

# On the Role of Nonparticipation Turnover in European Unemployment

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## Motivation and purpose

The sharp rise in unemployment during recessions is the main effect of the business cycle on the labor market, and accounts for most of its sizable welfare losses. Understanding the dynamics of unemployment is therefore important for many research questions in macro and labor economics, and has important implications for the optimal design of public income insurance policies aimed at reducing the welfare costs of recessions.<sup>1</sup> Until recently the study of the cyclicity of unemployment was limited to fluctuations in the rate at which workers find and lose jobs. Recent work by [Elsby et al. \[2015\]](#) on the United States (U.S.) labor market shows that focusing on this two-state model (in which workers are in one of two labor market states: employed or non-employed) ignores important aspects of labor adjustment during recessions. Specifically, flows of workers between nonparticipation and unemployment are large, display substantial cyclicity, and account for about one third of the recessionary increase in unemployment. This suggests that the determination of unemployment is not only dependent on the economic agents' decisions to create and destroy jobs, but also on individuals' decision to enter and leave the labor force. In general, the best policies to address recessionary unemployment will depend on its main driving forces. For example, the right policy incentives will likely be different if recessionary unemployment is mainly due to low job creation or if, instead, it is due to increased competition for jobs resulting from more workers joining the labor force in recessions. A correct diagnosis of the sources of recessionary unemployment is therefore relevant for policymakers interested in maximizing the social value of public expenditure on policies addressing the welfare costs of recessions (e.g. income insurance policies or hiring credits).

In this research project we aim to understand the role of nonparticipation turnover in the dynamics of unemployment of a large set of European countries, including Denmark. To achieve that goal, first, we

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<sup>1</sup>[Krusell et al. \[2017\]](#) developed a model featuring both a standard labor supply decision as well as search frictions to interpret these flows.

want to investigate whether the patterns of nonparticipation turnover documented by [Elsby et al. \[2015\]](#) in the U.S. are similar in European countries. Second, we want to identify which policy and institutional factors account for the differences in the composition of unemployment dynamics across the countries in our sample. By comparing countries with very different labor market institutions and policies relative to the U.S., but also between them (e.g. Nordic vs Southern European countries), we expect to offer a new perspective on the role of institutions and policies in shaping the cyclical response of unemployment. We expect to make an important contribution to the literature, since so far the large cross-country empirical literature on unemployment dynamics has ignored the role of nonparticipation turnover (see [Blanchard and Portugal \[2001\]](#), [Jolivet et al. \[2006\]](#), [Elsby et al. \[2013\]](#) and [Murtin and Robin \[2018\]](#)).

## Data and methodology

To answer our research question, we proceed in two steps. First, we develop an empirical strategy to estimate a three-state model of worker flows for a large set of European countries. Our preferred data source is the micro-data extracts from the European Union Labor Force Survey (EULFS), which offers harmonized measurements of labor market concepts across countries over a long period of time (in some cases since the early 1980s until today). Despite these advantages, the publicly-available extracts of the EULFS do not include longitudinal identifiers, which means researchers cannot use a standard approach to measure transition probabilities.<sup>2</sup> To address this, we propose a new estimation method geared towards the data structure and variables available in the EULFS. Our methodology is based on mixture model that combines a multinomial model for individual transition probabilities with a measurement error-model with a multinomial structure. In theory, our approach can deal with the two main measurement challenges posed by the EULFS data: classification error and recall error. Our approach builds on and extends previous work by [Poterba and Summers \[1995\]](#) and [Pfeffermann et al. \[1998\]](#). In addition, we will address other sources of bias that affect the estimation of workers flows such as time-aggregation bias (see e.g. [Shimer \[2012\]](#)) and margin error (see e.g. [Fujita and Ramey \[2009\]](#)).

Since our estimation method is based on specific assumptions, to assess their validity we will use data from the Danish labor force survey (LFS) from 1985 to 2018. Unlike the data on Denmark available in the EULFS, the Danish LFS includes longitudinal identifiers, and therefore allows us to obtain estimates of workers flows that are not subject to the same type of classification or recall errors present in the EULFS. As a result, combining the EULFS and the Danish LFS will also allow us to quantify the two sources of measurement error present in the EULFS. It is likely that the Danish LFS is subject to other forms of classification error. In principle, we can use standard approaches in the literature that explore the full labor-market histories of sampled individuals to address that type of classification error. Therefore, our

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<sup>2</sup>The approach pursued by [Elsby et al. \[2013\]](#) uses stocks of short-time unemployment to estimate the unemployment outflow and inflow transition probabilities. Unfortunately, with either OECD or EULFS data this approach, pioneered by [Shimer \[2012\]](#), cannot be extended to estimate transitions across employment, unemployment and nonparticipation. The approach based on the EULFS microdata faces a key challenge that we address in this project: due to data confidentiality, individual longitudinal identifiers are not included in the micro-data sets. Therefore, it is not possible to estimate workers flows across periods by counting workers in state  $i$  at time  $t$  and at state  $j$  at time  $t + 1$ .

research project will also shed light on the magnitude and bias of the classification error specific to the Danish LFS, so our results should be relevant for all users of this survey.

In the second step we focus on the more substantive questions. First, we quantify the role of nonparticipation flows in driving the dynamics of unemployment in the countries in our sample. Our main tool to achieve this is a dynamic variance decomposition developed by [Elsby et al. \[2015\]](#) that allows us to precisely quantify the relative contribution of different flows to the cyclical dynamics of unemployment. Second, we will combine the outcomes of the variance decomposition with data on countries' labor market institutions and policies to elicit the role of those institutions in shaping unemployment turnover. For this last part of the analysis we will use standard regression and graphical techniques.

## **Research team and budget**

The research team is composed of myself, my colleague at CBS ECON, Ralf Wilke, and a student assistant. Both Ralf Wilke and myself have extensive experience in the econometric methods developed and applied in this paper (see our attached CV). Ralf Wilke has extensive experience in the development and application of mixture models using maximum-likelihood techniques and with econometric techniques to deal with survey response error (see e.g. [Kyyrä and Wilke \[2007\]](#) and [Kyyrä and Wilke \[2014\]](#)). I have extensive experience in the estimation of worker flows using Markov chain models and survey data (see e.g. [Borowczyk-Martins and Lalé \[2018\]](#) and [Borowczyk-Martins and Lalé \[2019\]](#)).

The application for funding concerns, in the first place, the acquisition of data from the Danish LFS, which is necessary to assess the performance of our estimation protocol and to quantify the sources of measurement error. The data from the EULFS is freely available to researchers. We have already obtained those data for all countries and have been working on them for several months. The cross-country data on labor market institutions and policies is produced and made available to the public by the Eurostat and the OECD. Therefore, we can obtain the data very quickly.

In the second place, the funding would cover the salary of the student assistant for nine months. The role of the student assistant will be to apply our method to data from various countries. Since our estimation approach is based on micro-data covering several years, our sample includes as many as 10 countries, and our method uses maximum likelihood techniques (which require careful and time-consuming analysis), the time required to perform the estimations is quite elevated. We estimate that, using the estimation programs already developed by us, a student assistant will be able to produce final estimation results in nine months of part-time work (see the attached budget).

## **Outputs and calendar**

The expected output of this research project are up two academic papers. Our research project aims to deliver a methodological and a substantive contribution, which are likely to lead to two separate papers with good publication potential. Due to the very large interest in understanding the dynamics of

unemployment and the lack of cross-country analysis covering such a wide range of countries over such a long period of time, the substantive contribution has the potential to be published in a top-5 journal, a second-tier general-interest journal (e.g. *Journal of the European Economic Association*) or a top-field macroeconomics journal (e.g. *American Economic Journal: Macroeconomics*). The methodological contribution has the potential to be published in a second-tier general interest journal (e.g. *Review of Economics and Statistics*) or a top-field journal in applied econometrics (e.g. *Journal of Business and Economics Statistics*).

The project would start in Fall 2019, with the student assistant working until Summer 2020. At this stage, we have already developed the estimation method and have preliminary estimates for two countries. Once we have access to the Danish LFS, we can assess the validity of our approach, quantify the measurement error and write the methodological paper. We expect to have a working-paper version of the methodological paper before the end of 2019. We will start the selection process for the student assistant in September 2019 and expect the selected candidate to work on the project from November 2019 to July 2020, so that we have a working-paper version of the substantive paper at the end of 2020.

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