when the economy expands at a rate below 1%.

Chart 3 US and euro area Beveridge curve (2006 Q1-2023 Q4)

(%, seasonally adjusted; y-axis: job vacancy rate; x-axis: unemployment rate)



2022). Still, the job vacancy rate in Greece remains well below the euro area average, implying a less tight labour market. A caveat of using the job vacancy rate as a proxy of labour demand developments is that it does not take into account variations in recruitment intensity among firms, while changes in recruiting technology complicate comparisons across long periods of time or business cycles (Mongey and Horwich 2023). This limitation that has been reported for the US and other economies, may be gradually coming into play in the case of Greece, explaining part of the steady rise in vacancies seen in recent years.

Besides, a negative relationship between job vacancies and the unemployment rate (Beveridge curve) is a key indicator of labour market efficiency. A decline in domestic demand increases the unemployment rate and reduces job vacancies. However, a simultaneous increase in both, namely an upward shift in the Beveridge curve, implies a worsening of job-

matching efficiency, i.e. the matching of jobs between employers and employees. At the same time, movements along the Beveridge curve indicate shifts in labour market tightness; in other words, the higher an economy stands in the vacancy-to-unemployment space, the tighter its labour market is (see, among others, Consolo and Dias da Silva 2019). In the euro area, from 2020 Q1 to 2023 Q4, the Beveridge curve shifted upwards and to the left compared to the pre-pandemic period (see Chart 3). This indicates that job vacancies remained high despite a gradual slowdown in growth, while unemployment continued to decline, thereby pointing to a tighter labour market.⁶ Empirical studies confirm that there has been no post-pandemic simultaneous increase in job vacancies and the unemployment rate in Europe, implying lack of evidence of a deterioration in job-matching efficiency. By contrast, in the US, the post-pandemic Beveridge curve has shifted up and to the right, reflecting a less efficient labour market (Kiss et al. 2022) (see Chart 3).

In Greece, the post-pandemic improvement in the labour market has been the result of both a decrease in the separation rate and an increase in the job-finding rate (Antonopoulos et al. 2022). This may reflect the positive impact of the labour market reforms undertaken over the past decade. However, signs of increased tightness are evident as of mid-2022, with the Greek Beveridge curve shifting upwards and to the left (see Chart 4). In the second half of 2023, a higher number of vacancies corresponded to a given level of unemployment, which could also imply a slight deterioration in job-matching efficiency.

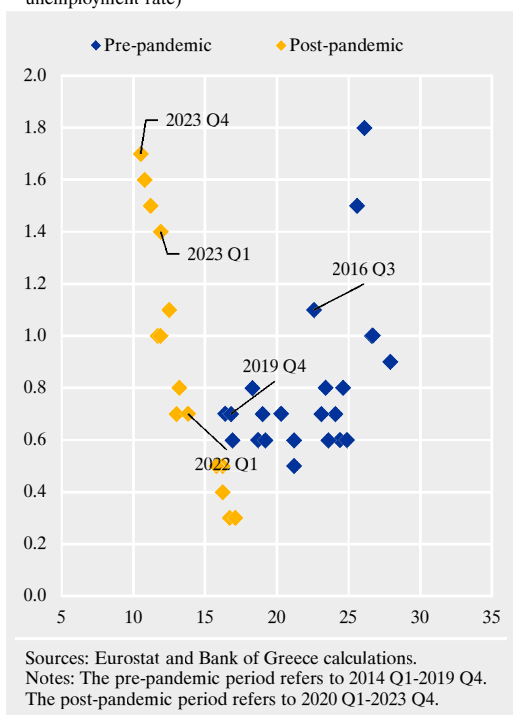
As an alternative indicator for the euro area, Eurostat's broader proxy of *labour market slack*,⁷ measured by the fraction of the

⁶ The job vacancy rate is a leading indicator of the reaction of the labour market to the economic cycle, while the unemployment rate reacts with a lag. Therefore, an increase in labour demand, for instance when economies were reopening post-pandemic, will lead to an increase in job vacancies before the unemployment rate declines.

⁷ This index includes the unemployed, part-time workers who wish to work more, people who are available to work but not looking for a job and people who are looking for a job but not immediately available to work.

Chart 4 Greek Beveridge curve (2014 Q1-2023 Q4)

(%, seasonally adjusted; y-axis: job vacancy rate; x-axis: unemployment rate)



extended labour force not fully utilised in the labour market, peaked in 2021 Q1 and has been declining since, standing below pre-pandemic levels already since 2021 Q3, which implies increased tightness. This trend primarily reflects the reduction in the number of unemployed persons. Notably, the euro area labour market exhibited greater tightness in 2019 compared to the previous decade, while the reduction in labour shortages during the pandemic was temporary. In 2023, the labour market slack in the euro area decreased at 13.1%, down from 15.2% in 2019.⁸ The corresponding decline in labour market slack for Greece was more pronounced at 16.3%, down from 25.2% in 2019, though still standing above the euro area average, implying a less tight labour market. Finally, additional indicators such as the *employment-to-working-age population ratio* have surpassed pre-pandemic levels in all three economies under examination.

3 INTERPRETING LABOUR SUPPLY AND DEMAND DEVELOPMENTS

The tightness of the labour market in many advanced economies in recent years can be attributed to various factors conducive to a decrease in labour supply, an increase in labour demand or a combination of both. These factors are linked, *inter alia*, to the policies implemented to address the pandemic (e.g. job retention schemes versus unemployment benefits and direct income support), possible shifts in workers' preferences (e.g. regarding the type and quality of jobs, work-life balance and teleworking options), skill shortages or mismatches and the structural characteristics of the respective labour markets (e.g. degree of flexibility, social safety nets and social protection institutions) (see, among others, Gomez-Salvador and Soudan 2022; Ando et al. 2022).

A general conclusion is that the post-pandemic labour market tightness in all three economies under examination is primarily driven by a significant increase in labour demand in 2022-2023 compared to 2019, more so in the euro area and Greece (see Chart 5). Developments in *labour demand* are visible in *employment growth*, which has rebounded strongly post-pandemic and has remained resilient in all three regions, as well as in the job vacancy rate, as aforementioned, which continues to hover at record highs (despite some easing in the euro area and, more notably, in the US). In the immediate aftermath of the pandemic, the strong rebound in contact- and labour-intensive services, such as tourism in Greece, has contributed to a vigorous increase in labour demand. Later in the post-pandemic period, several additional factors seem to explain the robust labour demand. First, particularly in the euro area, firms are engaging in labour hoarding, as evidenced by the decline in the per-

⁸ In the euro area, the percentage of workers transitioning to unemployment remains stable post-pandemic, reflecting the resilience of the labour market despite the gradual moderation in growth since 2022. By contrast, the percentage of unemployed persons transitioning to employment is at historically high levels.

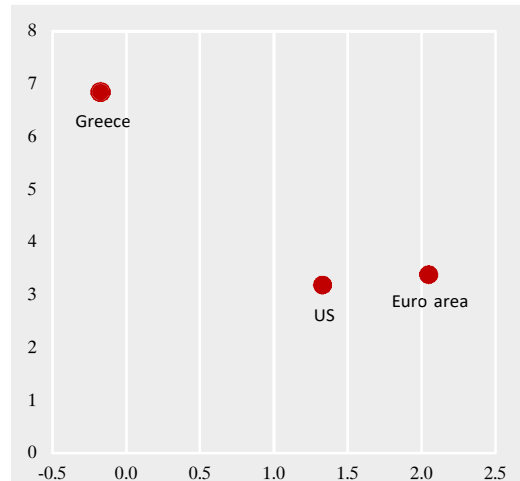
centage of workers transitioning into unemployment or the combination of lower hours worked per employee and robust employment growth rates. Firms are hesitant to resort to layoffs, due to the cost and challenges associated with rehiring or finding suitable replacements after widespread layoffs. Second, some of the new job vacancies are likely aimed at addressing medium-term staff reskilling needs rather than immediate recruitment needs. Third, the decreased cost of posting job vacancies and the easier process of online interviews encourage firms to advertise more job opportunities (Mongey and Horwich 2023).

Developments in *labour supply* are captured by the *labour force participation rate*, calculated as the proportion of employed and unemployed individuals (i.e. active participants in the labour market or, alternatively, the labour force) in the total working-age population. Following a temporary decline in 2020 due to pandemic-related restrictions, the labour force participation rate has rebounded strongly, particularly in the euro area compared to the US. In 2023 Q4, the labour force participation rate reverted to its pre-pandemic level of 68.1% in the US, supported by increased inflows of migrants (IMF 2024), while it climbed at an all-time record of 65.7% in the euro area, 1.2 pps higher compared to the pre-pandemic level of 2019 (see Chart 6). Women, older workers, highly educated persons and immigrants have contributed the most to the increase in the euro area labour force participation rate (Berson and Botelho 2023). In a similar vein, following a temporary fall during the pandemic, the labour force participation rate in Greece recovered to 59.9% in 2023 Q4, notably amid a higher participation of workers above prime age and women in recent years (Antonopoulos et al. 2022).

The more pronounced drop in 2020 and the slower recovery since then in the US participation rate compared to that in the euro area are likely related to relatively reduced immigration, health concerns, early retirement and the availability of alternative sources of

Chart 5 Labour demand and labour supply

(% change in 2022-2023 average compared to 2019; y-axis: labour demand, x-axis: labour supply)



Sources: US Bureau of Labor Statistics, Eurostat and Bank of Greece calculations.

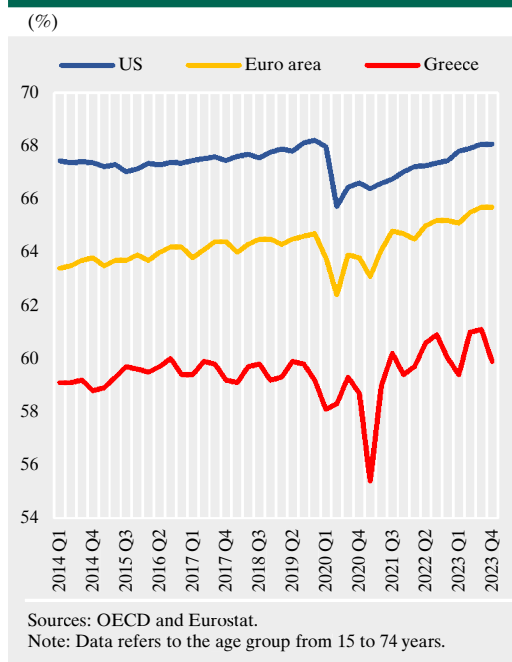
Notes: Labour demand is defined as the sum of the number of employees and job vacancies. Labour supply is defined as the total labour force.

income⁹ (see, among others, Faria e Castro and Jordan-Wood 2023; Abraham and Rendell 2023). The phenomenon of mass voluntary resignations (“Great Resignation”) in 2022 in the US turned out to be temporary and had no significant impact on the workforce, as these workers did not exit the labour market, but rather sought better-paying and higher-quality jobs amidst abundant employment opportunities (“Great Reshuffle”). Indicatively, the difference in annual pay growth between job stayers and job changers in the US peaked at 8.8 pps in April 2022, strongly incentivising worker mobility, while it fell to 2.7 pps by December 2023 (ADP 2024).

Another significant determinant of labour supply is *hours worked*. In most euro area countries, average hours worked per employee plummeted during the pandemic, unlike in the US, and have since remained below pre-pan-

⁹ Generous income support policies during the pandemic, combined with increased savings, delayed the return to work. Also, the increase in household net wealth due to very high returns on assets, such as stocks and housing, had a negative effect on the labour force participation rate.

Chart 6 Labour force participation rates



demographic levels, despite an increase and full recovery in total hours worked and employment. This post-pandemic phenomenon is primarily driven by changing preferences among workers, especially men (with young children) and young people, towards fewer working hours, is consistent with a longer-term trend and is not expected to reverse (Astinova et al. 2024).

4 IMPLICATIONS OF LABOUR MARKET TIGHTNESS FOR WAGES AND INFLATION

Labour market tightness typically exacerbates wage and inflationary pressures. High rates of job vacancies, job-to-job transitions and voluntary resignations tend to be associated with faster nominal wage growth, particularly in tight labour market conditions (Daly et al. 2012; Engbom 2022). Moreover, studies indicate that labour market tightness can amplify the inflationary impact of exogenous supply-side shocks, such as the recent energy crisis, given the non-linearity of the Phillips curve (Ball et al. 2022; Benigno and Eggertsson 2023).

Overall, the responsiveness of nominal wages to inflation hinges on cyclical and structural factors, including the prevailing level of inflation, expectations regarding inflation persistence, pension and wage indexation, and the institutional framework governing wage negotiations. Studies also indicate that non-pecuniary benefits, such as teleworking and flexible working hours, can partly constrain wage increases (Doornik et al. 2023; Maestas et al. 2023).

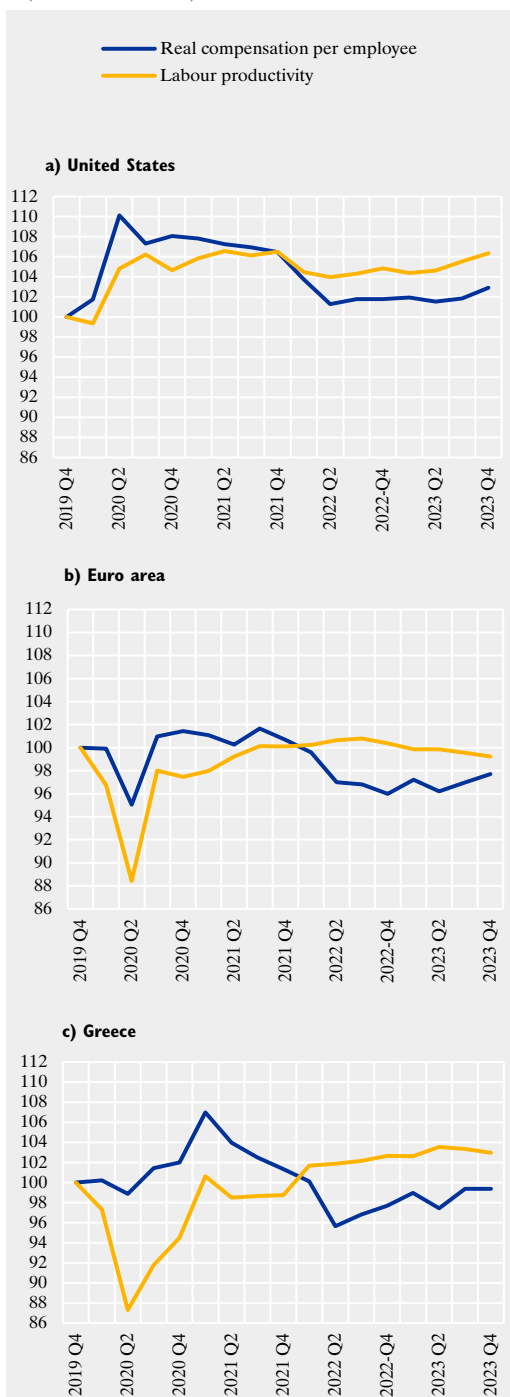
Since the onset of the war in Ukraine and the ensuing surge in energy prices and living costs, nominal compensation per employee in the US, the euro area and Greece has risen significantly to offset the loss of workers' purchasing power resulting from high inflation. In the period 2022-2023, the average annual growth of nominal compensation per employee stood at 3.5% in the US, 4.8% in the euro area and 4.2% in Greece, above the pre-pandemic growth rates, notably in Europe. Meanwhile, labour productivity growth, measured as real GDP per person employed, remained low or turned negative in some quarters, due to labour hoarding, reduced capacity utilisation and subdued economic activity.

However, annual growth in nominal compensation per employee has not kept pace with consumer price inflation. As a result, growth in real compensation per employee has been negative in the US, the euro area and Greece throughout 2022 and roughly until mid-2023. Since then, it has turned positive in all three economies and accelerated in the US and the euro area, reflecting, mainly, a moderation in inflation. The finding of wage inflation responding to past price inflation can be taken as supportive of a lag effect, leading to a lagged recovery of real wages (see, for example, Barlevy and Hu 2023).

A slowdown in nominal wage growth coupled with an increase in labour productivity growth is expected to push down unit labour costs in the coming years, thereby curbing wage-induced inflationary pressures. Interestingly, at

Chart 7 Real compensation per employee and labour productivity

(index: 2019 Q4=100)



Sources: ECB Data Portal, Eurostat, US Bureau of Labor Statistics, OECD and Bank of Greece calculations.
Note: Labour productivity is calculated as real GDP per person employed.

the end of 2023, real compensation per employee lagged labour productivity levels in the US, the euro area and Greece, and stood below its pre-pandemic levels in the euro area and Greece (see Chart 7). This suggests that the economies in question could tolerate some further real wage catch-up in the short term, without experiencing inflation. Meanwhile, the lower costs of intermediate inputs, such as energy, amid unwinding supply shocks and the sizeable profit margins accumulated post-pandemic create the space for firms to absorb part of the wage hikes, mitigating the second-round effects of wages on inflation (Cipollone 2024). To sum up, in the absence of new external shocks, the likelihood of a wage-price spiral seems less likely in the US, the euro area and Greece, as economic activity moderates, inflation dissipates and the labour market rebalances. The persistence of labour market tightness in certain sectors, particularly in labour-intensive services, may sustain high levels of services inflation for a while, delaying the deceleration of core inflation.

The inflationary risks of persistent tightness in the labour market warrant increased vigilance on the part of monetary authorities, but also a better understanding of the underlying labour dynamics, jointly assessed with other counter-vailing factors that drive inflation. The recent positive shift in real wage growth in the US, the euro area and Greece, coupled with a deceleration in inflation and a return of short-term inflation expectations to the 2% target, suggests moderating wage demands ahead. Meanwhile, there seems to be scope for some non-inflationary increases in real wages to match labour productivity. Furthermore, since changes in monetary policy have a lagged impact on aggregate domestic demand and, subsequently, on the labour market, the effects of previous monetary policy tightening are expected to become more apparent in the coming quarters. Recent studies corroborate these lagged effects of monetary policy tightening on the labour market. For instance, Bauer and Swanson (2023) demonstrate that the maximum effect of monetary policy tightening on

unemployment occurs after one year. Moreover, D'Amico and King (2023) document that the labour market effects of the current cycle of monetary policy tightening have not yet materialised for the most part, with over half of the effects still pending.

5 CONCLUSIONS

The labour market in advanced economies continues to exhibit resilience despite restrictive economic policies and an economic slowdown. Specifically, the large economies of the US and the euro area, as well as the small open economy of Greece continue to face labour market tightness, as suggested by various indicators, despite some early signs of easing. Post-pandemic tightness primarily stems from a substantial surge in labour demand, while labour supply has generally rebounded to pre-pandemic levels in all three economies. In the absence of new external shocks, the projected easing of the labour market will make monetary policy more effective in achieving price stability.

The process of labour market rebalancing in the US, the euro area and Greece is influenced in the short term by cyclical factors and

in the medium term by structural factors. The anticipated weakening of economic momentum in the US and sluggish growth in the euro area will initially dampen demand for new jobs, subsequently leading to a slight uptick in the unemployment rate towards levels more consistent with historical norms. Yet, in the medium term, initiatives such as the European recovery instrument NextGenerationEU or the Inflation Reduction Act in the US are expected to bolster labour demand through the implementation of new investment plans. At the same time, labour supply will be strengthened by structural measures aimed at enhancing the skills of the workforce, thus its employability, in anticipation of the heightened demands arising from digital transformation, the spread of new technologies (e.g. artificial intelligence) and sustainable growth initiatives. Reducing the effects of gender disparities and old-age bias in the labour force, including by mobilising pensioners, would also boost aggregate participation rates. However, a reallocation of labour across sectors due to the impacts of climate change and the greening of the economy on production, as well as a tightening of immigration regulations amid geopolitical tensions and fragmentation, may impede the process of rebalancing labour supply and demand.

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