ARTICLE IN PRESS

Economic Systems xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Economic Systems

journal homepage: www.elsevier.com/locate/ecosys

Oil price shocks and unemployment in Central and Eastern Europe

Juan Carlos Cuestas[a,b,*], Luis A. Gil-Alana[c,**]

[a] Economics and Research Department, Research Unit, Eesti Pank, Estonia pst. 13, 15095, Tallinn, Estonia
[b] Department of Economics and Finance, Tallinn University of Technology, Estonia
[c] Department of Economics, ICS – NCID, University of Navarra, Spain

ARTICLE INFO

JEL classification:
C22
E39
Q43

Keywords:
Unemployment rates
Oil price shocks
Central and Eastern Europe

ABSTRACT

The aim of this paper is to examine the effect of oil price movements on unemployment in Central and Eastern Europe. We do this by disentangling oil prices movements by their sign and from there we analyse the separate effects of positive and negative movements of oil prices on unemployment rates. We find that, although oil prices and unemployment are not correlated very much in the short run, the effect of oil price shocks on the natural rate of unemployment goes in the same direction, so that increases or decreases in oil prices increase or decrease the natural rate of unemployment.

1. Introduction

In both 2008 and 2015 oil prices reached levels similar to those of 2005 after falling steeply. Concerns about the consequences of these declines in oil prices, and more pertinently the reasons for them, have gathered momentum, as falling oil prices may be an indicator of a drop in global aggregate demand, and this can affect unemployment and the whole performance of the economy. Oil prices have driven inflation rates down to close to zero and even into negative territory in some European countries since the Global Financial Crisis erupted in 2007.

Economic theory (see, among others, Hamilton, 1983, 1988; Carruth et al., 1998) has established that oil price shocks may affect both short-run and, more commonly, long-run unemployment. We focus on the effect of oil price shocks on unemployment rather than on GDP, as changes in GDP are not always transmitted to unemployment; see Okun (1962). However, the short-run Phillips curve indicates that there may be a negative relationship between prices and unemployment. Here we follow the model of Carruth et al. (1998), where oil price changes affect the equilibrium unemployment rate (see next section).

In this paper we examine the effect that oil price movements have had on unemployment in a group of Central and Eastern European Countries (CEECs), namely the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia. We do this in two different ways. First, we distinguish between positive and negative shocks from oil prices in unemployment, and second, we analyse the effect of oil price movements on the unemployment rate, its dynamics, and the natural rate of unemployment. It is relevant to distinguish between positive and negative movements in oil prices as this permits measuring whether unemployment reacts in a different way when the oil price falls compared to how it does when the oil price rises. Our initial hypothesis, as established by Carruth et al. (1998), is that falls in the price of oil reduce the unemployment rate in equilibrium, while a rise in the price of oil will increase the unemployment rate in equilibrium.

The group of countries considered here is of key importance for the future of the enlarged European Union (EU). Unemployment

---

[*] Corresponding author at: Economics and Research Department, Research Unit, Eesti Pank, Estonia pst. 13, 15095, Tallinn, Estonia.
[**] Corresponding author.
E-mail addresses: juan.carlos.cuestas@eestipank.ee, cuestasjuancarlos@gmail.com (J.C. Cuestas), alana@unav.es (L.A. Gil-Alana).

https://doi.org/10.1016/j.ecosys.2017.05.005
Received 25 October 2016; Received in revised form 14 February 2017; Accepted 9 May 2017
0939-3625/ © 2017 Elsevier B.V. All rights reserved.

Please cite this article as: Cuestas, J.C., Economic Systems (2017), https://doi.org/10.1016/j.ecosys.2017.05.005

has generally been higher in these countries than in Western Europe, and net migration to the rest of the EU is negative for the CEECs, having been driven by the freedom of labour movement within the EU. This means that assessing the effects of supply shocks on the unemployment rate and how the equilibrium unemployment rates evolve after an oil price supply shock may also provide insights into migration flows. Furthermore, it may explain the high persistence of shocks to the unemployment rates of both Western and Eastern countries, which has been found in previous papers such as Cuestas et al. (2011), Gozgor (2013) and Marjanovic et al. (2015) for the CEECs, Cuestas and Harrison (2014) for the EU-15 at the national level, and Beyer and Stemmer (2016) at the European regional level.

There are a number of papers that analyse the persistence of shocks to the unemployment rate and also aim to test for the natural rate of unemployment hypothesis or the NAIRU, depending on the definition. For the CEECs, Cuestas et al. (2011) show that there might be rigidities that generate long memory behaviours and a slow speed of adjustment towards the equilibrium. More recently, Møller (2013, 2016); analyses potential sources of hysteresis in the unemployment rate in the United Kingdom and finds that the main source of sluggishness in unemployment is not prices, wages or output, but oil price shocks. This justifies the analysis of the relationship between oil prices and unemployment if the goal is to shed some light on the effect of supply shocks on unemployment. However, to the best of our knowledge there is no other paper that has considered the relationship between unemployment and oil price shocks for the CEECs.

Related to this, a number of studies analyse the effect of oil price shocks on GDP by incorporating the possibility of asymmetries for OECD countries; see, for instance, Jiménez-Rodríguez and Sánchez (2005) and Jiménez-Rodríguez (2009). The reason for incorporating non-linearities is straightforwardly that positive supply shocks may have a different effect on economic variables from that of negative supply shocks due to rigidities in the transmission mechanism for oil price shocks into the real economy (Acurio-Vásconez, 2015; Bampinas and Panagiotidis, 2015).

Analysing the relationship between unemployment and input prices is not a new idea. Caporale and Gil-Alana (2002), Gil-Alana and Henry (2003), and Gil-Alana (2003, 2006) estimate fractional integration and cointegrated relationships between unemployment and oil prices for Canada, Australia and the United Kingdom, respectively. For emerging markets, Doğrul and Soytas (2010) find for Turkey that the oil price helps to improve forecasts of unemployment in the long run. Similarly, but within the non-linear modelling literature, Andreopoulos (2009) uses Markov switching models and finds that oil prices can improve predictions of unemployment during recessions.

More recently, Katircioglu et al. (2015) apply panel data cointegration techniques for a group of OECD countries and find that the impact of oil price shocks is negative on macroeconomic variables such as unemployment and GDP. To the best of our knowledge, only Marjanovic et al. (2015) analyse the relationship between a broad definition of inflation and the NAIRU for a group of CEECs, finding that the NAIRU tends to decline with increases in the inflation rate. It should be noted that in our paper we are concerned about the equilibrium unemployment rate or natural rate of unemployment (see Richardson et al., 2000).

In a more recent contribution, Beyer and Stemmer (2016) analyse how regional unemployment and its dynamics have evolved over time in Europe. They find that there is evidence of convergence in unemployment until 2007, caused mainly by country-specific factors, and then of polarisation afterwards, this being caused by both country and region-specific shocks. In this line of research, Cuestas et al. (2015) find that Germany may have acted as a ‘locomotive’ in the convergence of unemployment. They also find clusters of convergence, with the Baltic States, Poland and Hungary in one group, and the Czech Republic and Slovakia in the other.

With this paper we aim to contribute to the previous literature on shocks to unemployment in the CEECs. In particular, we analyse supply shocks proxied by real oil prices, distinguishing between the effects of negative and positive shocks on both the equilibrium unemployment rates and the dynamics of unemployment. We do this by applying the non-linear autoregressive distributed lag (NARDL) method of Shin et al. (2014) and the fractional integration methodology of Robinson (1994) to disentangle the effects of positive and negative oil price shocks on unemployment.

The remainder of the paper is organised as follows. In the next section, we briefly discuss some of the economic theory behind our hypothesis. In Section 3 we discuss the methods used for our empirical application. In Section 4, we present the results, and in the last section we conclude.

2. Economic background

In this section, we describe the model by Carruth et al. (1998) relating oil price movements to changes in the equilibrium unemployment rate. The model is based on the efficiency-wage framework of Shapiro and Stiglitz (1984). The model by Carruth et al. (1998) states that the equilibrium wage can be explained by the following equation:

$$\log w = log b + e + \frac{e \cdot d}{[1 - a(U)](1 - d)}, \tag{1}$$

where w is the wage, b is the level of unemployment benefits, e is the level of on-the-job effort, d is the probability of a worker successfully shirking by making zero effort at work, U is the unemployment rate, and $a(U)$ is the probability of an unemployed individual finding a job. Eq. (1) implies that the equilibrium wage depends on the value of not working, the level of on-the-job effort and a declining function of Carruth et al. (1998) remind us that the utility of a worker is $u = log\, w - e$, that is, utility will be higher the greater the gap between the wage and the level of effort at work is. If the worker is caught shirking, they will be fired and have to find a job elsewhere. This means that the wage of a fired individual is an average weighted by the probability of finding work from the in-work utility $log\, w - e$ and unemployment benefits $log\, b$. Eq. (1) can be obtained by solving the problem of efficiency wages, where the firm needs to pay enough to discourage all workers from making zero effort at once, as in that case all the workers would

Download English Version:

https://daneshyari.com/en/article/7348020

Download Persian Version:

https://daneshyari.com/article/7348020

Daneshyari.com