A Search and Matching Approach to Business-Cycle Migration in the Euro Area

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Abstract

Recently migration patterns in the euro area changed markedly in response to increasing unemployment dispar- ities. This reinforced the interest in labor mobility as stabilization tool against the background of heterogeneous labor market conditions. In a data set of 55 bilateral migration corridors in the euro area over the period 1980-2010 we find evidence for business-cycle related fluctuations in net migration flows and the crucial role of unemploy- ment and vacancies in shaping migration patterns. We propose a two-country DSGE model with migration that is able to replicate the empirical facts on business-cycle migration. In this model unemployment arises from search and matching frictions. We endogenize migration via the unemployed workers choice on which labor market to search for a job. Additionally, we allow for migration as a consequence of successful on-the-job search abroad. The framework allows to account for wage and unemployment gaps between natives and immigrants over the cycle as well as for factors such as language barriers that hinder the labor market integration of foreigners. We find that the impact of migration on country-specific average wages and unemployment depends crucially on the characteristics of immigrants and natives as well as the institutional characteristics of the total corridor, i.e. search efficiency. We show that the ratio of employed migration to unemployed migration crucially shapes the size of the unemployment rate differential in response to business cycle shocks. The model will be used to analyze the evolution of migration cost in the euro area over time as well as the effects of different immigration and labor market policies on migration patterns and welfare.

Introduction

- European policy makers highlight cyclical migration as a stabilization tool that increases overall employment against the background of heterogeneous labor market conditions.
- Legal framework of the European Union lowers migration cost by guaranteeing free movement of labor.
- Interest in labor mobility was reinforced during the recent European crisis episode where migration patterns in the euro area changed markedly in response to increasing unemployment disparities.
- Understanding the drivers and cost of internal migration in the euro area is crucial in order to assess this important adjustment mechanism.

Main Objectives

1. Compile a data set on bilateral migration flows in the EA12.
2. Provide migration cycle facts.
3. Built a two-country DSGE model that can explain the key findings.
4. Estimate the model with Bayesian techniques in order to assess the size of migration cost.
5. Use the model for analyzing labor market policies taking into account their effect on migration patterns.

Related Literature

- Empirical studies on cyclical migration:
  - panel of OECD countries (BEINE ET AL., 2013)
  - shock absorption in the EU (BEYER/SMETS, 2015)
- Theoretical models with migration and search and matching
  - steady-state effects of immigration (CHASSAMBOULLI/PALIVOS, 2014)
  - remigration to Germany after World War II (BRAUN/WEBER, 2016)

Data and Methods

Data and business cycle analysis

- Observations for the years 1980-2010
- Annual bilateral migration flows covering all EA12 migration corridors (OECD)
  - EA12=AT, BE, DE, ES, EL, FI, FR, IE, IT, LU, NL, PT
  - potential corridors: $12 \cdot 11/2 = 66$, actual corridors due to data limitations: 55
- macroeconomic data on source and destination countries (Ameco database), EC survey data on employers perception of labour shortages in manufacturing as vacancy indicator
- apply HP filter with smoothing parameter $\lambda = 400$ (results robust to $\lambda = 100, 6.25$)

Theoretical model

- Two country version of the CHRISTOFFEL ET AL. (2009) model
  - new Keynesian DSGE model with search and matching frictions in labor market
  - price and nominal wage rigidity, price and wage indexation
  - three types of firms: labor good firm, intermediate good firms, retail firms
  - intermediate goods produced with capital and a labor composite (CES aggregate of native and migrant labor)
  - trade in intermediate goods
  - central bank follows a Taylor rule of standard form
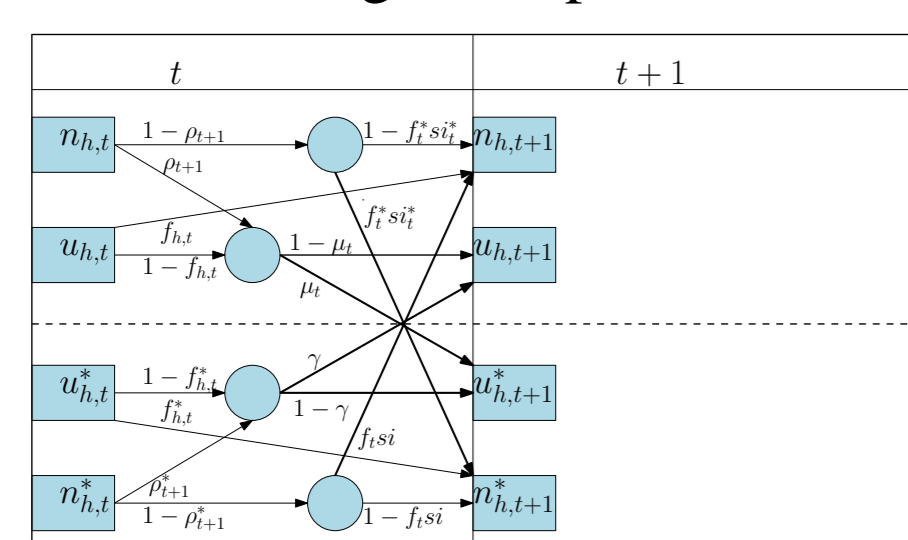- Circular migration pattern

Figure 1: Timing of migration, home household's perspective

- net migration: immigration and return migration
$nm_t = [n_{f,t} + u_{f,t} - (n_{f,t-1} + u_{f,t-1})] - [(n^*_{h,t} + u^*_{h,t}) - (n^*_{h,t-1} + u^*_{h,t-1})]$
- endogenize migration via the employed and unemployed workers' choice on which labor market to search for a job in presence of migration cost
- migrants take into account all relevant information on relative labor market conditions (wages, employment and separation probabilities)

Results

Over the business cycle, migration flows in EA12 migration corridors are directed towards countries with decreasing relative unemployment and increasing relative vacancies. Our theoretical model is able to replicate this finding. It allows to investigate the migration response to various business cycle shocks.
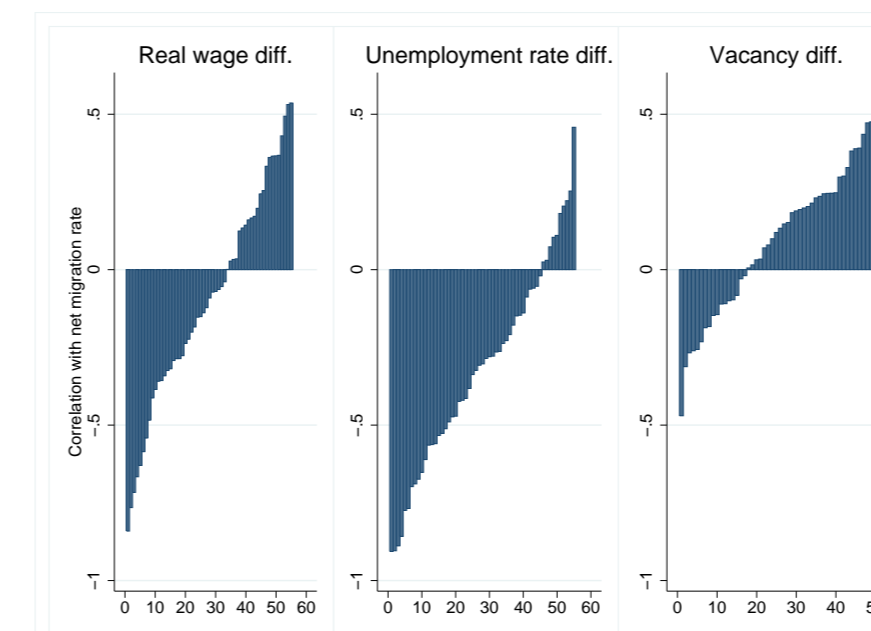
EA12 migration cycle facts

Figure 2: Corridor correlations of net migration

Statistic	τ				
	lag			lead	
	-2	-1	0	1	2
$\rho(dy_{t+\tau}, nm_t)$	0.06	0.11	0.17	0.10	0.04
$\rho(dw_{t+\tau}, nm_t)$	-0.12	-0.13	-0.10	-0.07	0.01
$\rho(du_{t+\tau}, nm_t)$	-0.14	-0.27	-0.31	-0.20	-0.05
$\rho(dv_{t+\tau}, nm_t)$	0.11	0.11	0.09	-0.01	-0.03

Table 1: Dynamic correlations, EA12 average

Modeling migration in response to unemployment differentials seems crucial. The search and match- ing model provides a realistic description of labor market processes.

Theoretical results

Investigating the migration response to various business cycle shocks in the home economy:
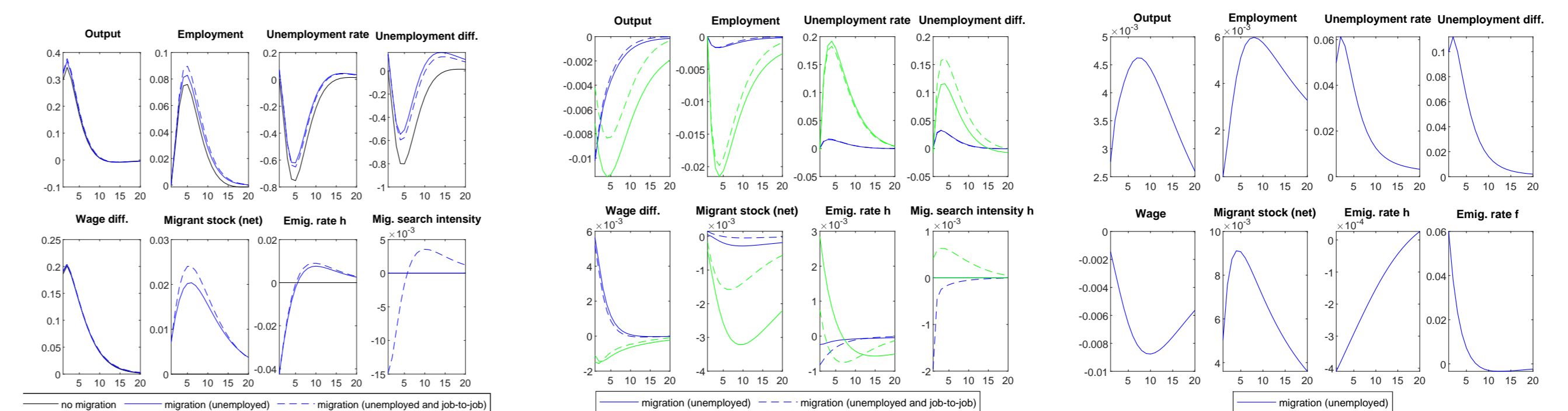
Figure 3: IRFs positive technology shock

- output response stronger with migration via increased employment
- reduced emigration rate of unemployed and employed workers and increased immi- gration rate of foreigners
- migration reduces the un- employment differential be- tween home and foreign
- unemployment differential larger for a high share of job-to-job migrants

Figure 4: IRFs bargaining (blue) and vacancy posting cost shock (green)

- vacancy posting cost in- crease unemployment and emigration rate of unem- ployed and employed work- ers
- wage bargaining power of workers increases un- employment but reduces the emigration rate of un- employed and employed workers via higher wages
- unemployment differential larger for a high share of job-to-job migrants

Figure 5: IRFs immigration cost re- duction shock

- immigration shock has a positive effect on output via higher employment
- higher immigration in- creases aggregate unem- ployment and reduces wages
- unemployment rate returns to steady state quickly since a) labor market quickly ab- sorbs additional workers and b) inflow of workers raises outmigration

Conclusions

- Model reproduces the negative correlation of the unemployment differential and the net migration rate over the business cycle.
- Immigration cost shock increases output and employment. While the accompanying wage decrease is relatively persistent, the rise in the unemployment rate is of temporary nature.
- Labor mobility lowers the relative unemployment fluctuation in presence of asymmetric business cycle shocks.

Forthcoming Research

- Estimate the model with Bayesian techniques for different time periods to learn how migration cost evolved over time.
- SVAR analysis of EA12 panel and individual migration corridors.
- Welfare analysis of labor market policies.

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