LABOUR MARKET EFFECTS OF FLEXICURITY FROM A REGIONAL PERSPECTIVE

AYOLT J. DE GROOT* & J. PAUL ELHORST**

**Faculty of Economics and Business, University of Groningen, PO Box 800, 9700AV Groningen, the Netherlands. E-Mail: ayoltdegroot@gmail.com*
***Corresponding author: Faculty of Economics and Business, University of Groningen, Box 800, 9700AV Groningen, the Netherlands. E-mail: j.p.elhorst@rug.nl*

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ABSTRACT

One of the main questions for politicians is how to introduce more flexibility in the labour market while still providing employees with ample social security. The concept of flexicurity has sprung to attention through its success in Denmark. This paper explores whether the Danish model can also be successful in other European countries. A simultaneous equations model is constructed and estimated using regional data, which is an extension of the Blanchard-Katz model developed in 1992. It is found that a European country such as the Netherlands can permanently lower its unemployment rate and increase its participation and employment growth rates at the regional level, by 1.47, 2.08 and 1.05 percentage points respectively, if it copies the Danish model.

Key words: Unemployment, participation, employment growth, institutions, the Netherlands

INTRODUCTION

Across the European continent labour market institutions are still rigid, especially when compared to Anglo-Saxon countries like the United States or Canada. This poses a challenging problem for the near future, particularly in the context of recent demographic, social and economic developments. Increased competition from globalisation, and ever-accelerating developments in technology, information and communication, are factors that have drastically altered the environment in which firms operate. In order to stay competitive and innovative, companies need flexible labour markets so that they can quickly adapt their workforce in response to changing conditions. Workers are also affected. Employees need new kinds of security to help them update their skills, remain in employment, or return to employment if they lose their job (European Expert Group on Flexicurity 2007, p. 10).

Further challenges, such as the unsustainability of national social protection systems, have recently initiated the discussion on labour market reform at both the national level and the European level. Societies are ageing rapidly, causing tensions between the economically active and inactive population to rise. In addition, average employment rates are still relatively low in most EU-countries, while long-term unemployment remains high.

It is evident that, in order to meet these challenges, European countries will have to rethink their labour market institutions. But the question is how reform should take place. One possibility would be to conduct labour market policy along Anglo-Saxon lines, which implies loosening employment protection and cut back spending on social security. This is frequently argued to be of vital importance in increasing employment and participation rates. However, measures to achieve these aims are vastly unpopular among the general public and therefore difficult to implement.

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In reshaping their labour market policies, politicians are faced with the challenging task of deciding what is economically necessary on the one hand and socially viable on the other. More flexibility in labour markets is required to meet the economic objectives of competitiveness and growth, but should not lead to unacceptable outcomes in the field of social security. A form of labour market policy to deal with this 'flexibility-security nexus', as Wilthagen has called it (Wilthagen & Tros 2004), is flexicurity. Ideally, flexicurity provides a 'best of both worlds', smoothening the functioning of the labour market, while still providing employees with ample employment security. The concept has sprung to attention through its success in Denmark, where a dynamic labour market model commonly referred to as the 'golden triangle' has contributed to impressive macroeconomic results.

The Danish system is characterised by three main features, namely: (1) a flexible labour market facilitated by low employment protection; (2) a generous system of unemployment benefits; and (3) a set of active labour market policies aimed at getting unemployed workers back into employment as soon as possible. Since 1994, the Danish economy has fared well, especially when compared to other European countries.

The Danish case shows that it is possible to introduce more flexibility in labour markets without sacrificing the attainments of the welfare state. This suggests that there may be a Scandinavian alternative to the more traditional school of thought that labour market reform in European countries ought to take place along Anglo-Saxon lines. The key question is whether or not the Danish model is exportable to other countries. Can European countries, such as the Netherlands, benefit from a flexicurity approach similar to that in Denmark?

While flexicurity has been frequently discussed, thorough econometric research on its labour market effects is rather sparse. Most studies focus on its more theoretical aspects (see for example, Madsen 2002; Wilthagen and Tros 2004; European Expert Group on Flexicurity 2007). The goal of this paper is to find out how the components of flexicurity influence unemployment, participation and employment growth rates. The central question is: can European countries structurally improve the functioning of their labour markets by lowering employment protection while at the same time increase government expenditure on passive and active labour market policies?

To answer this question, a simultaneous equations model is constructed, which builds upon the recursive model that was developed by Blanchard and Katz (1992). It consists of three equations that explain unemployment, participation and employment growth. The model is extended by adding three exogenous variables that represent the underlying fundamentals of the Danish 'golden triangle' of flexicurity, namely: (1) the degree of employment protection legislation (EPL); (2) government expenditure on active labour market policies (ALMP); and (3) government expenditure on unemployment benefits (UB). The model is estimated for an unbalanced panel of 126 regions across nine EU countries over the period 1983–2001. By impulse-response analysis it is examined how changes in the exogenous variables affect the equilibrium values of the endogenous variables.

There are two reasons why regional data are used instead of national data. First of all, Blanchard and Katz (1992) also used regional data for their estimations. This is because their model is regional in nature. As regions produce different bundles of goods and services, they also experience different shocks to labour demand (and supply) and thus experience region-specific fluctuations (and changes). Supply and changes are put within brackets, because they are not accounted for in the original study of Blanchard and Katz (1992) but will be worked out in this paper. The second reason is to do justice to regional differences within countries, given the national values of ALMP, UB and EPL. Most international studies are limited to national data. For that reason they cannot answer the question why regions do have different levels of unemployment, participation and employment growth, even if ALMP, UB and EPL are exactly the same. The data set to be discussed and analysed here shows that regional disparities in unemployment, participation and employment growth are, on average, 102 per cent, 66 per cent and 81 per cent of those between countries, respectively.

Consequently, an analysis of unemployment, participation and employment growth from a regional perspective may provide a better understanding of the impact of these national variables than a straight analysis based on national data only. Besides, we will have more variation in the data, given the number of countries considered.

The paper is structured as follows. The following section treats the conceptual aspects of flexicurity. The third section introduces the Blanchard-Katz model and describes its theoretical and empirical implications. The fourth section presents the results, while the main conclusions are summarised in the final section.

THE CONCEPT OF FLEXICURITY

The term flexicurity (a compound of flexibility and security) is used to refer to combinations of labour market flexibility and high levels of social security. The literature provides a number of more concrete interpretations. Two interpretations, provided by Wilthagen and Tros (2004), are relevant here. The first definition describes flexicurity as a policy strategy:

> that attempts, synchronically and in a deliberate way, to enhance the flexibility of labour markets, work organisations and employment relations on the one hand, and security – employment security and social security – on the other, with the objective to combine employment and income security with flexible labour markets, work organisation and labour relations.

This definition interprets flexicurity as a deliberate political choice. However, flexicurity can also be referred to as a state of affairs in the labour market, which is often the outcome of an historic social-economical process. This brings us to understand flexicurity as:

> (1) a degree of job, employment, income and 'combination' security that facilitates the labour market careers and biographies of workers with a relatively weak position and allows for enduring and high quality labour market participation and social inclusion, while at the same time providing (2) a degree of numerical (both external and internal), functional and wage flexibility that allows for labour markets' (and individual companies') timely and adequate adjustment to changing conditions in order to enhance competitiveness and productivity.

Internal-numerical flexibility refers to flexible arrangements within a firm (e.g. working time flexibility: overtime, short-time, and part-time work), while external-numerical flexibility refers to flexibility on the external labour market (e.g. external job changes, temporary layoffs, and fixed term contracts).

To some extent, this mix of flexibility and security may seem like a paradox. High levels of labour market flexibility are often thought to be a disadvantage for employees, while a high level of job security is generally associated with a burden on an employer's ability to respond quickly to changing market conditions. However, the key principle that underpins the flexicurity concept is that flexibility and security should not be seen as opposites. Within a well-implemented flexicurity strategy flexibility and security are mutually reinforcing, leading to a win-win situation in which both employer's and employee's needs are satisfied.

Flexicurity is by no means a definite concept. According to Wilthagen and Tros (2004), countries can encounter specific forms and mixes of flexibility and security. The European Expert Group on Flexicurity[1] (2007, p. 15), provides a useful generalisation of the concept and argues that flexicurity policies can be designed and implemented across four policy components:

1. Flexible and reliable contractual arrangements (from the perspective of the employer and the employee, of 'insiders' and 'outsiders') through modern labour laws, collective agreements and work organisation;
2. Comprehensive lifelong learning strategies to ensure the continual adaptability and employability of workers, particularly the most vulnerable;
3. Effective active labour market policies (ALMPs) that help people cope with rapid change, reduce unemployment spells and ease transitions to new jobs;
4. Modern social security systems that provide adequate income support encourage employment and facilitate labour market mobility. This includes broad coverage of social protection provisions (unemploy-

ment benefits, pensions and healthcare) that help people combine work with private and family responsibilities such as childcare.

Along these lines, labour market arrangements such as the Austrian severance pay system or the fixed-term contract reductions in Spain can be classified as flexicurity policies. The framework that is the centre of attention in the remainder of this paper is the Danish 'golden triangle' of flexicurity, which incorporates all four policy components mentioned above into one integrated flexicurity approach. Over the last decade, Danish labour market performance has been impressive compared to other EU-member states, combining high participation rates with a generous system of unemployment benefits. The features of the Danish labour market model are under the constant attention of the European Commission and, within the EU, Denmark has become a textbook example of how countries can increase efficiency in their labour markets.

The Danish 'golden triangle' of flexicurity – Although the term was first used in the Netherlands in 1995, flexicurity is now often used in referring to the functioning of the Danish labour market. Since 1995, Denmark has experienced stable growth, a structurally high employment rate and a dramatic decline in its unemployment figures. Over the period 1992–2006, Denmark's employment rate was structurally higher than that of the Netherlands, Germany, France and the UK. In 2006, Denmark's employment rate was 77.4 per cent while the EU 15 average was only 66 per cent. Unemployment rates were also structurally lower than the European average. In 2006, the average EU unemployment rate was 7.4 per cent, while the Danish rate was 3.9 per cent.

So how could the Danish economy flourish, while other European countries lagged behind? Madsen (2002, pp. 2–3) argues that the Danish success is partly explained as a standard case of demand-driven growth. Fiscal policy was allowed to expand in 1993–94, followed by falling international interest rates, rising prices of houses and a credit reform allowing home-owners to convert the fall in long-term interest rates into lower housing costs. Furthermore, private demand was strongly stimulated and in 1994 private consumption grew by 7 per cent in real terms, while investment in housing accelerated. But favourable economic circumstances can explain only part of the story. Recently, the focus in explaining the Danish 'employment miracle' has shifted to the functioning of the Danish labour market, in particular towards the labour reforms commenced in 1994.

Flexicurity in Denmark rests on three pillars: (1) a flexible labour market offering flexible labour laws and relatively low job protection; (2) a generous social security system; and (3) extensive efforts on lifelong learning and active labour market policies. Together, these three components constitute what is typically referred to as the 'golden triangle' of flexicurity.

The Danish labour market is characterised by a high rate of job mobility and low average job tenure. Bingley *et al.* (1999) have found that the level of worker turnover is about 30 per cent, while job creation and job destruction sum to around 12 per cent of total employment. These numbers can, to a large extent, be explained by the liberal regime of employment protection that is present in Denmark. According to the OECD (2004), Denmark's level of employment protection is very low compared to other industrialised countries. Within Europe, only Ireland and Switzerland have lower values. According to a survey that was conducted by the OECD, this relatively low level does not lead to higher uncertainty among employees about their job and income perspectives. Madsen (2002) points out the Danish industrial structure as an important explanatory factor. The economy in Denmark is dominated by small and medium-sized firms which, he argues, could imply that strong internal (within a firm) labour markets are far less important than in other countries.

Employees in Denmark that are struck by unemployment are secured by a generous system of unemployment benefits, which is described under the second pillar. Workers who become unemployed receive 90 per cent of their previous income in unemployment compensation from the first day of unemployment and for a maximum of four years.

A potential drawback of such a generous system of income-related benefits is of course

the relatively high reservation wage for low-income groups. To prevent them from getting stuck in the so-called 'poverty trap', the unemployed should have incentives to actively seek for a job. Within the Danish model, the generous system of unemployment benefits is therefore supported by a set of active labour market policies (ALMPs). From 1994 onwards, a series of successive policies were introduced aiming to get unemployed workers back to employment as quickly as possible. These included the introduction of a two-period-system for the insured unemployed with a strong emphasis on activation during the second period. As well as a change in assistance to the long-term unemployed from a rule-based system to a system based on an assessment of the needs of the individual unemployed and the local labour market (Madsen 2002, p. 6). The success of ALMP in Denmark can be illustrated by the share of long-term unemployment (one year and over) in total unemployment. With 22.6 per cent in 2004, this share was much lower than the EU 15 average of 42.6 per cent. Furthermore, 20.4 per cent of the unemployed workers were only inactive for less than a month.

Playing down the myth – From the above, it would be tempting to conclude that Denmark has discovered the Holy Grail in labour market policy. Unfortunately, matters are not that simple. The key question of course is: can the Danish system also prove to be successful in other countries?

There are some reasons why implementation might fail. For example, flexicurity in Denmark was not decided upon from one day to the other, which makes it difficult to derive generalised policy recommendations, especially on the path along which reforms should take place. Indeed, there is no guarantee that strategies that have worked well in Denmark will also function elsewhere. Success is determined by a wide variety of factors that are often country-specific, such as the relationship between social partners and the government.

In Denmark, flexicurity came gradually into existence during the course of the twentieth century. It originated in 1899 with the so-called 'September agreement', when negotiations between employers and trade-unions led to the constitution of the right to recruit and dismiss, as well as the institution of a public employment benefit system. In the 1960s the government took over most of the unemployment risk, with the establishment of the Public Employment Service and, in the late 1980s and early 1990s, active labour market policies were introduced aimed at motivating job-seeking activities by the unemployed (Commission of the European Communities 2007, p. 20).

Implementation of the Danish model might also prove problematic because of its costs. Flexicurity in Denmark heavily depends on high government expenditure on unemployment benefits and active labour market policies. Therefore, implementation would most likely imply a substantial increase of a country's tax bill. Zhou (2007) argues that most countries that are tempted to adopt the Danish model will typically start from a high unemployment level. As such, implementation would trigger a sharp increase in the cost of unemployment benefits and active labour market policies in the short run, which would then widen the tax wedge. This will likely have an adverse impact on labour demand and supply. According to Zhou, the Danish model may therefore not be suitable for countries that face a high unemployment rate along with budgetary difficulties. A similar argument is put forward by Hilbers (2007).

Another reason why it may prove difficult for countries to copy its labour market policy according to the Danish model is put forward by Algan and Cahuc (2006). They argue that the efficiency of the Danish model relies on a strong public-spiritedness, which is absent in many countries whose labour market institutions are different from those in Denmark. The authors argue that a country may be unlikely to succeed in its labour market reforms without a comprehensive policy that affects the civic attitude of citizens.

THE BLANCHARD-KATZ MODEL

Basic form – Blanchard and Katz (1992) have developed a model that describes the interaction between unemployment, participation and employment growth at the regional level over time. In its basic form this model is formulated as follows:

$$u = \beta_{11}u[-1] + \beta_{12}p[-1] + \beta_{13}e[-1] + \beta_{14}e,$$
$$p = \beta_{21}u[-1] + \beta_{22}p[-1] + \beta_{23}e[-1] + \beta_{24}e, \quad (1)$$
$$e = \beta_{31}u[-1] + \beta_{32}p[-1] + \beta_{33}e[-1].$$

The endogenous variables u, p and e are, respectively, the unemployment rate, the logarithm of the participation rate and the employment growth rate. The model is recursive in nature, because both unemployment and participation in period t are explained by employment growth in period t and employment growth in period t-1, whereas employment growth is only explained by participation in period t-1 and unemployment in period t-1.

Both unemployment and participation are defined in levels, while employment is defined as a growth variable. The reason is that unemployment and participation are both stationary series (integrated order 0), while employment is non-stationary (integrated order 1). As a rule, non-stationary time series cannot be used in regression analysis, as this would lead to spurious results. The problem is solved by using employment growth instead of the employment level. The reason why each endogenous variable is explained by its lagged value is that labour market variables tend to be strongly correlated in time (Elhorst 2008).

In contrast to a single equation approach on either unemployment, participation or employment growth, the Blanchard and Katz model allows one to decompose the response of a regional labour market to an employment shock into changes in regional unemployment, participation and employment growth, as we will show in this paper. The most prominent result from Blanchard and Katz (1992) on regional evolutions in the US and subsequently of Decressin and Fatás (1995) for European regions is the dichotomy between the US and Europe. Whereas migration is found to be the major adjustment channel to an employment shock in the US, changes in labour force participation is found to be the major adjustment channel in Europe.

Supply shocks and exogenous variables – The Blanchard-Katz model is built to simulate demand shocks and cannot, due to its recursive nature, meaningfully simulate the effects of supply shocks that affect the unemployment, participation or employment growth rate directly. To simulate the effect of a labour supply shock (for example, an increase in public spending on active labour market policies) a simultaneous approach is needed. Such a simultaneous model should be structured in such a way that the equilibrium values of the endogenous variables u, p and e are determined at the same time, unlike the basic model in Equation (1) where employment growth in period t has to be known before unemployment and participation can be determined:

$$u = \beta_{11}u[-1] + \beta_{12}p[-1] + \beta_{13}e[-1] + \beta_{14}p + \beta_{15}e,$$
$$p = \beta_{21}u[-1] + \beta_{22}p[-1] + \beta_{23}e[-1] + \beta_{24}u + \beta_{25}e,$$
$$e = \beta_{31}u[-1] + \beta_{32}p[-1] + \beta_{33}e[-1] + \beta_{34}u + \beta_{35}p. \quad (2)$$

The simultaneous model in Equation (2) incorporates the effects of unemployment and participation on employment growth in period t, as well as the mutual relation between unemployment and participation in the same period.

For the parameters of the entire model to be identified, every equation should have its own unique predetermined or exogenous variable (Greene 2003, p. 393).[2] So, in its current form, the parameters in Equation (2) cannot be meaningfully estimated. This problem is solved by adding exogenous variables.

Another problem of the Blanchard-Katz model in its basic recursive form is that a labour demand shock has only a temporary effect on employment growth, unemployment and participation but a permanent effect on the level of employment. Since unemployment and participation return to their long-run equilibrium, migration is forced by construction to explain any permanent change in the level of employment, possibly overestimating its role (Tani 2003). This problem is also solved by adding exogenous variables.

The three variables that will be added to the model are those that embody the 'golden triangle' of flexicurity: (1) the level of employment protection legislation (EPL); (2) the level of public spending on unemployment benefits (UB) as a percentage of GDP; and (3) the level of public spending on active labour market policies (ALMP) as a percentage of GDP.

The fundamental yet difficult question is: what variables should be added to which

equation? More specifically, what is the expected relation between the exogenous variables and endogenous variables? For example, will expenditure on ALMP affect participation, employment or both? These questions are discussed by looking at existing literature on the effects of EPL, ALMP and UB on labour market outcomes.

Employment protection legislation – The government aim of EPL is to enhance workers' welfare and improve employment conditions. At the same time, EPL is a cost to employers and is thought to have a negative impact on a firm's hiring decisions. This dissension makes the topic of EPL a controversial one. For example, in the Netherlands, recent government plans to loosen EPL were met by heavy criticism from both labour unions and leftwing parliamentarians. Except for political motives, this controversy is due to the fact that the effects of EPL are not straightforward. Economists do not unanimously agree on the effect of EPL strictness on labour market outcomes.

In the 2004 Employment Outlook, the OECD (2004) provides a thorough analysis of the labour market effects of EPL. By evaluating empirical work by other authors as well as by conducting new research, the OECD concludes that the effects of EPL on unemployment, employment and participation are uncertain and thereby subject to debate.

Consider the effect of EPL on employment and unemployment. Using cross-sectional data on EPL, employment and unemployment rates for OECD and Eastern European countries in 2002 or 2003, the OECD (2004) finds a significant negative correlation between EPL and the employment rate. The impact of EPL on the unemployment rate is positive, but not significant. While these simple correlations give an idea of the effect of EPL, further research is necessary to provide a full picture.

The OECD also considers the influence of EPL on inflow and outflow rates into and from unemployment for 19 OECD countries, using data from 1985 to 2002. The results show that EPL tends to reduce the outflow from unemployment and, in addition, is found to increase long-term unemployment (OECD 2004, p. 79). However, the impact of EPL on unemployment and employment rates is ambiguous, as it depends on whether the effect of EPL on layoffs is offset by the reduction in hiring rates.

Several authors have turned to multivariate analysis in an attempt to find clear conclusions on the impact of EPL. Unfortunately, the outcomes from these studies also differ. For example, the view that EPL decreases unemployment rates is supported by Nickell *et al.* (2001) and Bertola *et al.* (2002), while Baker *et al.* (2004) and Heckman and Pages (2000) question this view since they find no significant negative effect.

The empirical evidence on the relation between EPL and employment is also rather vague. Nevertheless, based on several studies, the OECD concludes that it is possible to detect a link between EPL and employment rates for specific groups. For example, some studies suggest the possibility of a negative link between a high degree of EPL and the employment rates of youth and of prime-age women, while there may be positive links to the employment rates of other groups. Youth and prime-age women are more likely to be subject to entry problems in the labour market than other groups, and they are therefore likely to be disproportionately affected by the effects of EPL on firms' hiring decisions (OECD 2004, pp. 81–86). Storm and Naastepad (2007) reveal that stricter employment protection promotes long-run productivity growth.

Active labour market policy – ALMPs are used by the government to correct for labour market inadequacies. The economic rationing behind ALMP is that the causes of high unemployment rates originate from the supply side of the labour market rather than from the demand side. Measures can include employment services such as labour exchange facilities, training programmes or direct employment subsidies.

Within the flexicurity framework, ALMP and EPL are complementary. That is, ALMPs, to some extent, dampen negative labour market outcome effects that result from employment protection. Weaker employment protection increases the probability for workers to become unemployed, thereby making them less secure about their jobs. In this respect, higher government expenditure on ALMP to

get unemployed workers back to work can be interpreted as a substitute for weaker job protection.

With respect to their intuitive effect on labour market outcomes, ALMPs can roughly be divided into two categories: (1) ALMPs that assist the unemployed to find work; and (2) ALMPs that are aimed at activating non-participants. In the first case, ALMP eases the transition from unemployment to employment and leads to a lower unemployment rate, while in the latter case, ALMP increases the participation rate.

Consider the first category of ALMPs. Jackman *et al.* (1990) develop a framework based on the Beveridge curve (a curve that depicts the relationship between job vacancies and unemployment) to analyse the effect of ALMP on unemployment in the 1970s and 1980s. They find that ALMP has a significant negative impact on unemployment rates. Munch and Skipper (2003) have studied the effects of ALMP for Denmark. Interestingly, they find that public policies are not very successful in achieving their stated aims. Instead, they find evidence of so-called 'locking-in effects': participation in activation programmes reduces the efforts of the unemployed to find a regular job. While this effect is sometimes counteracted by positive post-programme effects, overall ALMP does not have quantitatively important effects on unemployment duration. Calmfors *et al.* (1990) support this view. For the Nordic countries they find that accommodative labour market policies designed to reduce unemployment lead to a rise in real wages, which results in an increase in the unemployment rate.

Now consider the other category of ALMPs, aimed at activating non-participants. Bellmann and Jackman (1996) find that ALMP may be successful in increasing female labour market participation. Calmfors and Lang (1995) also argue that ALMP is likely to have a positive effect on labour force participation. Nickell and Layard (1999), on the other hand, consider employment to population ratios and find no significant effect.

Unemployment benefits – A rise in the level of unemployment benefits decreases the relative cost of unemployment to employment. According to standard job search theory (see, for example, Heijdra & Van der Ploeg 2002, p. 223), the reservation wage, which is the minimum wage at which a worker is willing to accept a job, increases with the level of UBs. With a higher reservation wage, unemployed individuals will spend more time searching for a job. Or, put differently, when benefits are high, workers will be less eager to accept a job offer. A rise in UBs therefore decreases the outflow rate from unemployment, increases unemployment duration and leads to a higher unemployment rate. This theoretical assumption is relatively straightforward and although the effect might be small is also supported by the empirical literature.

Solon (1979), for example, has studied the labour supply effects of unemployment insurance by comparing empirical data on two groups of unemployed New Yorkers. He finds that the availability of extended benefits provides a work disincentive for unemployed workers. Moffitt and Nicholson (1982) find that an increase in the net replacement ratio results in an increase in weeks unemployed. Burda *et al.* (1988) conclude that, for any given industrial structure, unemployment and the duration of unemployment spells are positively correlated with the level of unemployment insurance. Van den Berg *et al.* (2004) find that a sanction in the form of a temporary benefit reduction substantially increases the individual transition rate from welfare to work. The OECD (2004, p. 79) states that the generosity of UBs increases the incidence of long-term unemployment.

While less intuitive than its effect on the unemployment rate, the level of unemployment benefits might also influence the participation rate. It is plausible to assume that, if benefits are substantial, unregistered unemployed workers, who are not active job seekers (and who are possibly not even genuinely interested in work) decide to enter the workforce just because they can collect benefits. These non-participants, who would normally not have showed up in the official unemployment rate, become passive participants on the labour market, which would positively affect the participation rate.

This proposition is also put forward by Solon (1979), who suggests three more ways in which

the level of UBs may affect observed labour force participation: (1) by encouraging continued job search by people who would otherwise become discouraged workers and stop looking for work; (2) by inducing some people who would not otherwise be interested in work to conduct genuine job search in accordance with benefit eligibility requirements; and (3) by inducing some people who would otherwise be out of the labour force to take seasonal jobs.

Conclusively, no specification of exogenous variables clearly stands out as optimal. As a matter of fact, one could come up with multiple specifications and find empirical support for each of them in the literature. For example, there are sufficient arguments in favour of adding the ALMP variable to the participation equation, but it is also reasonable to add the UB variable instead, as a higher level of UBs draws more people to the labour market. And what about employment protection? Should the EPL variable be added to the unemployment equation, the employment growth equation or both? Because it is not possible to add all three variables to each equation (this would result in a model that is again unidentified), we will specify the model in a way that makes sense empirically, but also does justice to the theory of flexicurity, discussed in the second section.

Moreover, most studies discussed in this section are single equation studies. This means that they have tried to find the impact of one or more exogenous variables (UB, ALMP and EPL) on one particular endogenous variable (unemployment, participation or employment growth). The advantage of a simultaneous equations model is that the impact of every exogenous variable can be determined on every endogenous variable, even if the former does not belong to the set of variables explaining the latter. A simultaneous equations model therefore offers more opportunities to test whether it makes sense empirically than a single equation model.[3]

The UB variable is added to the unemployment equation, which is a relatively straightforward choice. If benefits are generous, potential workers will be less eager to accept a job offer. The EPL variable is added to the employment growth equation. If it is true that a higher level of employment protection slows employment growth, its sign will be negative. The ALMP variable is added to both the participation equation and the unemployment equation. The first accounts for the effect that may result from activating non-participants, while the second accounts for the possibly complementary role of ALMP and EPL within the flexicurity framework. If employment protection is weak, ALMPs may be used to dampen the adverse effect on job security.[4]

The system of equations is formulated accordingly. Note that the unemployment and employment growth equation now each include a unique exogenous variable, UB and EPL respectively. The participation equation has no unique variable, as ALMP is also included in the unemployment equation. However, both equations are intrinsically different, because the UB variable and the EPL variable are not included in the participation equation. For these reasons, the unknown parameters of this system of equations are identified:

$$\begin{aligned} u &= \beta_{11}u[-1] + \beta_{12}p[-1] + \beta_{13}e[-1] + \beta_{14}p + \beta_{15}e \\ &\quad + \beta_{16}UB + \beta_{17}\text{ALMP}, \\ p &= \beta_{21}u[-1] + \beta_{22}p[-1] + \beta_{23}e[-1] + \beta_{24}u + \beta_{25}e \\ &\quad + \beta_{26}\text{ALMP}, \\ e &= \beta_{31}u[-1] + \beta_{32}p[-1] + \beta_{33}e[-1] + \beta_{34}u + \beta_{35}p \\ &\quad + \beta_{36}\text{EPL}. \end{aligned} \tag{3}$$

EMPIRICAL RESULTS

Tables 1 and 2 present the results of the Blanchard-Katz model extended to include the exogenous variables EPL, UB and ALMP; Table 1 in its basic recursive form and Table 2 in the proposed simultaneous form.

Both models are estimated for nine EU countries. The data on unemployment, employment and participation are on the regional (NUTS 2) level, available from EUROSTAT (Labour Force Survey, available at: <http://epp.eurostat.ec.europa.eu/portal/page/portal/region_cities/introduction>). The countries are (the number of regions between brackets): Belgium (11), France (20), West Germany(31), Greece (13), Ireland (1), Italy (20), Luxembourg (1), the Netherlands (12), Spain (16) and Denmark (1). The data for Spain and Greece are available from 1986 and 1988, respectively. For all other coun-

Table 1. *Estimation results of Blanchard-Katz model with exogenous variables in its basic recursive form.*

	Unemployment		Participation		Employment growth	
	Coefficient	*t*-value	Coefficient	*t*-value	Coefficient	*t*-value
u[−1]	0.696	50.084	−0.339	−11.351	−0.211	−4.527
p[-1]	−0.046	−7.347	0.807	57.989	−0.307	−12.057
e[-1]	−0.002	−0.536	0.002	0.300	−0.336	−16.115
e	−0.133	−41.524	0.707	101.059	–	–
EPL	–	–	–	–	−0.043	−5.375
UB	0.009	13.149	–	–	–	–
ALMP	−0.006	−5.125	−0.010	−4.028	–	–
R-squared	0.964		0.956		0.266	

Note: Regional fixed effects are added to the unemployment and participation equations and time-period fixed effects to all three equations.

Table 2. *Estimation results of extended Blanchard-Katz model with exogenous variables in the simultaneous form.*

	Unemployment		Participation		Employment growth	
	Coefficient	*t*-value	Coefficient	*t*-value	Coefficient	*t*-value
u[-1]	0.661	37.457	–	–	–	–
u	–	–	−0.469	−8.519	−0.325	−4.788
p[-1]	–	–	0.607	13.873	–	–
p	−0.101	−5.265	–	–	−0.415	−9.466
e[-1]	−0.005	−1.299	−0.031	−2.841	−0.434	−17.794
e	−0.099	−14.285	0.423	8.974	–	–
EPL	–	–	–	–	−0.052	−5.037
UB	0.008	8.865	–	–	–	–
ALMP	−0.005	−4.000	−0.003	−0.711	–	–

Note: see note to Table 1.

tries the data are available from 1983 to 2001. Because of the model's lag structure and the specification of the employment growth variable, the total number of observations is 2,026. The variables UB and ALMP are both defined as a percentage of GDP. EPL is an index ranging from 0–2, calculated by the OECD, where zero represents the lowest level of EPL. The data on UB and ALMP are also from the OECD (OECD Labour Market Statistics Database, available at: <http://www.oecd.org/topicstatsportal>). In the Introduction, we discussed two reasons why regional data are used.

Note that regional fixed effects are added to the unemployment and participation equations, while time-period fixed effects are added to all three equations. The standard reasoning behind regional and time-period fixed effects is that they control for all time-invariant and all regional-invariant variables whose omission would bias the estimates in a typical cross-section or time-series study. Since employment has been defined as a growth variable, regional fixed effects of the level of employment are automatically controlled for. The equations of the Blanchard-Katz model in its basic recursive form have been estimated by OLS and in the simultaneous form by 2SLS.[5]

From Table 1 it appears that all variables are significant, except for the lagged employment growth variables in the unemployment and participation equations. The level of spending on unemployment benefits has a significant positive effect on the unemployment

rate, while government expenditure on ALMP has a significant negative impact. EPL has a significant negative impact on employment growth and ALMP a significant negative impact on participation.

One problem, known as multicollinearity, is that the correlation coefficients between u and $u[-1]$ and between p and $p[-1]$ are relatively high, 0.936 and 0.736 respectively. To circumvent this problem, we dropped the lagged unemployment variable from the participation equation ($\beta_{12} = 0$), the lagged participation variable from the unemployment equation ($\beta_{21} = 0$), and the lagged unemployment and lagged participation variables from the employment growth equation ($\beta_{31} = \beta_{32} = 0$) in the simultaneous model. The correlation between e and $e[-1]$ is smaller and acceptable (–0.43), which does not require the lagged employment variable to be dropped. The estimation results of this reformulated model (Table 2) show that the negative sign of the ALMP variable in the participation equation is no longer significant.[6]

The impact of employment protection and flexicurity – Given the coefficient estimates of the Blanchard and Katz model, it is possible to consider the labour market effects of changes in the explanatory variables. Below we simulate the labour market effects if a European country such as the Netherlands lowers its employment protection to the Danish level and if it fully copies its labour market policy according to the Danish model. According to Table 3, this would imply successively a decrease of the EPL index by 36 per cent or a decrease of the EPL index by 36 per cent together with a decrease in public spending on unemployment benefits by 16.9 per cent and an increase in public spending on active labour market policies by 87.3 per cent. To simulate the labour market effects of these policy measures, we employ the estimated coefficients and the Dutch 2001 regional averages for the $u[-1]$, $p[-1]$, $e[-1]$, EPL, UB and ALMP variables. Furthermore, to find out which model makes more sense empirically, we first employ the estimated coefficients reported in Table 1 and then in Table 2. By extrapolating the model over a 50-year time-horizon, we find how the model will evolve over time and to what equilibrium values the endogenous variables ultimately converge.[7] If EPL is altered or if EPL, UB or ALMP are altered, the endogenous variables u, p and e change to $\tilde{u}$, $\tilde{p}$ and $\tilde{e}$. By calculating the differences $\tilde{u}$-u, $\tilde{p}$-p and $\tilde{e}$-e, we can determine the effects of a policy change. Note that this simulation is based on the assumption that the impact of these policy changes within a particular country can be simulated by a model that has been estimated by using regional data across nine European countries. We have already discussed why implementation of the Danish system in some countries might fail, and we will come back to this in the concluding section.

Table 3. *Average values of EPL, UB and ALMP in different European countries in 2001.*

	EPL	UB	ALMP
Denmark	0.643	1.37	3.26
Netherlands	1.015	1.65	1.74
Belgium	1.004	1.78	1.21
Germany	1.073	1.92	1.21
Spain	1.504	1.32	0.85
France	1.528	1.39	1.53
Italy	0.899	0.53	0.72
Ireland	0.629	0.63	1.20
Greece	1.405	0.47	0.46

Figure 1 depicts the impulse-response diagram of a decrease of EPL using the estimation results reported in Table 1. At time $t = 1$ the new policy is introduced, which causes employment growth in this period to increase by 1.59 percentage points. In the following years this initial increase levels out and eventually settles, after approximately 20 years, at 0.55 per cent. So lowering the EPL index by 36 per cent will permanently increase employment growth by 0.55 of a percentage point in the long-run.

Even though EPL is not an explanatory variable of unemployment and participation, unemployment and participation will still be structurally affected by a change in EPL, since they are dependent on lagged employment growth. Figure 3 shows that unemployment gradually decreases toward a rate that is 0.74 percentage point lower as a result, while the participation rate increases by 2.3 percentage points. Adjustment toward these values takes about 20 years. These results show that the participation rate is the main adjustment channel to an employment shock. This result is

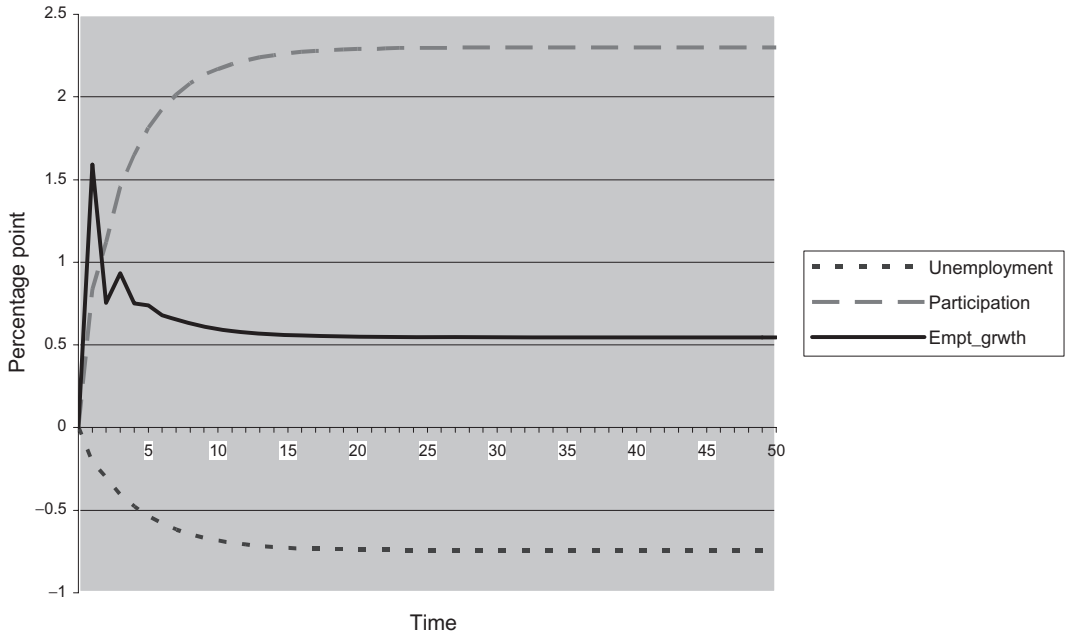

Figure 1. *Impulse-response diagram of a 36 per cent drop of the Dutch EPL-index based on the estimation results in Table 1.*

in line with Decressin and Fatás (1995), who investigated regional evolutions to employment shocks of 45 European regions and six European countries over the period 1975–1987. In conclusion, we can say that countries can achieve substantial improvements in their labour market outcomes if employment protection were to be lowered.

Figure 2 depicts the impulse-response diagram if the Netherlands fully copies its labour market policy according to the Danish model, again using the estimation results reported in Table 1. What is immediately apparent from Figure 2 is the extreme effect on unemployment, which ultimately settles at a rate that is 4.6 percentage points lower than if EPL, UB and ALMP were left unchanged. At time $t = 1$ the participation rate drops by 0.25 of a percentage point, as the initial effect of the increase in spending on ALMP of 87.3 per cent is negative (see Table 1). However, participation starts to rise quickly and eventually settles at a rate that is 2.85 percentage points higher structurally. Employment growth overshoots its long-run rate at first, but gradually adjusts to a stable rate that is 0.98 of a percentage point higher than if policy were to be left unchanged. For all three variables the time of adjustment before equilibrium values are reached is about 22 years. Of course, the projections regarding unemployment are quite drastic. If labour market effects were this obvious, antagonists would most likely promptly metamorphose in a cheering crowd.

There are two reasons why the projections turn out to be this unrealistic. First, it should be noted that the results might be somewhat misleading, as the Dutch 2001 regional average unemployment rate that was used as the base value for the projections was only 2.5 per cent, which is very low and far from the economy's natural equilibrium. If the exogenous variables were left unchanged, this rate would increase to about 7.5 per cent, which is more realistic and probably closer to its natural rate. If the exogenous variables are changed in the way that was discussed, the regional unemployment rate would rise from 2.5 to just 7.5 – 4.6 = 2.9 per cent. This partly explains the huge differences depicted in Figure 1. Second, and more importantly, we recall from our discussion in the previous section that the Blanchard-Katz model in its basic recursive form is designed to simu-

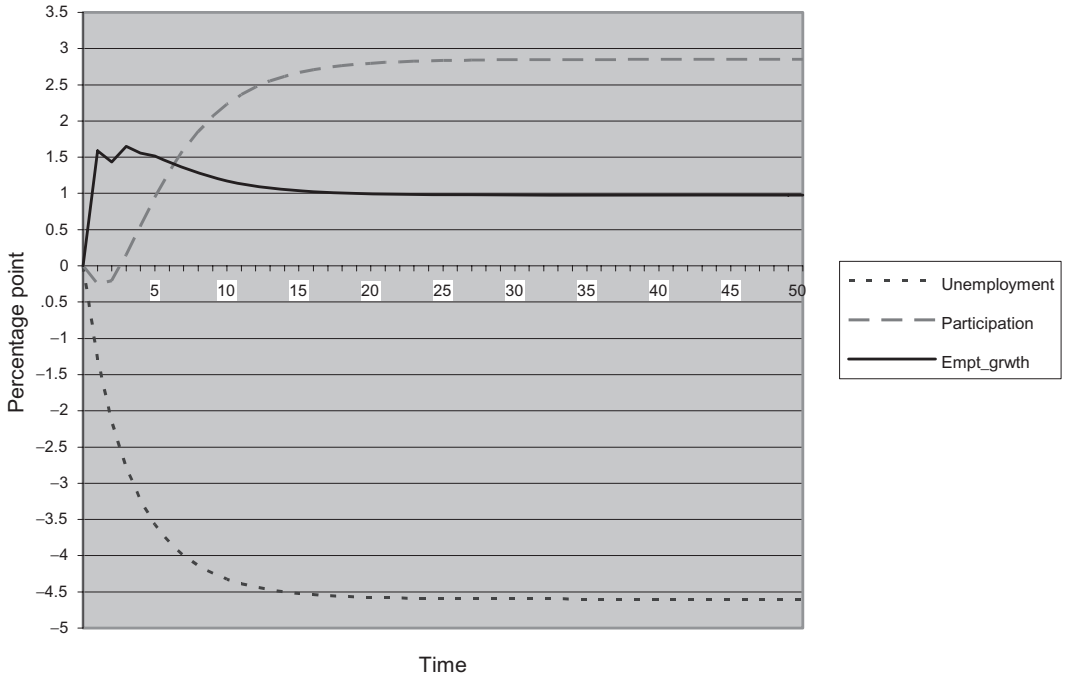

Figure 2. *Impulse-response diagram if the Netherlands fully copies Danish labour market policy based on the estimation results in Table 1.*

late labour demand shocks, but not labour supply shocks. The basic model is therefore only useful to determine what happens after a shock that affects the employment growth equation. Since the UB and ALMP variables are also included in the unemployment and participation equations, they directly affect participation and unemployment at time $t = 1$. This explains the initial, but unrealistic, drop in the participation rate in Figure 2.

Figure 3 depicts the impulse-response diagram if the Netherlands fully copies its labour market policy according to the Danish model, but now using the estimation results reported in Table 2. This figure shows that the results of the simultaneous model are more realistic than the results of the recursive model graphed in Figure 2. The unemployment rate drops by 1.32 percentage points at time $t = 1$, gradually diminishes further in the years that follow and eventually settles at a rate that is 1.47 percentage points lower than if policy were left unchanged. Similarly, employment growth and participation settle at rates that are 1.05 and 2.08 percentage points higher than if policy were left unchanged. The fact that the participation rate immediately increases when public expenditures on active labour market policies are increased is one reason why these numbers are more realistic. The explanation is that the reduced-form coefficient of the ALMP variable in the participation equation is positive, whereas it appeared to be negative in the structural form equation (significant in the recursive model and not significant in the simultaneous model). It illustrates that the interaction between employment, unemployment and participation at the regional level over time when estimated simultaneously eventually can lead to different results than the structural form parameters suggest. Another reason why these numbers are more realistic is that the fall in unemployment does not exceed the increase in participation. This is because the participation rate covers both employed and unemployed people and the number of people entering the labour market tends to exceed the flow from unemployment to

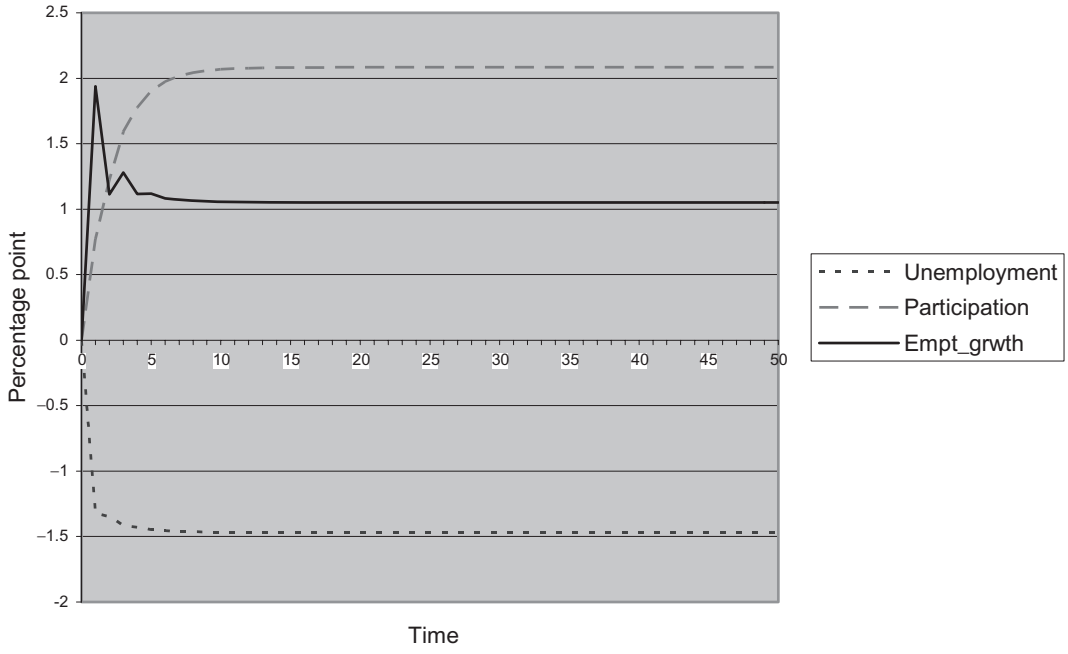

Figure 3. *Impulse-response diagram if the Netherlands fully copies Danish labour market policy based on the estimation results in Table 2.*

employment.[8] The final reason why these numbers are more realistic is that the patterns of adjustment of the unemployment, participation and employment growth rates in Figure 3 are largely similar to those found for the recursive model for the case only if the EPL index is lowered by 36 per cent (see Figure 1).

In conclusion, we can say that the recursive Blanchard-Katz model is significantly improved when a simultaneous approach is used and the model equations are estimated by 2SLS. Further research is needed to find out whether UB, ALMP and EPL should be treated as endogenous variables. Using the simultaneous model it appeared that a European country such as the Netherlands can lower unemployment rates and increase participation and employment growth rates by introducing a flexicurity policy similar to the 'golden triangle' framework that is in place in Denmark.

Table 3 shows that the implementation of the Danish model might also be successful for Belgium, Germany and France, since these countries are in the same position as the Netherlands. The expenditures on unemployment benefits and the level of employment protection are higher and the expenditures on active labour market policies lower than in Denmark. By contrast, a country that will hardly be able to improve its labour market performance by implementing the Danish model is Ireland, since unemployment benefits and employment protection in Ireland are already low. Countries in between are Spain, Italy and Greece. Although unemployment benefits in these countries are low, there is room to increase public spending on active labour market policies and to decrease employment protection.

CONCLUSIONS AND DISCUSSION

In response to rapidly changing economic, social and demographic conditions, countries on the European continent will have to rethink their labour market institutions, which are currently still rigid. Based on the findings in this paper, the Danish system of flexicurity may be considered by politicians as a serious alternative to the traditional paradigm of labour market reform along Anglo-Saxon lines. The

results show that a trade-off can be achieved between flexible employment relations and a generous social protection system, combined with a strong emphasis on active labour market programmes, which defend individuals from the potential costs of low social security.

It was shown that many European countries can seriously improve labour market outcomes if politicians copy their labour market policies according to the Danish model. The case study for the Netherlands shows that the regional unemployment rate can be permanently lowered by 1.47 percentage points if the Danish system were to be adopted. Participation and employment growth rates would rise with, respectively, 2.08 and 1.05 percentage points.

The results presented in this paper are quite robust. The Blanchard-Katz model accounts for both lagged effects and mutual relations between labour market variables and therefore represents the complexity of labour market interactions particularly well. It was shown that the usability and effectiveness of the basic recursive model is even further enhanced when a simultaneous estimation method is used.

Of course, flexicurity is not the Holy Grail in labour market policy. Its success also depends on external factors which often vary greatly between countries. Labour market policy in Denmark was not decided upon from one day to the next, which makes it difficult to derive generalised policy recommendations on the path along which reforms should take place. Above all, implementation is associated with high costs and will likely lead to a substantial increase in a country's tax bill. A widening of the tax wedge could have an adverse impact on labour demand and supply. Furthermore, the success of the Danish model relies on strong public-spiritedness, which is absent in many countries whose labour market institutions are different from those met in Denmark. Therefore, civic attitudes of citizens will have to be changed for implementation to succeed. This being said, the Danish case can serve as a useful guideline for politicians in shaping their future labour market strategies.

Acknowledgement

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Notes

1. In September of 2006, the EC established the European Expert Group on Flexicurity, to report on pathways towards improved flexicurity to be taken by the Member States.
2. This is a sufficient condition that may be relaxed. See, for more details, Greene (2003).
3. See Elhorst (2003) for a further discussion on the advantages of a simultaneous equations model in relation to a single equation model.
4. Just as in the single equation studies discussed in this section, UB, ALMP and EPL are treated as exogenous variables. One might argue that these variables should be treated as endogenous variables, but this extension is beyond the scope of the current paper. In this respect it should be stressed that the replacement of current by predetermined values of UB, ALMP and EPL is no solution to this problem. Since institutional variables change over time relatively slowly, the parameter estimates to be presented in the next section turned out to be almost the same when replacing current by predetermined values.
5. To account for the correlation between the error term and the endogenous variables on the right-hand side of that the equations. Since we have a lagged dependent variable and regional fixed effects in each equation, we also estimated the model equations by the GMM estimator of a dynamic panel data model. However, since the number of observations in the time domain is relatively large, the differences appeared to be small.
6. In contrast to Table 1, Table 2 does not report the R-squared. Since the residuals in 2SLS-estimations are computed over a set of regressors different from those to fit the model, the R-squared has no statistical meaning.
7. The Blanchard-Katz model can be rewritten as $Ay_t = By_{t-1} + X_t$, where $y_t = [u_t\ p_t\ e_t]'$, A and B are (3×3) matrices containing the coefficient estimates of u_t, p_t and e_t and X_t is a (3×1) vector containing the variables ALMP, UB and EPL and the corresponding coefficient estimates. The reduced form of this model is $y_t = A^{-1}By_{t-1} + A^{-1}X_t$. This reduced form is used to construct the impulse-response diagrams.
8. Assume that initially one in every 20 people in the labour force is unemployed and that six in every 10 people in the working age population participate in the labour market. Then the

unemployment rate is 5% and the participation rate 60%. Now assume that the unemployment rate falls by 1.5 percentage points, because unemployed people are able to find a job. Then the unemployment rate becomes 3.5%, while the participation rate remains unchanged. The reason that the participation nonetheless increases is because people discouraged from looking from a job due to high unemployment may now enter the labour market. In addition, more school leavers and in-migrants may enter the labour market. Generally, these effects exceed the flow from unemployment to employment.

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