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# THE DETERMINANTS OF UNEMPLOYMENT DYNAMICS IN GREECE

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## 1 INTRODUCTION

The high unemployment rate observed over a number of years is recognised as one of the major economic and social problems that the country is facing. The unemployment rate in Greece increased from around 10% in 2009 to 27.5% in 2013 and still fluctuates at a very high level (Q2 2015: 25.2%). According to the European Commission's autumn forecasts (European Commission 2015), the unemployment rate is projected to stand at approximately 25.7% in 2015 and marginally rise to 25.8% in 2016. Among age groups, the situation is clearly worse for young workers, who face unemployment rates close to 50%. It should be noted that more than two-thirds of the unemployed report to have been without a job for over one year. The failure to address the problem so far has led to the marginalisation of parts of society and, certainly, to a loss of human capital. Needless to note that high and persistent unemployment undermines the medium- to long-term outlook of the Greek economy and puts strain on the country's social security system and public finances.

In the light of the above, this study attempts to identify the factors that affect unemployment dynamics. Specifically, it examines the determinants of the variance of the unemployment rate, i.e. the role played by inflows and outflows of workers. This study also examines the relationship between unemployment and vacancies (Beveridge curve) in Greece in order to understand whether the recent rise in unemployment reflects solely cyclical and/or structural changes in the Greek economy.

According to previous studies by Shimer (2005) and Hall (2005), the outflow rate has been found to be the key determinant of unemployment dynamics. In particular, Shimer (2012) argues that since 1948 the outflow rate from unemployment has accounted for three fourths of the fluctuation in the unemployment rate in the United States, and the inflow rate to unemployment for one fourth. However, since 1990 the contribution of the outflow rate is estimated to have reached about 90 % of the variability of the US unemployment, which induced Shimer to conclude that the inflow rate is acyclic, i.e. it does not rise in periods of recession.

However, according to the results of the studies by Fujita and Ramey (2009) and Elsby, Michaels and Solon (2009) for the United States and Petrongolo and Pissarides (2008) and Smith (2011) for the United Kingdom, inflows to unemployment are quantitatively relevant for unemployment dynamics, contrary to what Shimer and other researchers maintained for the United States. In addition, Smith (2011), on the basis of UK data, shows that the inflow rate is the most relevant determinant of unemployment dynamics, while at times of declining unemployment the outflow rate matters the most for unemployment dynamics.

Reviewing OECD country data, Elsby, Hobijn and Sahin (2013) demonstrated that the monthly exit rate from unemployment stands at 20% in a group of countries defined as "Anglo-Saxon and Nordic", while it stands below 10% for a group of countries defined as "Continental Europe". Similarly, the monthly inflow rate is over 1.5% for the former group of countries, while it ranges between 0.5% and 1% for the latter, confirming that labour markets in Continental Europe are less flexible, thereby failing to facilitate labour restructur-

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ing. In addition, according to the same study, the contribution of the total employment inflow rate (s) to the interpretation of unemployment variance is a mere 20% (and of the total unemployment outflow rate (f) 80%) in Anglo-Saxon countries characterised by more flexible forms of employment, compared to 50% and 50%, respectively, in Nordic and Continental Europe countries, where the structures in labour relations are more conservative.

Bonthuis, Jarvis and Vanhala (2013) examine the relationship between unemployment and vacancies in the euro area as a whole and at country level, in order to identify whether the recent rise in unemployment reflects cyclical and/or structural factors. According to the findings of the study, during the recent economic crisis there was an outward shift of the Beveridge curve in the euro area, but there is great heterogeneity at country level. For instance, there is an outward shift in the Beveridge curve for Spain and France and an inward shift for Germany. In the case of Greece, there is some evidence of an outward shift during the economic crisis.

Therefore, based on prior experience, it is very important to identify the determinants of unemployment movements. In particular, if changes in the inflow rate to unemployment are the most important factor behind unemployment fluctuation, then a pick-up in economic activity will contribute to the stabilisation and eventual decline of the unemployment rate. However, if changes in the outflow rate from unemployment matter as well, then economic recovery will result in lower unemployment only if it is associated with job creation. In addition, if there is an outward shift in the Beveridge curve, then this would imply growing mismatches in the labour market, possibly reflecting a rise in long-term unemployment.

We use data from ELSTAT's Labour Force Survey (LFS) for the period Q1 2001-Q2 2015 to investigate the determinants of unemployment dynamics in Greece. Then we calculate the inflow rate to and the outflow rate from unemployment, along with the contribution of these rates to unemployment variance. We then examine the relationship between unemployment and vacancies (Beveridge curve) to ascertain whether the rise in unemployment over the past few years reflects the effects of the economic cycle or whether it also implies a decline in the labour market's matching efficiency, which would signal the presence of structural weaknesses in the economy. The next step involves econometric examination of the effect of lower economic activity on the unemployment inflow and outflow rates and on the job vacancy rate to evaluate the effect on the unemployment rate, also reviewing the role of unemployment lag. Finally, we analyse the effect of structural changes in the labour market on the evolution of unemployment inflow and outflow rates.

## 2 UNEMPLOYMENT INFLOWS AND OUTFLOWS

To calculate unemployment inflows and outflows, we use aggregated LFS questionnaire data regarding the responses of participants on their current employment status and their status one year before (employed (E), unemployed (U), inactive (I)). Given that the analysis is based on aggregated questionnaire data, it approximates actual employment and unemployment flows.

In addition, data are affected both by classification errors, e.g. participants may consider themselves unemployed although they are classified as employed, and by recall error, i.e. participants might not recall their employment status one year before. Despite their disadvantages, aggregated data are considered reliable, since there is high correlation (98.1%) between actual unemployment and implied unemployment based on the LFS recall question.

Based on this information, we calculate quarterly flows for the three employment statuses.

For instance, the number of flows from unemployment at time t-1 ($U_{t-1}$) to employment at time t ($E_t$) is shown as $U_{t-1}E_t$. Dividing this by the number of unemployed at time t-1 ($U_{t-1}$), i.e. $U_{t-1}E_t/U_{t-1}$, we obtain the average quarterly probability of making the relevant transition from unemployment to employment.

Similarly, using seasonally adjusted data, we calculate the remaining probabilities (from employment to unemployment $E_{t-1}U_t/E_{t-1}$, from unemployment to non-participation in the labour force $U_{t-1}I_t/U_{t-1}$ etc.).

Then, building on Smith analysis (2011), we calculate the instantaneous transition rates, which record the average number of jobs gained or lost in the reviewed quarter.[2]

In more detail, $\lambda_{t\_UE}$ $(\lambda_{t\_UE})=-ln\,(1-\frac{U_{t-1}*E_t}{U_{t-1}})$, is the rate of transition from unemployment to employment (job finding rate) and $\lambda_{t\_EU}$ is the rate of transition from employment to unemployment (job separation rate). In order to calculate the total rate of transition to unemployment $s_t$ (inflow rate), we take into account both the job separation rate ($\lambda_{t\_EU}$) and the transition rate from employment (E) to inactivity (i.e. non-participation in the labour force, I) and then to unemployment (U).

Hence:

$$s_t=\lambda_{t\_EU}+\frac{\lambda_{t\_EI}*\lambda_{t\_IU}}{\lambda_{t\_IU}+\lambda_{t\_IE}} \qquad (1)$$

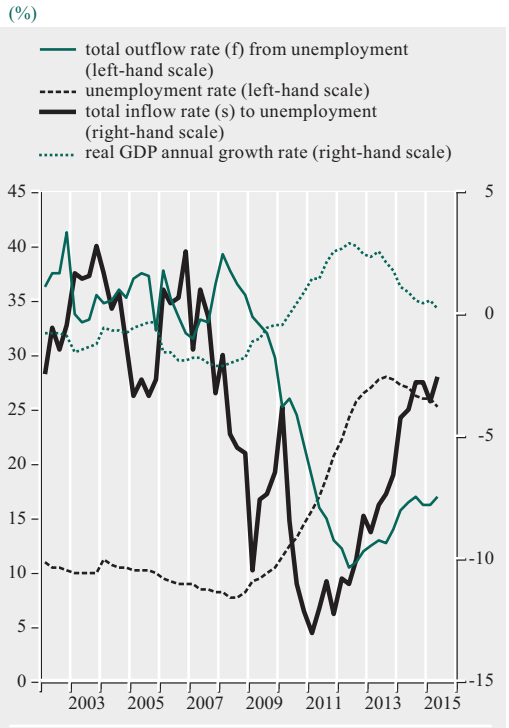
where the second term in equation (1) reflects the transition E→I→U. Similarly, the total outflow rate or job finding rate $f_t$ is calculated as the sum of the job finding rate ($\lambda_{t\_UE}$) and the transition rate to employment via I (non-participation in the labour force). Therefore:

$$f_t=\lambda_{t\_UE}+\frac{\lambda_{t\_UI}*\lambda_{t\_IE}}{\lambda_{t\_IU}+\lambda_{t\_IE}} \qquad (2)$$

where the second part of equation (2) reflects the transition U→I→E.

As shown in Chart 1, until the end of 2008 the total outflow rate (f) stood at 35% on average,

**Chart 1 Total inflow rate to unemployment, total outflow rate from unemployment, unemployment rate and real GDP annual growth rate**

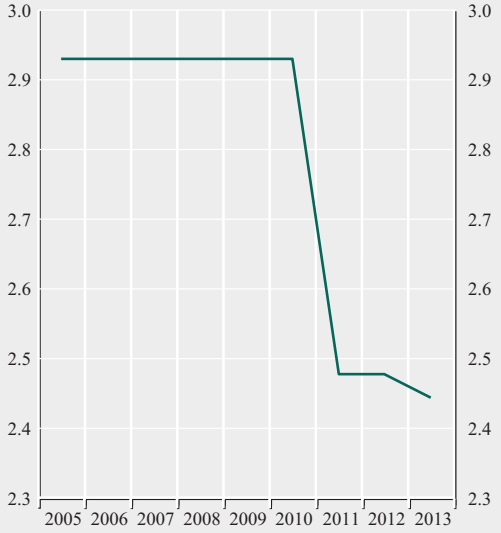



Source: Labour Force Survey, ELSTAT; author's calculations.

while the total inflow rate (s) was 3%. But from 2009 onwards, as unemployment rates started to rise and economic activity fell further, a considerable deceleration in the total job finding rate (f) and a corresponding acceleration in the job separation rate (s) were witnessed until the second quarter of 2012 (a period characterised by high political polarisation and two elections), when these two rates respectively reached their lowest and highest level (10% and 8% for the outflow rate and the inflow rate, respectively). Thereafter, although the unemployment rate kept rising (recording a peak in Q3 2013), developments in the two rates implied signs of improvement, with the f rate picking up to 17% and the s rate slowing down to 5% in Q2 2015, directly associated with the gradually declining recession.

2 See Koutentakis (2012) for an analysis on the basis of the study by Elsby, Michaels and Solon (2009) using OAED monthly data on employment flows.

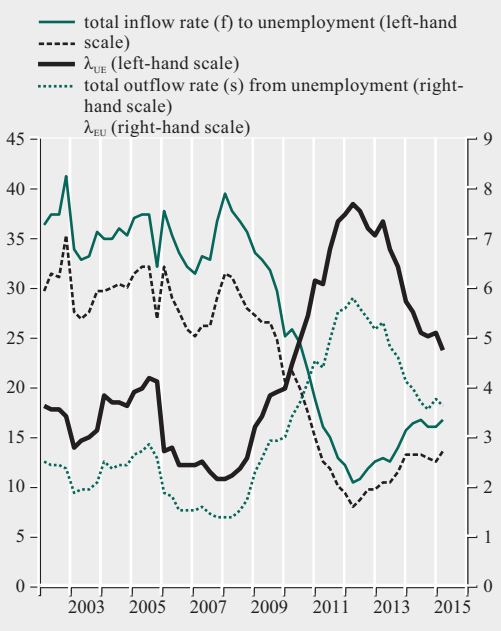
**Chart 2 OECD's EPL index reflecting labour market flexibility in individual and collective dismissals**




Source: OECD.
Note: Lower values reflect a more flexible labour market.

**Chart 3 Job separation ($\lambda_{EU}$) and job finding ($\lambda_{UE}$) rates, total outflow rate (s) from unemployment and total inflow rate (f) to unemployment**

(%)




Source: Labour Force Survey, ELSTAT; author's calculations.

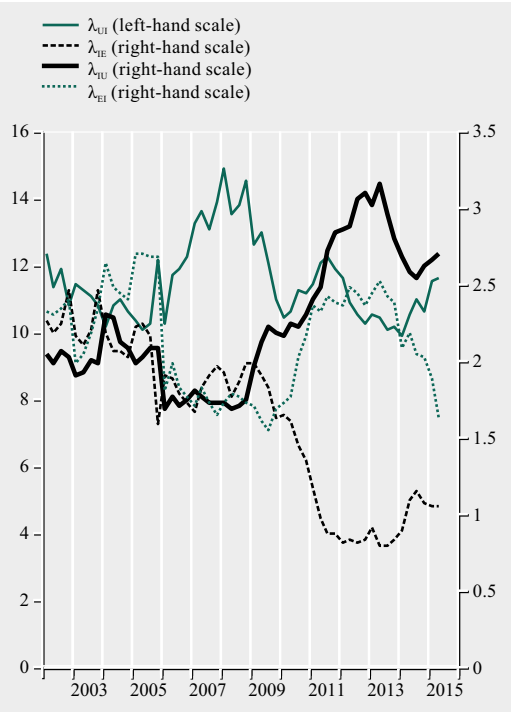
As noted in the *Interim Monetary Policy Report 2015* of the Bank of Greece (Special Feature IV.1), the evolution of these two rates (see Chart 1) is attributed both to cyclical and structural factors. The dramatic decline in GDP in the first years of the crisis (until the end of 2011) has negatively affected the labour market by raising the job separation rate and lowering the job finding rate.[3] The containment of uncertainty and the gradual normalisation of the economy after the two elections in mid-2012 have shaped more favourable job finding prospects, while they also contained the job separation rate. In the same period, important structural changes were implemented in the labour market, which helped strengthen its flexibility and have most probably affected the job finding and job separation rates. Increased labour market flexibility is reflected in the decline in OECD's EPL (Employment Protection Legislation) index, which reflects labour market inflexibility as regards constraints in individual and collective dismissals (see Chart 2). In more detail, the relaxation of restrictions in firing and hiring in 2010-2011 was accompanied by a pick-up in the job separation rate (s), while in parallel the decreased hiring and available job vacancies curbed the job finding rate (f). By contrast, subsequent reforms —relating e.g. to the reduction of employers' contributions in November 2012 and July 2014, the redetermination of minimum wages, changes in the context of collective bargaining, an enhanced role for firm-level agreements and the promotion of active labour market programmes— helped curb labour costs and led to a deceleration in the job separation rate (s) since end-2012. Moreover, in the same period, the new and more flexible labour market regime[4]

3 The dramatic fall in GDP in the first years of the crisis is also attributed to the fact that the first economic adjustment programme placed emphasis on fiscal adjustment and rapid containment of primary deficit. According to the IMF (2015), the primary balance as a percentage of GDP declined from -10.3% in 2009 to -3.0% in 2011 and then came to -1.4% in 2012, 1.0% in 2013 and 0.0% in 2014. Therefore, the bulk of the adjustment was implemented in 2010-2011, when the deepest recession was observed. Similarly, the cyclically adjusted primary balance as a percentage of potential GDP came from -13.2% in 2009 to -1.6% in 2011, 1.8% in 2012, 4.6% in 2013 and 3.2% in 2014.

4 Since new workers could now be employed with lower wages and less regulatory constraints as regards the possibility of dismissal.

**Chart 4 Rates of transition into and out of the workforce**

(%)




Source: Labour Force Survey, ELSTAT; author's calculations.

enabled a gradual acceleration in the job finding rate (f).

Examining the individual transition rates (see Chart 3), we come to the conclusion that the main determinant of the total job finding rate f is the rate of transition from unemployment to employment ($\lambda_{UE}$) and, similarly, the main determinant of the job separation rate s is the rate of transition from employment to unemployment ($\lambda_{EU}$). However, it is noted that as from 2009 the relevance of the transition from employment to unemployment via inactivity (E→I→U) for the determination of the total inflow rate (s) has increased. On the contrary, the transition from unemployment to employment via inactivity (U→I→E) has a smaller effect on the total outflow rate from unemployment (f ). Indeed, as shown in Chart 4, the $\lambda_{IU}$ and $\lambda_{IE}$ rates changed from around 2% on average before the crisis to around 3% and 1%, respectively, during the crisis. Therefore, because of the crisis, persons who were previously inactive were forced to seek employment and, as a result, they were recorded as unemployed. In addition, the evolution of the transition rate from unemployment to inactivity ($\lambda_{UI}$) implies that there is limited discouraged worker effect in the course of the crisis. Nevertheless, there is a slight uptick in $\lambda_{UI}$ from Q1 2014 until the end of the sample period.

## 3 UNEMPLOYMENT DYNAMICS

Following the analysis by Petrongolo and Pissarides (2008) and Smith (2011), we briefly describe the determinants of unemployment dynamics. Assuming that there are two states of employment, namely employed or unemployed, and using the instantaneous transition rates, the unemployment rate $u_t = \frac{U_t}{U_t+E_t}$ changes in continuous time as follows:

$$\dot{u}_t = s_t * e_t - f_t * u_t = s_t * (1-u_t) - f_t * u_t \quad (3)$$

where $e_t$ is the employment rate. In a state of steady-state, $\dot{u}_t = 0$ and employment inflows and outflows are equal. Consequently, the steady-state unemployment rate is equal to:

$$u_{t\_ss} = \frac{s_t}{s_t + f_t} \quad (4)$$

If we add the option of inactivity (non-participation in the labour force, I), the dynamics of each employment state can be described as:

$$\dot{U}_t = \lambda_t^{EU} * E_t + \lambda_t^{IU} * I_t - (\lambda_t^{UE} + \lambda_t^{UI}) * U_t \quad (5)$$

$$\dot{E}_t = \lambda_t^{UE} * U_t + \lambda_t^{IE} * I_t - (\lambda_t^{EU} + \lambda_t^{EI}) * E_t \quad (6)$$

$$\dot{I}_t = \lambda_t^{UI} * U_t + \lambda_t^{EI} * E_t - (\lambda_t^{IU} + \lambda_t^{IE}) * I_t \quad (7)$$

In a state of steady-state, where $\dot{U}_t = \dot{E}_t = 0$, equations (5)-(7) may be expressed as $u_{t\_ss} \equiv \frac{U_{t\_ss}}{U_{t\_ss} + E_{t\_ss}}$, i.e. the steady-state unemployment rate $u_{t\_ss}$ is expressed as a function of the instantaneous transition rates λ. On the basis of the analysis by Petrongolo and Pissarides (2008) and Smith (2011), equation (4) can be written as follows:

$$\frac{\Delta u_{t\_ss}}{u_{t-1\_ss}} \approx C^{s}_{t\_ss} + C^{f}_{t\_ss} =$$

$$(1-u_{t-1\_ss}) * \frac{\Delta s_t}{s_{t-1}} - (1-u_{t-1\_ss}) * \frac{\Delta s_t}{s_{t-1}} \quad (8)$$

The percentage change in steady-state unemployment is allocated to the contribution of transition rates, namely:

$$\frac{\Delta s_t}{s_{t-1}} \equiv \frac{1}{s_{t-1}} [\Delta \lambda_t^{EU} + \Delta \left( \frac{\lambda_t^{EI} * \lambda_t^{IU}}{\lambda_t^{IU} * \lambda_t^{IE}} \right)] \quad (9)$$

In other words, the contribution of the total rate of transition to steady-state unemployment can be allocated to the direct transition from employment to unemployment ($\Delta \lambda_t^{EU}$) and the indirect transition via inactivity ($\left( \frac{\lambda_t^{EI} * \lambda_t^{IU}}{\lambda_t^{IU} * \lambda_t^{IE}} \right)$). The same method is used to calculate the contribution of the total rate of transition out of steady-state unemployment ($f_t$).

## 4 COVARIANCE CONTRIBUTIONS TO UNEMPLOYMENT VARIANCE

Equation (4) is the basis for examining the role of transition to and from unemployment rates as determinants of changes in the steady-state unemployment rate. Specifically, following the work of Smith (2011), Fujita and Ramey (2009) and Elsby, Hobijn and Sahin (2013), we calculate the contribution (β, covariance contribution) of the individual transition rates (s, f, $\lambda_{t\_EU}$ etc.) to the variance of the change in steady-state unemployment. Specifically, we calculate the following equations:

$$\beta_s = \frac{Covar\left( \frac{\Delta u_{t\_ss}}{u_{t-1\_ss}}, \frac{(1-u_{t-1ss}) * \Delta s_t}{s_{t-1}} \right)}{\mathrm{Var}\left( \frac{\Delta u_{t\_ss}}{u_{t-1\_ss}} \right)} \quad (10)$$

and

$$\beta_f = \frac{Covar\left( \frac{\Delta u_{t\_ss}}{u_{t-1\_ss}}, \frac{(1-u_{t-1ss}) * \Delta f_t}{f_{t-1}} \right)}{\mathrm{Var}\left( \frac{\Delta u_{t\_ss}}{u_{t-1\_ss}} \right)} \quad (11)$$

According to the analysis by Smith (2011) and Elsby, Hobijn and Sahin (2013), actual unemployment and steady-state unemployment rates may diverge when actual unemployment changes rapidly, as was the case in Greece during the crisis.[5] Taking into consideration the role of time lags in the evolution of unemployment (persistence effect), we repeat the previous analysis by calculating the contribution (β) of the individual rates of transition (s, f, $\lambda_{t\_EU}$ etc.) to the variance of the change in actual unemployment.

Specifically, when solving equation (3) as regards the rate of actual unemployment, the result is

$$u_t = \frac{s_t}{s_t + f_t} - \frac{\dot{u}_t}{s_t + f_t} \quad (12)$$

In other words, the importance of the rate of change in unemployment (the second value in the right-hand leg of equation (12)) for the evolution of the rate of actual unemployment will decline as the sum of the rates of transition (job turnover) increases. According to Smith's analysis (2011), the change in the rate of actual unemployment can be written as follows:[6]

$$\Delta u_t = \frac{\Delta u_{t\_ss}}{u_{t-1\_ss}} * \frac{\omega_t * s_{t-1}}{\omega^2{}_t + \omega_{t-1}} + \Delta u_{t-1} * \frac{\omega_t}{\omega^2{}_t + \omega_{t-1}} \quad (13)$$

where $\omega_t = s_t + f_t$. Namely, the change in actual unemployment is a function of the change in steady-state unemployment and the time lag of actual unemployment. Therefore, as the transition rates to and from unemployment increase, changes in actual unemployment and steady-state unemployment will approximate each other. Otherwise, past changes in actual unemployment and transition rates become more important.

The contributions of transition rates s and f to actual unemployment can be calculated as follows:

5 The actual unemployment rate is different from the steady-state unemployment rate, but the two series have a high correlation (90.4%).

6 Taking into consideration that $\dot{u}_t = \frac{du}{dt}$, we differentiate equation (12), thereby generating a second-order differential equation ($\frac{d^2u}{dt}$ ). Subsequently, this equation is expressed as a first-order differential equation as regards $\frac{du}{dt}$ and then as first-order difference equation (see Smith 2011).

$$C_t^s = C_{t\_ss}^s * \frac{\omega_t * s_{t-1}}{\omega^2_t + \omega_{t-1}} + C_{t-1}^s * \frac{\omega_t}{\omega^2_t + \omega_{t-1}} \quad (14)$$

$$C_t^f = C_{t\_ss}^f * \frac{\omega_t * s_{t-1}}{\omega^2_t + \omega_{t-1}} + C_{t-1}^f * \frac{\omega_t}{\omega^2_t + \omega_{t-1}} \quad (15)$$

where $C_{t\_ss}^s$ and $C_{t\_ss}^f$ have been defined in equation (8), while, by definition, $C_0^s = C_0^f = 0$. Moreover, the contribution of the initial state in period t=0 can be shown as follows:

$$C_t^0 = C_{t-1}^0 * \frac{\omega_t}{\omega^2_t + \omega_{t-1}} \quad (16)$$

while $C_0^0 = \Delta u_0 - \alpha \Delta u_{0\_ss} = u_0 - u_{0\_ss}$. The contributions (β) of the individual transition rates (s, f, $\lambda_{t\_EU}$ etc.) to the variance of the change in actual unemployment may be calculated using the equations.[7]

## 5 ESTIMATES OF THE CONTRIBUTION (B) OF THE UNEMPLOYMENT AND EMPLOYMENT TRANSITION RATES TO UNEMPLOYMENT VARIANCE

The analysis shows that 58% of the changes in the steady-state unemployment rate and 52% in the case of the actual unemployment rate can be explained by changes in the total inflow rate (s; see Table 1).[8] Moreover, changes in the job separation rate ($\lambda_{t\_EU}$) account for around 39-40% of changes in unemployment. By contrast, the job finding rate ($\lambda_{t\_UE}$) accounts for 35% and 39% of changes in steady-state and actual unemployment, respectively.

These findings are similar to the ones reported by Smith (2011) for the UK in 1988-2008, Hairault, Le Barbanchon and Sopraseuth (2015) for France in 1990-2002 and Daouli, Demoussis, Giannakopoulos and Lampropoulou (2015) for Greece in 1998-2013. In other words, contrary to the findings of Shimer (2005, 2012) for the United States, the job separation rate greatly affects unemployment variance in Greece, the UK and France.[9]

In order to verify whether the conclusions drawn from Table 1 are true throughout the reviewed period, we compute rolling 4-year betas ($\beta_s$, $\beta_f$, etc.) for each individual transition rate to the variance of steady-state unemployment.

From the beginning of the reviewed period until the end of 2012, the total unemployment

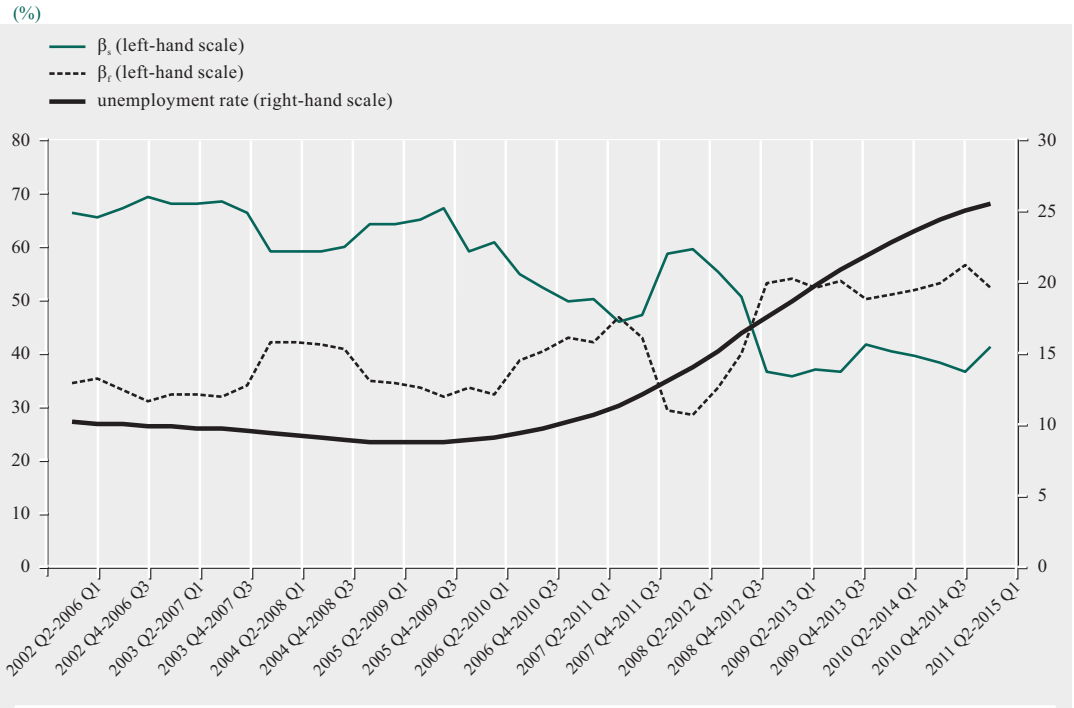
7 As discussed by Smith (2011), the sum of contributions may be different from one, due to approximation errors.
8 As with Smith's analysis (2011), in the case of actual unemployment, annual changes in unemployment are analysed to contain the great variance that characterises quarterly changes in transition rates.
9 According to Hairault, Le Barbanchon and Sopraseuth (2015), the outflow rate from unemployment is the dominant factor to explain unemployment dynamics in France the in period from 2004 to 2010.

**Table 1 Covariance contributions to unemployment variance**

| β | Rate of transition | Steady-state unemployment | Actual unemployment rate |
|---|---|---|---|
| $\beta_s$ | inflow rate to unemployment | 0.58 | 0.52 |
| $\beta_f$ | outflow rate from unemployment | 0.41 | 0.48 |
| $\beta_{EU}$ | job separation rate | 0.39 | 0.40 |
| $\beta_{UE}$ | job finding rate | 0.35 | 0.39 |
| $\beta_{EIU}$ | inflow via inactivity | 0.19 | 0.12 |
| $\beta_{UIE}$ | outflow via inactivity | 0.06 | 0.09 |

Notes: $\beta_s$ (= $\beta_{EU}$+$\beta_{EIU}$) and $\beta_f$ (=$\beta_{UE}$+ $\beta_{UIE}$) do not add up to one due to the approximation error. Rates of transition are calculated on the basis of Smith's methodology (2011). The steady-state unemployment level is calculated as s/(s+f). Period: Q1 2001-Q2 2015.

**Chart 5 Rolling estimations of $\beta_s$ and $\beta_f$ and rolling average of the unemployment rate**



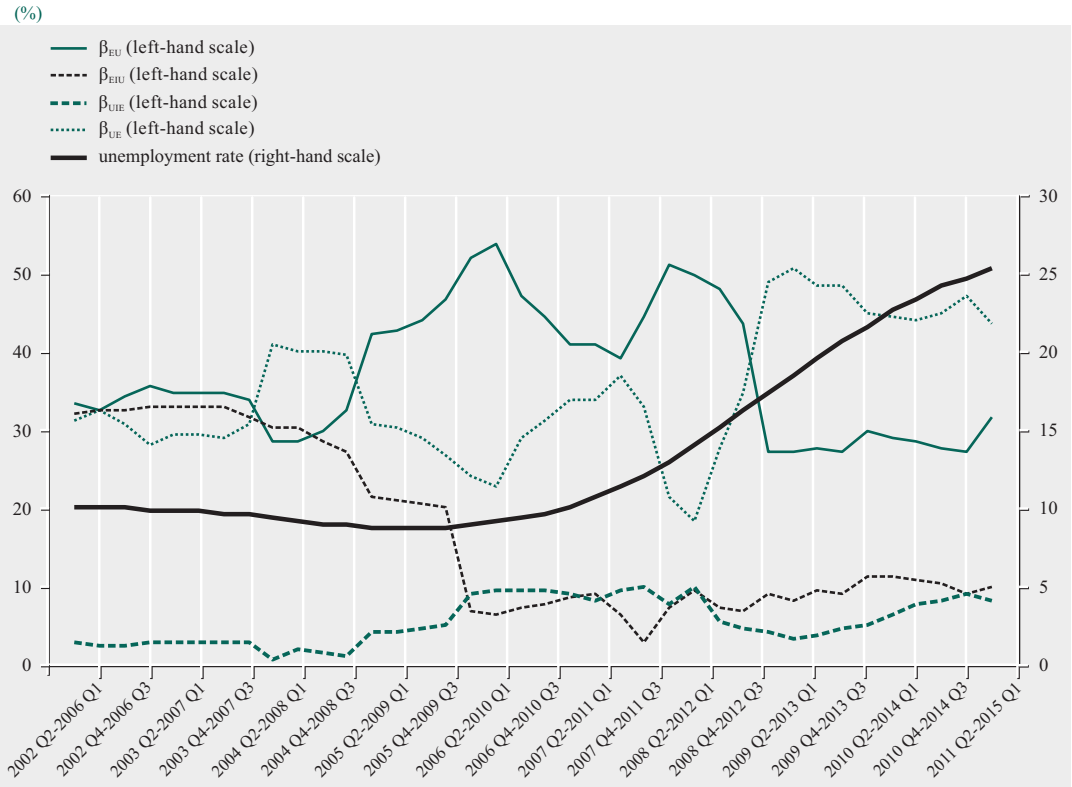

Source: Labour Force Survey, ELSTAT; author's calculations.
Note: Rolling 4-year estimations of $\beta_s$ and $\beta_f$ and rolling 4-year average of the unemployment rate. The horizontal axis shows each 4-year period.

inflow rate (s) played a primary role in the variance of unemployment, exactly as shown in Table 1 (see Chart 5). However, in the period from Q2 2009 to Q1 2013, which saw a sharp rise in the unemployment rate despite the gradual slowdown of recession, and when structural reforms in the labour market started to yield results, the total outflow rate (f) was better in explaining the variance of unemployment.

It is noted that, until early 2009, inflow and outflow rates had almost the same effect on unemployment variance (see Chart 6). Then, until late 2012, when the unemployment rate rose by over 15 percentage points, the greatest effect on unemployment variance came from the separation rate ($\lambda_{EU}$). This development reflects both the effect of recession and greater flexibility in dismissals as a result of structural changes. From Q1 2013 onwards, the greatest effect on unemployment variance, according to the findings of the study, came from the job finding rate ($\lambda_{UE}$). Containing uncertainty about the country's prospects and normalising economic conditions contributed to the gradual increase in job seeking (increased vacancies, hiring etc.). This development was assisted by the adoption of a more flexible legislative framework in labour law and the upgraded role of firm-level agreements that led to reduced nominal wages.

We then computed the contribution of rolling 4-year betas ($\beta_s$, $\beta_f$ etc.) to actual unemployment variance (see Chart 7). The conclusions confirm the outcome of the analysis on the basis of steady-state unemployment. Specifically, the job separation rate mostly affected unemployment variance at the beginning of the crisis, but the situation was then reversed, with the job finding rate being more important. Data on actual unemployment

**Chart 6 Rolling estimations of $\beta_{EU}$ and $\beta U_{E,}$ $\beta_{EIU}$ and $\beta_{UIE}$ and rolling average of the unemployment rate**




Source: Labour Force Survey, ELSTAT; author's calculations.
Note: Rolling 4-year estimations of $\beta_s$ and $\beta_f$ and rolling 4-year average of the unemployment rate. The horizontal axis shows each 4-year period.

imply that the turning point concerning the importance of the two rates (s and f) occurred in the period between Q3 2008 and Q2 2012, i.e. 3 months earlier than the turning point resulting from the analysis on the basis of steady-state unemployment (Q2 2009-Q1 2013). However, both periods cover the sharp increase in unemployment, of about 15 percentage points.

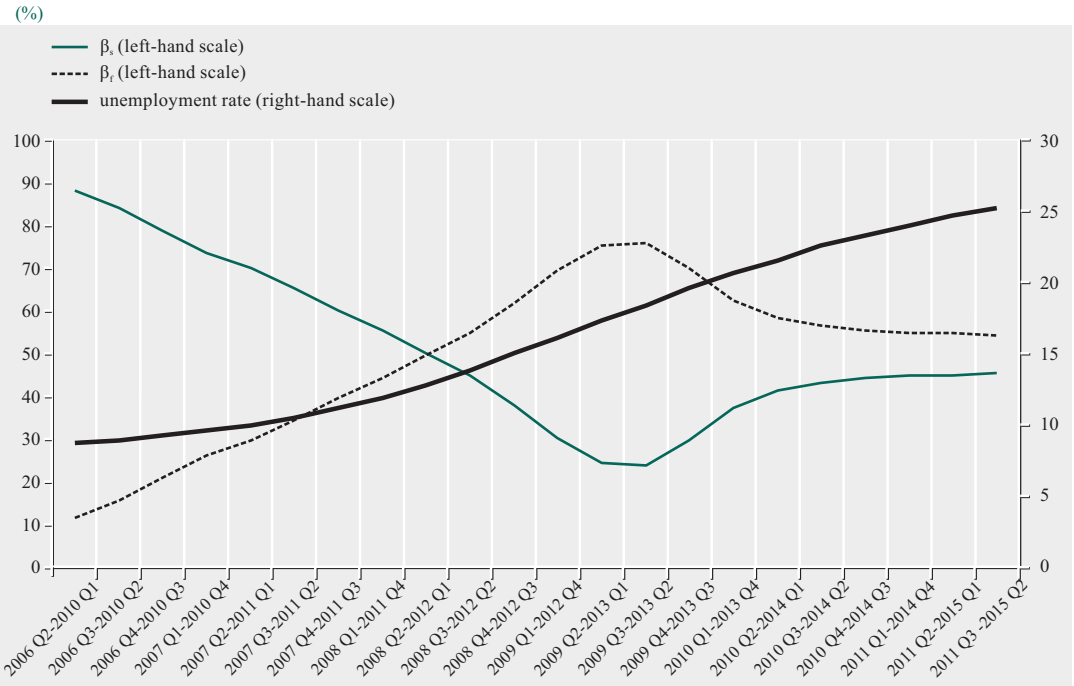
In conclusion, the findings of the study so far show that, in times of rising unemployment, the inflow rate to unemployment is the main determinant of the change in unemployment, reinforced in case of flexible labour relations. By contrast, in times of economic recession and declining unemployment, job finding plays a bigger role (also facilitated by flexible labour relations).

Needless to say that containing the job separation rate is not enough to reduce the unemployment rate; new jobs must also be created, thereby accelerating the fall in the unemployment rate. Otherwise, even under recessionary conditions where the job separation rate declines, there is a risk of persisting high unemployment rates for many years, which would negatively affect the Greek economy's current and future productive capacity (a situation described as "jobless recovery").

## 6 THE RELATIONSHIP BETWEEN THE JOB VACANCY RATE AND THE UNEMPLOYMENT RATE

The importance of the job finding rate is reflected in the evolution of the job vacancy

**Chart 7 Rolling estimates of $\beta_s$ and $\beta_f$ from actual unemployment and rolling average of the unemployment rate**




Source: Labour Force Survey, ELSTAT; author's calculations.
Note: Rolling 4-year estimations of $\beta_s$ and $\beta_f$ and rolling 4-year average of the unemployment rate. The horizontal axis shows each 4-year period.

rate,[10] which is an indicator of firms' demand for labour. According to the data presented in Chart 8, the increase in unemployment during the crisis was accompanied by a constant decrease in the job vacancy rate (that, however, had started in late 2006), which reached a trough in Q2 2013. Subsequently, it trended upwards in line with the slight decline in unemployment; nevertheless, it still remains at levels that are below those recorded in 2005-2010.[11]

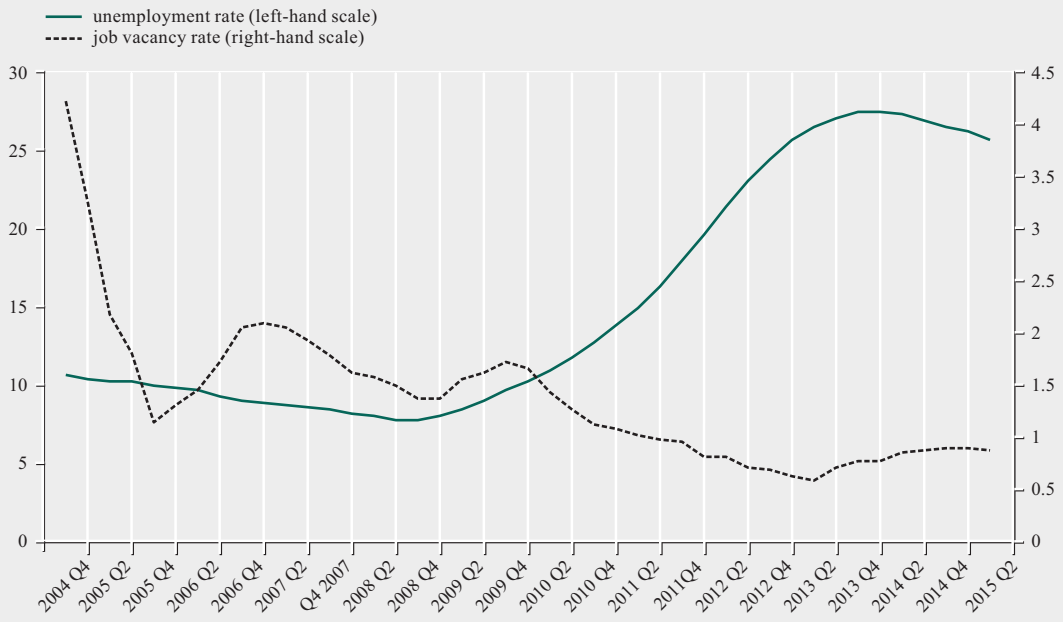
The relationship between job vacancies and unemployment is presented in the form of a Beveridge curve (see Charts 9 and 10), which reflects both the cyclical conditions and the efficiency with which the labour market matches unemployed workers and job vacancies. The picture that emerges from the start of the sample in 2004 until late 2009 is rather mixed. For instance, in 2004-2005 unemployment remained unchanged, despite the high job vacancy rate. This indicates the presence of structural unemployment, which is not related to cyclical economic conditions, but rather to the failure to match job vacancies and available skills of the unemployed.

A slight decline in unemployment was recorded in 2006-2008, with the job vacancy rate remaining at 1.5-2%, i.e. there was a parallel slight inward shift in the Beveridge curve. However, from late 2009 onwards, on account of the deteriorating economic conditions, the unemployment rate increased and the job vacancy rate decreased. There was an outward shift in the Beveridge curve (since over 10% unemployment corresponds now to a job vacancy rate of 1.1%, unlike e.g. Q1 2006 when

10 Job vacancy rate = posted vacancies/(posted vacancies + occupied posts).
11 The high vacancy rates in 2004-2005 also relate to the economic expansion on account of the Olympic Games. To control for seasonality, data are averages over four quarters, i.e. the observation for Q4 2004 is the average of the four quarters of 2004.

## Chart 8 The relationship between job vacancies and unemployment

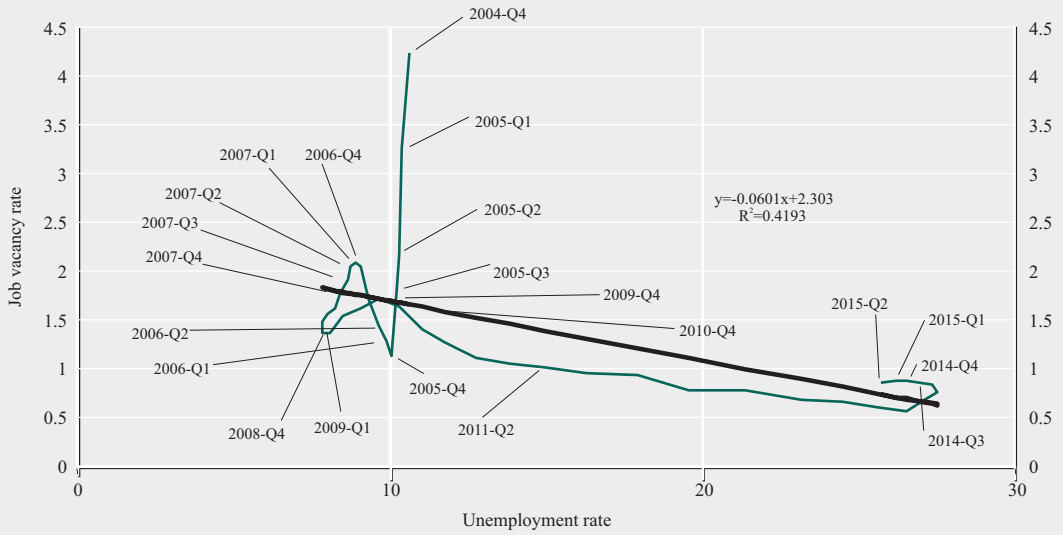
(%)




Source: Eurostat; author's calculations.
Notes: Job vacancy rate = posted vacancies/(posted vacancies+occupied posts), unemployment rate for ages 15-74. To control for seasonality, the values reported are averages over four quarters, i.e. the observation for Q4 2004 is the average of the four quarters of 2004.

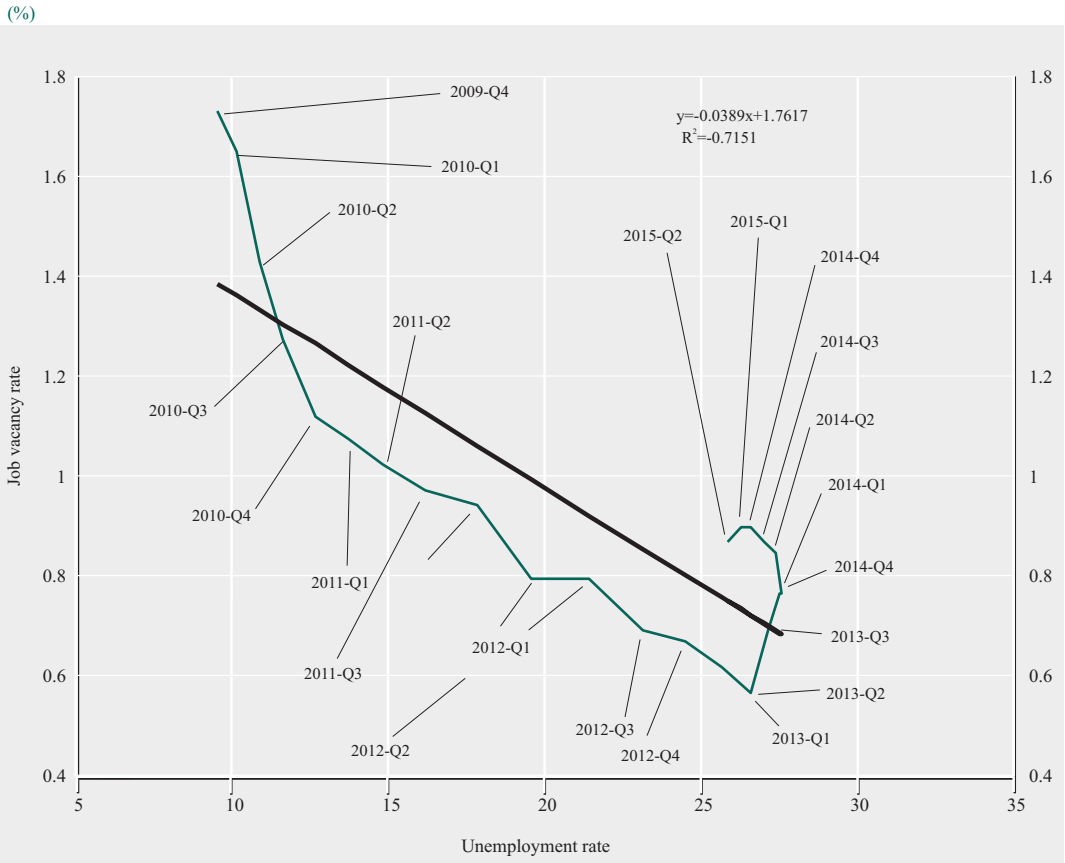
## Chart 9 The Beveridge curve (Q4 2004-Q2 2015)

(%)




Source: Eurostat; author's calculations.
Note: To control for seasonality, the data are averages over four quarters, i.e. the observation for Q4 2004 is the average of the four quarters of 2004.

**Chart 10 The Beveridge curve (Q4 2009-Q2 2015)**




Source: Eurostat; author's calculations.

unemployment stood slightly below 10%) and the negative slope of the curve has been reduced (also shown by the trend lines in Charts 9 and 10). In addition, as the recession deepens, the economy moves along the Beveridge curve. Since 2013 the gradual deceleration in the unemployment rate and its subsequent gradual decline were accompanied by a higher job vacancy rate. This implies, first, that recession is gradually bottoming out.

However, a parallel outward shift of the Beveridge curve can also be seen since end-2013. In other words, whereas at the end of 2011 a job vacancy rate of 0.9% was associated with an unemployment rate of 17%, now it is associated with an unemployment rate of 25-26%. Despite the fact that reforms implemented since 2010-2011 in the labour market boosted the matching efficiency of job vacancies and unemployed persons, the restructuring of production in the economy in the past few years because of the recession (e.g. restructuring in required skills, sectoral and branch restructuring etc.) led to the emergence of structural unemployment. For instance, over two-thirds of the unemployed report to have remained in unemployment for over one year.

Therefore, policy interventions are needed to attract investment in order to boost the job creation rate. At the same time, the unemployed must streamline their skills, assisted by active education and employment policies, to improve their chance to find work in new sectors of economic activity that emerged through the crisis.

### 6.1 ECONOMETRIC ANALYSIS

Building on the work of Bonthuis, Jarvis and Vanhala (2013), we use econometric analysis to investigate the relationship between the unemployment rate and the job vacancy rate, i.e. the Beveridge curve. Specifically, we rely on seasonally adjusted data covering the period Q1 2004-Q2 2015.

The dependent variable is the unemployment rate. The key interpreting variables are: the lagged unemployment rate, the job vacancy rate, the squared job vacancy rate, a dummy variable called "decline in real GDP", which takes the value of 1 in periods when the annual change in real GDP is negative (reflecting periods of decline in economic activity) and 0 otherwise. We also use a dummy variable called "structural changes", reflecting the structural changes that took place in the labour market, as reflected in the EPL index of OECD (see Chart 2). This dummy variable equals 1 from 2004 to 2010, 2 from Q1 2011 to Q4 2012 and 3 from Q1 2013 to Q2 2015.[12] Therefore, higher values of the "structural changes" dummy variable are interpreted as more flexible conditions in the labour market.

On the basis of the results of the estimates presented in Table 2, we come to the following conclusions: a) There is a significant lag in the evolution of the unemployment rate (persistence), as shown by the statistically significant lagged coefficient of the unemployment rate (see columns 1-5). b) The job vacancy rate negatively affects the unemployment rate (see column 1), thereby confirming the negative relationship between the job vacancy rate and the unemployment rate. c) The positive and statistically important coefficient of the squared job vacancy rate implies the presence of a non-linear relationship between the job vacancy rate and the unemployment rate (see column 1). In other words, the response of the unemployment rate is milder when the job vacancy rate is high (as in 2004-2005) and stronger in periods of subdued demand for work and few job vacancies (as during the recent crisis). d) The positive and statistically significant coefficient of the dummy variable that records the period of decline in real GDP implies that during the crisis the Beveridge curve shifted to the right (see columns 2-5). e) The interaction of the dummy variable relating to the period of decline in real GDP with the job vacancy rate has a negative and statistically significant coefficient, implying that the negative Beveridge curve is due to the most recent crisis period (see columns 3 and 5).[13] f) The positive and statistically important coefficient of the dummy variable recording structural changes in the labour market implies that greater labour market flexibility contributed to an increase in unemployment and a shift of the Beveridge curve to the right (see columns 2-5). g) The interaction of the dummy variable relating to the period of structural changes with the job vacancy rate is negative, which is interpreted as an improvement in the effectiveness of the matching process in the period when structural changes took place in the labour market (see columns 4-5). In other words, an increase in the job vacancy rate leads to stronger decline in unemployment when labour relations are more flexible. It should be noted that the finding in column 5 is not statistically important when the interaction of the real GDP decline with the job vacancy rate is also taken into account, but the sign remains negative.

In conclusion, the results presented in Table 2 correspond to the analysis of Bonthuis, Jarvis and Vanhala (2013) and verify the presence of an inverse relationship between unemployment and vacancies, which is however observed mainly in the post-2008 period after the economic crisis began. Moreover, the decline in economic activity alongside a more flexible labour market have contributed to the outward

12 The OECD EPL index runs until 2013. In the analysis, we assume that any changes that took place until the end of 2013 and are reflected in the EPL index remain valid until the end of the available sample (Q2 2015), i.e. we assume that the EPL index did not improve further.

13 The same picture emerges from Charts 9 and 10 if we switch the y and x axes, i.e. if the unemployment rate is placed on the y axis and the job vacancy rate on the x axis.

**Table 2 Beveridge curve estimations for Greece**

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| Dependent variable: | Unemployment rate | | | | |
| Unemployment rate$_{t-1}$ | 0.967<br>(39.94)*** | 0.894<br>(25.58)*** | 0.895<br>(28.15)*** | 0.8857<br>(27.74)*** | 0.892<br>(27.07)*** |
| Job vacancy rate$_t$ | -1.342<br>(-2.24)** | -0.586<br>(-1.31) | -0.093<br>(-0.23) | -0.3623<br>(-0.76) | -0.068<br>(-0.16) |
| Job vacancy rate$_t$^2 | 19.878<br>(2.031)** | 10.469<br>-1.41 | 2.588<br>-0.4 | 6.913<br>(0.91) | 2.188<br>-0.33 |
| Decline in real GDP$_t$ | | 0.007<br>(3.91)*** | 0.017<br>(3.96)*** | 0.007<br>(3.54)*** | 0.0163<br>(3.17)*** |
| Structural changes$_t$ | | 0.061<br>(2.54)*** | 0.0567<br>(2.74)*** | 0.107<br>(2.56)** | 0.071<br>(1.76)* |
| Job vacancy rate* Decline in real GDP$_t$ | | | -0.8459<br>(-2.64)** | | -0.767<br>(-2.12)** |
| Job vacancy rate* Structural changes$_t$ | | | | -4.381<br>(-1.86)* | -1.392<br>(-0.57) |
| Constant term | 0.0217<br>(2.31)** | 0.0152<br>(2.20)** | 0.01<br>-1.47 | 0.0137<br>(2.12)** | 0.01<br>-1.49 |
| Number of observations | 46 | 46 | 46 | 46 | 46 |
| F-test | F(3.42) = 1371,26 | F(5.40) = 1447,78 | F(6.39) = 1525,63 | F(6.39) = 1445,03 | F(7.38) = 1291,98 |
| (p-value) | (0.000) | (0.000) | (0.000) | (0.0000) | (0.000) |
| R^2 | 0.9921 | 0.9954 | 0.9959 | 0.9956 | 0.9959 |

Notes: OLS estimations. Standard errors are corrected for autocorrelation using the Newey-West procedure.
***, **, * statistically significant at a confidence level of 1%, 5% and 10%, respectively.

shift of the Beveridge curve. At the same time, there is evidence suggesting that structural changes have improved the matching process of job vacancies and the unemployed.

## 7 THE EFFECT OF A DECLINE IN ECONOMIC ACTIVITY ON JOB SEPARATION (S), FINDING (F) AND VACANCY RATES

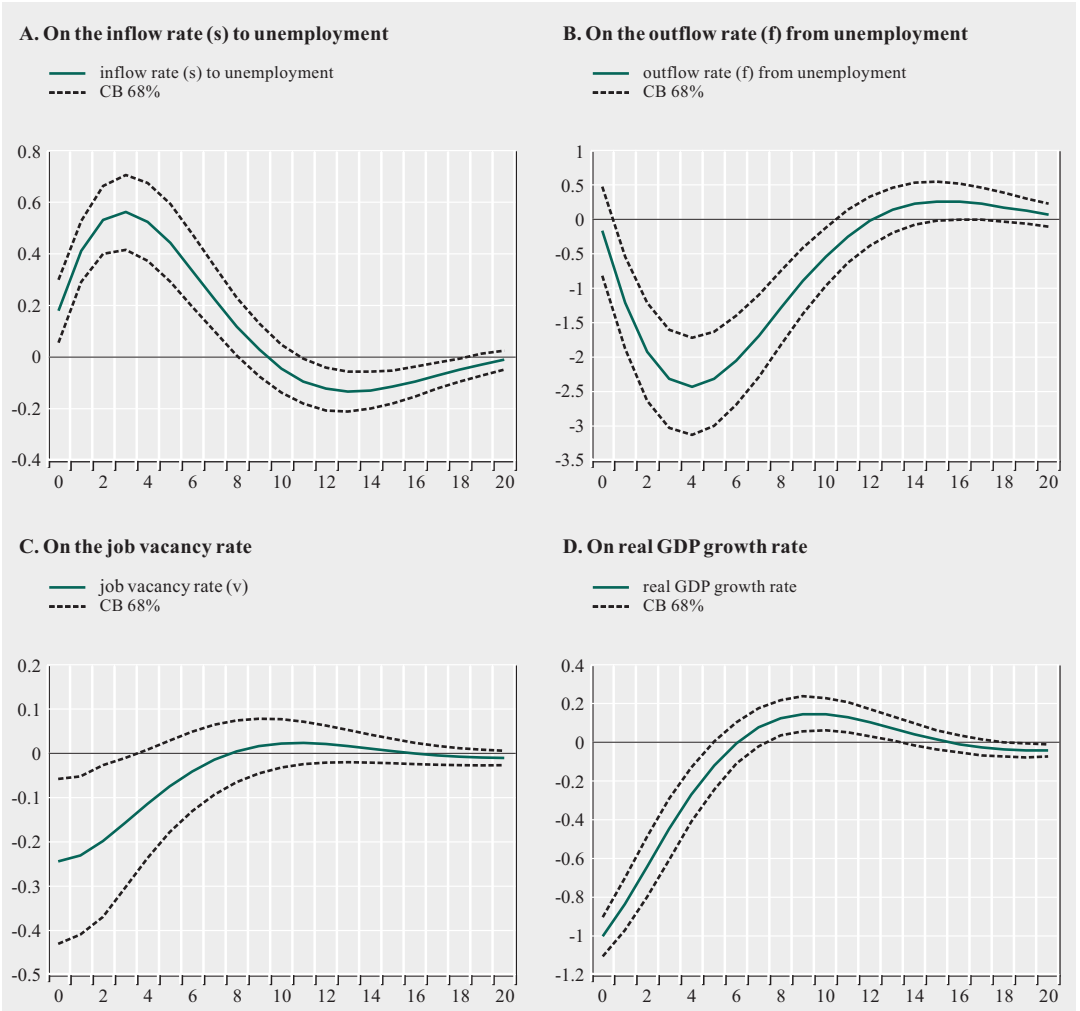
This section examines the effect of the decline in economic activity (as a result of an exogenous shock) on the job separation rate (s), the job finding rate (f) and the job vacancy rate (v).[14] According to the results, the decline in economic activity lasts for about 1.5 year and leads (see Charts 11A-14D) to: a) a decrease in the job vacancy rate for about 2 years (8 quarters), b) a significant fall in the job finding rate for about 3 years, and c) an increase in the employment exit rate for about 2.5 years, thereby leading to an increase in the unemployment rate. In other words, the decline in economic activity implies a downward movement on the Beveridge curve, since it leads to less job vacancies and higher unemployment. It should be pointed out that the decline in the job finding rate lasts for about half a year more than the increase in the job separation rate, which implies an increase in unemployment, even if flows from employment to unemployment stop.

The estimated effect on the (steady-state) unemployment rate of the fall in GDP is based on the changes of s and f rates, reflected in Charts 11A-11B, equation (3) and the alternative assumptions about average s and f val-

14 The analysis is based on structural vector autoregression (SVAR) with a lag, a dummy variable whose value is equal to 1 after Q2 2010 and the following seasonally-adjusted variables: the annual rate of change in real GDP, the job separation rate (s), the job finding rate (f) and the job vacancy rate (v) (see Tagkalakis 2015). The estimated effects shown are based on the assumption of an exogenous 1% fall in the rate of change in real GDP. The 68% confidence bands (CB) in the impulse responses of the reviewed variables are based on the bootstrap method (1,000 replications were performed).

## Chart 11 Estimated effect of the decline in GDP

(percentage points)




Sources: Eurostat and ELSTAT; author's calculations.

ues in order to calculate the contributions of changes in s and f to the unemployment rate (three alternative assumptions are used; see Charts 12A-12C).[15] The key conclusions are:

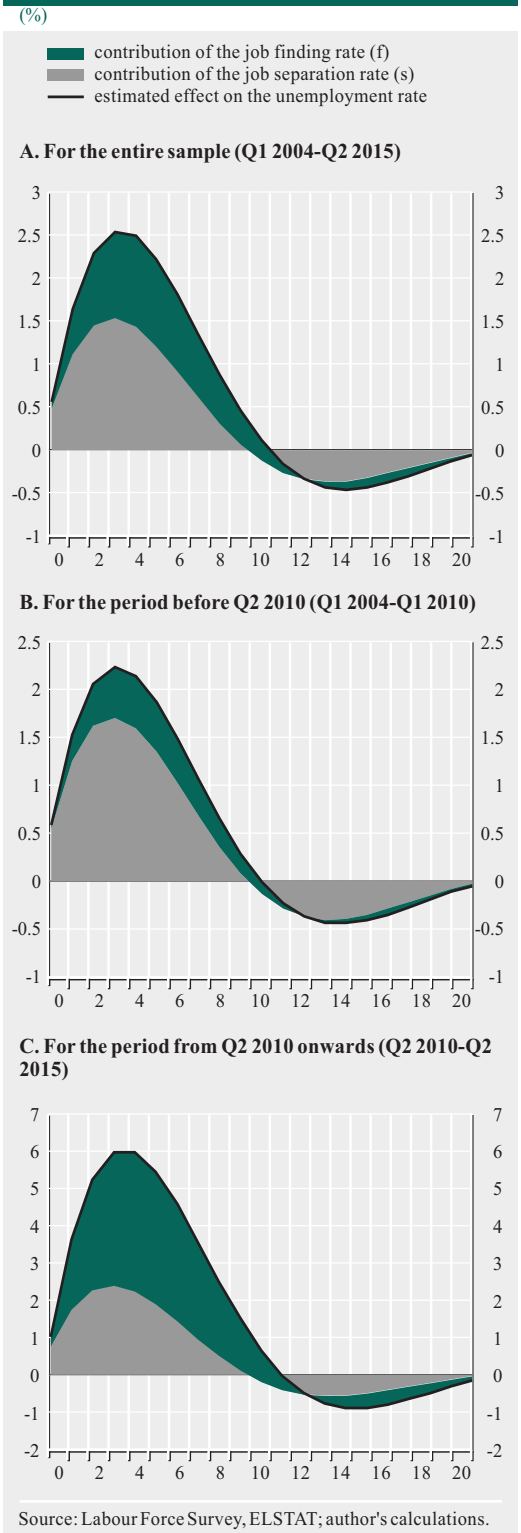
- The increase in the unemployment rate lasts for about 2.5 years and is significantly higher when the weights of changes in s and f are based on average s and f values during the crisis (see Charts 12A-12B).

- The contribution of the job separation rate (s) is the main determinant of the increase in unemployment throughout the reviewed period and the pre-crisis period (see Charts 12A-12B).

- The contribution of the job finding rate (f) is the main determinant of the increase in

15 The impulse response of the unemployment rate (in a state of steady-state) to the change in GDP is calculated as follows: du(y)/dy=(du/ds)*ds/dy+(du/df)*df/dy, where ds/dy and df/dy are the impulse responses of s and f rates presented in Charts 11A-11B. Three scenarios were used to calculate du/ds, du/df: a) average s, f for the entire sample (see Chart 12A), b) average s, f for the period before Q2 2010 (see Chart 12B) and c) average s, f for the period since Q2 2010 (see Chart 12C).

**Chart 12 Estimated effect on the (steady-state) unemployment rate from the decline in GDP and f, s contributions on the basis of f, s averages**




Source: Labour Force Survey, ELSTAT; author's calculations.

unemployment during the crisis (Q2 2010-Q2 2015), while it has led to higher unemployment rates for 3 years (see Chart 12C).[16] This is consistent with corresponding findings by Hairault, Le Barbanchon and Sopraseuth (2015) for France.

Using the implied reactions of the (steady-state) unemployment rate and the contributions of the job separation and job finding rates shown in Charts 12A-12C, we come to the conclusion that the job finding rate accounts for 57% of unemployment variance in the last scenario concerning the crisis period, against 21% for the pre-2010 period (see Table 3).

**Table 3 The contribution of separation and job finding rates of change to the fluctuation of unemployment (estimated indirect effect)**

| β | Q1 2004-Q2 2015 | Q1 2004-Q1 2010 | Q2 2010-Q2 2015 |
|---|---|---|---|
| $\beta_s$ | 0.58 | 0.74 | 0.39 |
| $\beta_f$ | 0.37 | 0.21 | 0.57 |

## 8 THE ROLE OF THE HYSTERESIS EFFECT IN THE CHANGE IN UNEMPLOYMENT

In line with the analysis by Barnichon and Garda (2015), this section examines the role of the hysteresis effect in the change in the unemployment rate following an exogenous increase in the job separation rate (s) which could be due to a decline in economic activity.[17] According to the results, the increase in the job sep-

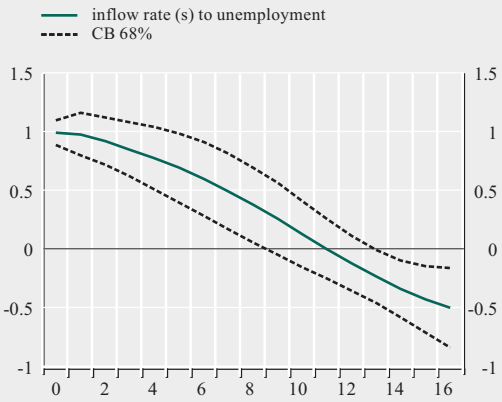
16 The analysis is based on the (simplistic) assumption that the estimates of ds/dy and df/dy that concern the entire sample remain valid during the crisis. Therefore, the different effect on the unemployment rate results indirectly from the use of different weights, which are based on the s, f values during the crisis.

17 The analysis is based on structural vector autoregression (SVAR) with a lag, a dummy variable whose value is equal to 1 after Q2 2010 and the following seasonally-adjusted variables: the annual rate of change in real GDP, the job separation rate (s), the job finding rate (f) and the job vacancy rate (v) (see Tagkalakis 2015). The estimated effects shown are based on the assumption of an exogenous 1% fall in the rate of change in real GDP. The 68% confidence bands (CB) in the impulse responses of the reviewed variables are based on the bootstrap method (1,000 replications were performed).

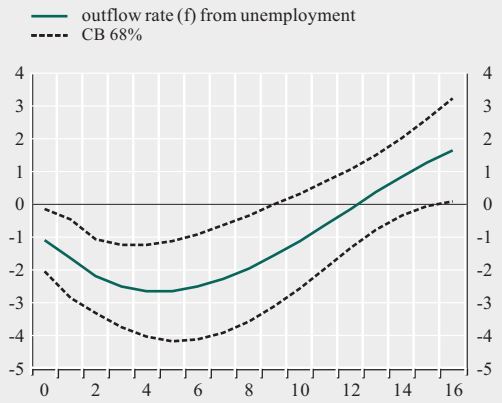
**Chart 13 Estimated effect of an exogenous increase in the inflow rate to unemployment**

(percentage points)

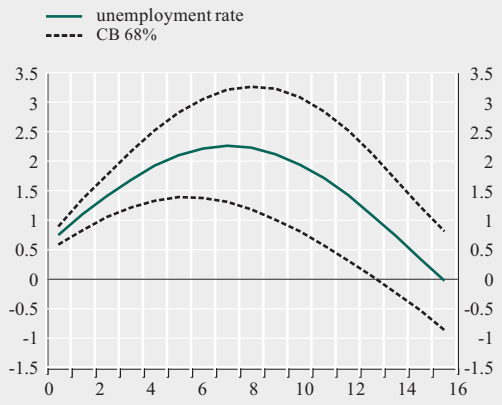
**A. On the inflow rate (s) to unemployment**




**B. On the outflow rate (f) from unemployment**




**C. On the unemployment rate**




Sources: Eurostat and ELSTAT; author's calculations.

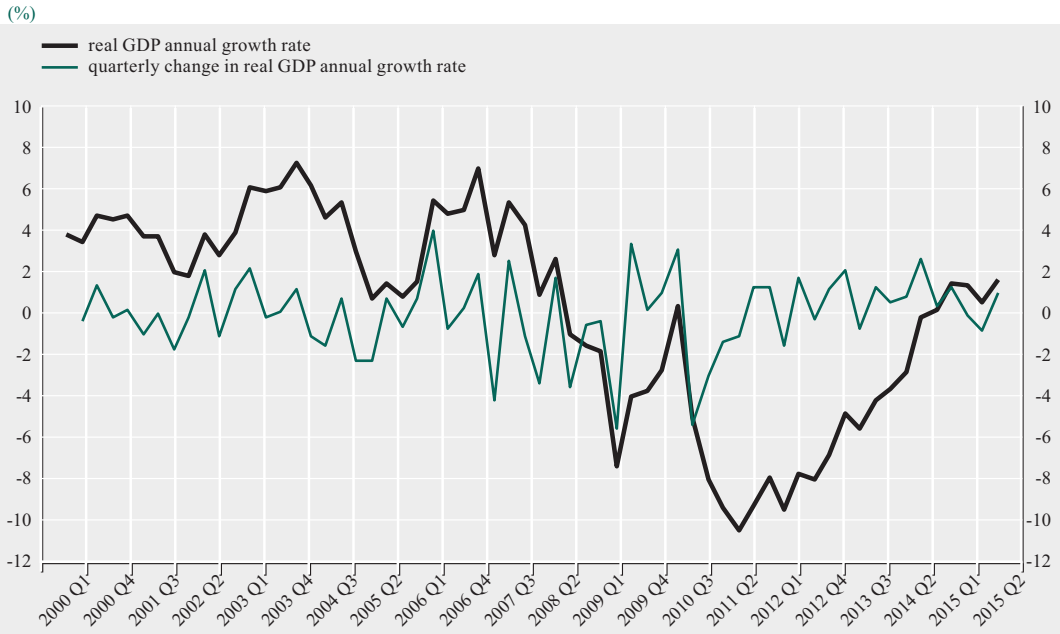
aration rate lasts for 11 quarters, while the decline in the job finding rate lasts 12 quarters (see Charts 13A-13C). In other words, the decline in the job finding rate increases the unemployment rate substantially and for a marginally longer period (1 quarter). However, according to Chart 13C, the unemployment rate is upwardly affected by the exogenous increase in the job separation rate (s) for a period of 15 quarters, i.e. about 1 year more than what is implied by changes in s and f rates. This is indicative of the persistence that characterises the change in the actual unemployment rate (persistence effects), above and beyond the changes in the estimated job separation and job finding rates.

## 9 A FIRST ECONOMETRIC ANALYSIS OF THE IMPACT OF STRUCTURAL REFORMS IN THE LABOUR MARKET ON THE JOB SEPARATION AND JOB FINDING RATES

According to the preceding analysis, the job separation and job finding rates have been significantly affected in the past few years both by cyclical and structural factors. The dramatic decline in economic activity in the first years of the crisis accelerated the job separation rate and decelerated the job finding rate (see section 7). The gradual improvement in economic conditions since early 2014 is estimated to have had exactly the opposite result. However, various structural interventions were made in the same period in the labour market, making it more flexible. Some of them are reflected in the path of OECD's EPL index (see Chart 2).

This section investigates the impact of structural changes in the labour market on the job separation rate (s) and the job finding rate (f). The analysis is based on a vector autoregression (VAR) with a lag and the following seasonally-adjusted variables: the annual rate of change in real GDP, the job separation rate (s) and the job finding rate (f). The "structural changes" dummy variable defined in section 6.1 is also used, reflecting the structural changes made in the labour market, as reflected in OECD's EPL index.

**Chart 14 Evolution of the real GDP annual growth rate and its quarterly change**




Source: ELSTAT; author's calculations.

The impact of structural changes on the evolution of s and f rates can vary depending on the state of the business cycle. Hence, the period Q1 2000-Q2 2015 is broken down into three subperiods, for each of which a dummy variable is constructed, equal to 1 in the reference period and 0 for the remaining period. Specifically, the following three dummy variables are constructed, reflecting: a) the deepening economic recession, i.e. when the annual real GDP growth rate is negative and deteriorates further from one quarter to the other, b) the gradual recovery, when the annual real GDP growth rate is negative but improves from one quarter to the next, and c) the times of economic expansion, when the real GDP growth rate is positive.

Chart 14 plots the annual real GDP growth rate and its quarterly change. The economy is in a state of deepening recession when both series shown in Chart 14 have negative values. The economy is in a state of gradual recovery (or decelerating recession) when the annual real GDP growth rate is negative but its quarterly change is positive.

Then the "structural changes" dummy variable is multiplied by the three dummy variables relating to the periods of deepening recession, gradual recovery and economic expansion and the three new dummy variables are incorporated in the VAR as exogenous variables. These three new variables are interpreted as structural changes that have taken place in periods of deepening recession, gradual recovery and economic expansion. Therefore, a value of 1 indicates lack of progress in structural changes, 2 indicates implementation of structural changes and 3 indicates accelerating structural changes in the labour market.

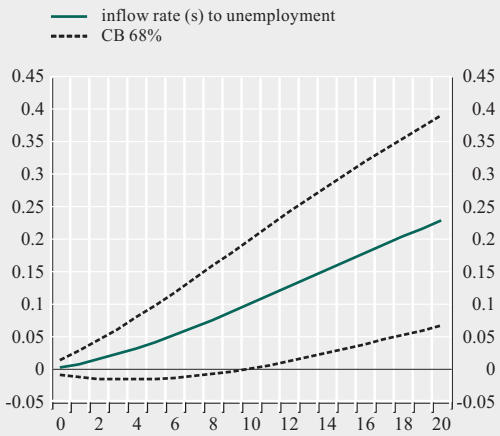
Following the analysis by Lutkepohl (2005), we employ cumulative dynamic multiplier functions, which measure the cumulative effect of a unit change in each of the exogenous variables on the endogenous variables of the VAR. The results of the exercise are shown in Charts 15A-15C and 16A-16C.[18]

18 The 68% confidence bands (CB) in the impulse responses of the reviewed variables are based on the bootstrap method (1,000 replications were performed).

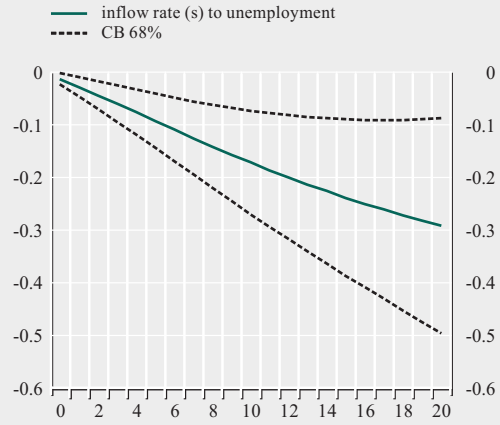
## Chart 15 The cumulative effect of structural reforms on the inflow rate (s) to unemployment

(percentage points)

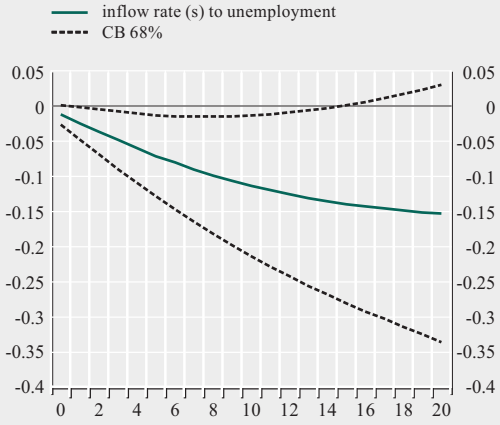
**A. At times of deepening recession**




**B. At times of gradual recovery**




**C. At times of economic expansion**

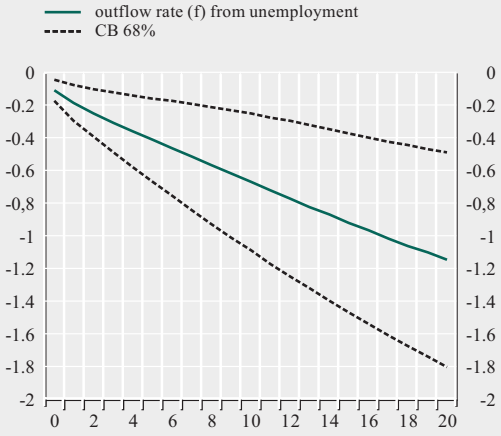



Sources: Eurostat and ELSTAT; author's calculations.

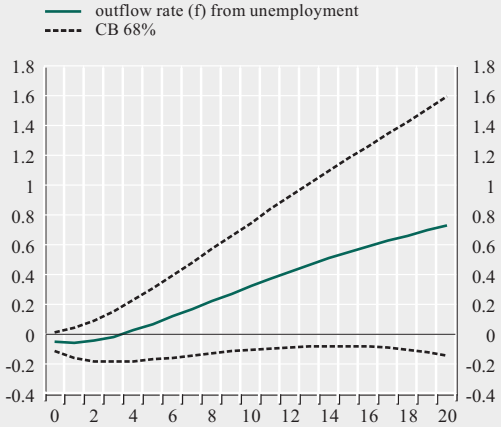
## Chart 16 The cumulative effect of structural reforms on the outflow rate (f) from unemployment

(percentage points)

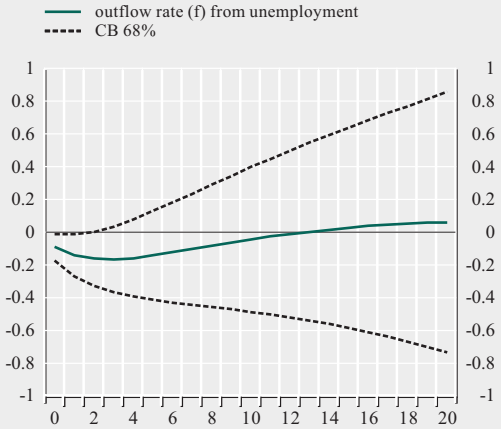
**A. At times of deepening recession**




**B. At times of gradual recovery**




**C. At times of economic expansion**




Sources: Eurostat and ELSTAT; author's calculations.

According to these results, structural changes at times of deepening recession increase the job separation rate (s) without improving the job finding rate (see Charts 15A and 16A). By contrast, in periods of gradual recovery of the economy (or decelerating recession), structural changes in the labour market boost the job finding rate (f) without leading to an increase in the job separation rate (see Charts 15B and 16B). Finally, in periods of economic expansion, structural changes in the labour market have limited effects which, after a period of 5 years (20 quarters), lead to a small decline in the job separation rate and a small increase in the job finding rate (see Charts 15C and 16C).

These results suggest that the structural labour market reforms that were undertaken at times of deep and accelerating recession contributed to an increase in the job separation rate (s), while those undertaken at times of recovery (decelerating recession) had a positive effect on the job finding rate (f).

In any event, these results represent a first effort to evaluate the reforms undertaken and should be seen as preliminary, since this analysis and the dummy variables used here cannot capture all structural interventions since 2010. These structural changes include the establishment of more flexible labour relations, cuts in employers' social security contributions, minimum wage setting, changes in the collective bargaining framework, the primacy given to firm-level agreements, active employment policies, reform in the pension system and, more recently (since 2013), reforms in the products and services markets.

## 10 SUMMARY AND CONCLUSIONS

Using data from ELSTAT's Labour Force Survey (LFS) and following the methodology of Smith (2011) and Petrongolo and Pissarides (2008), we examined the determinants of unemployment dynamics. Based on the results of the study, we come to the conclusion that the job separation rate has picked up since the onset of the crisis. This reflects the effect of recession and the establishment of more flexible labour relations since 2010, which facilitated dismissals. Lower hiring and available job vacancies curbed the job finding rate and subsequently led to higher unemployment rates.

Reduced uncertainty about the country's outlook and a normalisation of the economic conditions since mid-2012 contributed to a gradual increase in demand for labour. In this context, the structural changes that took place in 2012, relating among other things to the establishment of minimum wages, a reshaped framework for collective bargaining with primacy given to firm-level agreements and proactive employment policies, slowed the reduction of labour costs and contributed to a deceleration in the job finding rate (since 2012). At the same time, the new and more flexible labour market regime enabled a gradual acceleration in the job finding rate, as young workers could now be employed receiving lower wages and fired with fewer regulatory constraints.

Therefore, in periods of low economic activity, the transition from employment to unemployment represents the main component of the increase in the unemployment rate, whereas in periods of economic recovery the "job finding" factor becomes more important. It is clear, however, that restraining the job separation rate is not enough to lower the extremely high unemployment rate, since the negative effect of the job finding rate lasts longer because of the decline in economic activity. It is very important to create new jobs to tackle the problem. Otherwise, even in conditions of recovery, there is a risk of persisting high unemployment rates, with negative consequences for the Greek economy's productive capacity (a situation described as "jobless recovery").

Moreover, the outward shift of the Beveridge curve during the crisis and the increase in unemployment are consequences of the restructuring of production in the economy in

the years of the crisis from non-tradeables (e.g. construction) to tradeables. The reforms implemented since 2010 in the labour market support an effective matching of job vacancies and unemployed persons, as they increase the change in the unemployment rate after a change in the job vacancy rate. This implies that, in boom years when demand for labour increases, they facilitate new hirings, thereby leading to a faster reduction in unemployment.

Therefore, further policy interventions are needed both for firms to create new jobs and for the unemployed to improve the quality of labour supply.

New jobs can only be created by increasing domestic and foreign private investment. In order to help attract private investment, reforms could be expedited e.g. by upgrading the institutional and legal frameworks, improving the efficiency of public services, introducing a stable tax framework, eliminating restrictions in goods and services markets and, more generally, creating a business-friendly environment.[19] It is of paramount importance to lift capital controls and restore the economy's financing conditions.

Finally, emphasis should be placed on active employment policies and on the unemployed persons' apprenticeship and retraining. This would improve and renew their skills and knowledge, in order to increase their probability of absorption in the new extrovert sectors of economic activity that have emerged during the crisis.

19 It is estimated that the deregulation of goods and services markets will lead to price declines (because of lower profit margins due to increased competition), thereby boosting the real disposable income of households, which was affected in the past few years by the decrease in wages and the increase in taxation.

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