Atypical work and intra-EU mobility patterns

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Grant agreement no.

Deliverable: D3.3

Due date: 04.2024

Funded by
the European Union

Document control sheet

Project Number:	**101061388**
Project Acronym:	WeLaR
Work-Package:	[WP3]
Last Version:	[ ]
Issue Date:	[ ]

Classification

Draft	X
Final	
Confidential	
Restricted	
Public	X

Legal notice

This project, WeLaR, has received funding under the Horizon Europe programme. Views and opinions expressed are, however, those of the authors only and do not necessarily reflect those of the European Union or the European Research Executive Agency. Neither the European Union nor the granting authority can be held responsible for them.

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Abstract*

This study investigates the relationship between various forms of atypical work and intra-EU migration patterns. The descriptive analysis in Part I highlights general trends from 2000 to 2020 in four types of atypical work – part-time, temporary, self-employment and working from home – differentiated by gender, country groups and education levels, as well as trends in intra-EU immigration and emigration flows differentiated by gender and country groups. The econometric analyses in Part II study how atypical work, alongside other labour market conditions, affect intra-EU migration and vice versa in a sample of 17 EU countries from 2004 to 2019. We find that relative increases in the part-time and self-employment share in the sending country increase net migration, whereas a relative increase in the short fixed-term share reduces net migration. Conversely, a shock to net migration reduces the part-time share differential persistently and the self-employment share differential initially but increases the short fixed-term share differentials. Finally, a variance decomposition shows that atypical work accounts for around one-fifth of the fluctuations in net migration five and 10 years after the initial shock. These results emphasise the importance of understanding the potential trade-off between internal (via employment flexibility) and external (via outmigration) labour market adjustment, especially in times of skill and geographical mismatch.

* We extend our gratitude to Sandra Leitner for her invaluable input throughout the course of this research. Special thanks are also due to Maryna Tverdostup for her support in the final stages of the process. We would also like to thank Mikkel Barslund and Ludivine Martin for their valuable feedback.

1. Introduction

The landscape of employment in the European Union (EU) has undergone significant transformations in recent decades. Researchers have extensively studied various forms of atypical work, including part-time work, temporary employment, self-employment and working from home, in order to understand their prevalence, characteristics, drivers and consequences (e.g. Standing, 2011; Rubery and Grimshaw, 2020). In addition, intra-EU migration increased considerably as the EU underwent substantial expansion in the past two decades, characterised by the accession of 12 countries (predominantly from Central and Eastern Europe) between 2004 and 2007, and with Croatia joining in 2013. Consequently, recent research on intra-EU migration has focused on the drivers of East-West migration, studying the role of income and wages, unemployment and migration networks (e.g. Landesmann and Leitner, 2015; Baláž and Karasová, 2017).

To date, surprisingly little is known about the mutual influence of atypical work and intra-EU migration patterns. However, Monastiriotis and Sakkas (2021) identify two opposing effects regarding the relationship between atypical work and migration: on the one hand, atypical work may improve internal labour market adjustment processes, leading to, for instance, lower unemployment, which decreases the necessity for outmigration. On the other hand, atypical work is associated with weaker labour market attachment, which facilitates outmigration.

In view of this ambiguity, our study aims to determine how atypical work, alongside other labour market indicators, affect intra-EU migration in a cross-country context, whereas Monastiriotis and Sakkas (2021) studied cross-regional migration. Moreover, in contrast to Monastiriotis and Sakkas (2021), we use a panel vector autoregressive (pVAR) approach that allows for the simultaneous estimation of the bidirectional relationship between migration flows and different forms of atypical work (i.e. differentials in the shares of part-time work, self-employment and short-term fixed-term contracts) as well as other important labour market indicators (i.e. differentials in real wages, unemployment rates, human capital endowment, union densities and employment protection legislation).

The analysis consists of two parts. Part I provides an overview of patterns and trends of atypical work and intra-EU migration flows from 2000 to 2020. Part II analyses the interrelationship between intra-EU migration and atypical work, using a panel vector autoregressive (pVAR) approach on a sub-sample of 17 EU countries covering the period 2004 to 2019. In addition, the impact of labour market institutions is studied on a sub-sample of nine countries for the period 2003 to 2018. The sample selection is driven by data availability on bilateral migration flows.

2. PART I: An overview of atypical work and migration flow trends in the European Union 2000-2020

2.1. Atypical work

Data from Eurostat reveal that approximately 14% of employees aged 15 to 64 are working part-time in 2020 this share is especially high for women and young workers (Eurostat, 2021). Similarly, 14% of European employees aged 15 to 64 have temporary contracts in 2020. Scholars have also explored the characteristics of atypical workers and their employment conditions. Research indicates that atypical workers often face lower wages, limited access to social protections and greater job insecurity than their counterparts in standard employment arrangements (Rubery and Grimshaw, 2020; Bosch and Lehndorff, 2019). Moreover, atypical work is associated with higher levels of precarity, as evidenced by shorter job tenures, unpredictable work schedules, and reduced bargaining power (Vosko, 2006; Standing, 2011).

The drivers of atypical work in the EU are multifaceted and context-dependent. Regulatory frameworks, labour market institutions, technological advancements and economic globalisation play pivotal roles in shaping the prevalence and nature of atypical employment (Doellgast et al., 2018; Peck and Theodore, 2015). Moreover, cultural norms, demographic trends and sectoral dynamics influence individuals' preferences for non-standard work arrangements (Kalleberg, 2018).

The consequences of atypical work extend beyond the individual level to encompass broader social and economic implications. Although atypical work offers flexibility and opportunities for certain segments of the workforce, it exacerbates income inequality, undermines social cohesion and strains welfare systems (Kalleberg, 2018; Bosch and Lehndorff, 2019. Moreover, the proliferation of precarious work can hinder economic growth, dampen consumer demand and weaken labour market resilience (Scharpf, 2015).

As the nature of work continues to evolve in response to technological advancements, globalisation and changing societal preferences, understanding the landscape of atypical work in the EU is crucial for policy makers, employers and workers alike.

2.1.1. Data

This section aims to present the trend in atypical work within the EU, from 2000 to 2020, using EU Labour Force Survey (EU-LFS) data. The EU-LFS is a comprehensive statistical survey that provides quarterly and annual data across the 27 EU member states, along with three European Free Trade Association (EFTA) countries (Iceland, Norway and Switzerland) and four EU candidate countries (Montenegro, North Macedonia, Serbia and Turkey). Its primary objective is to provide accurate and timely information on

key labour market indicators, such as employment, unemployment and economic activity. Through a harmonised methodology, the EU-LFS collects data on a wide range of demographic and socioeconomic characteristics, including age, gender, education, occupation and working conditions.

The EU-LFS is designed as a continuous quarterly survey with interviews spread uniformly over all weeks of a quarter. All participating countries conduct the EU-LFS as a continuous survey and produce quarterly and annual estimates. As a consequence of the COVID-19 outbreak, the LFS data collections have been severely hampered in most countries. During the lockdown periods, face-to-face (CAPI and PAPI) data collection methods have been stopped and replaced as much as possible by remote collection methods (CATI or CAWI). Non-response increased because phone numbers/mail addresses were not always immediately available. Wave 1, for which a face-to-face interview was mainly used before the COVID crisis, has been particularly affected. In this report, we highlight trends in four types of atypical work: part-time work, temporary work, self-employment and working from home. For each form of atypical work, we display the differences by gender, country group and education level.

More specifically, EU countries were grouped into five geographical areas, as follows.

- Baltic: Estonia, Latvia and Lithuania.
- Nordic: Denmark, Finland and Sweden.
- Eastern: Bulgaria, Czechia, Hungary, Poland, Romania, Slovakia and Slovenia.
- West: France, Germany, Belgium, Ireland, Luxembourg, the Netherlands and Austria.
- South: Spain, Italy, Portugal, Greece and Croatia.

It should be noted that Malta and Cyprus were excluded from this part of the analysis, owing to lack of data for migration flows.

Education levels are presented according to ISCED 2011. It represents the highest educational attainment level usually as derived variable HATLEV1D aggregated to three levels, as follows.

- Lower secondary: primary and lower secondary education.
- Upper secondary: upper secondary education and post-secondary non-tertiary education.
- Tertiary: short-cycle tertiary education, bachelor, master, doctoral or equivalent level.

2.1.2. Part-time work

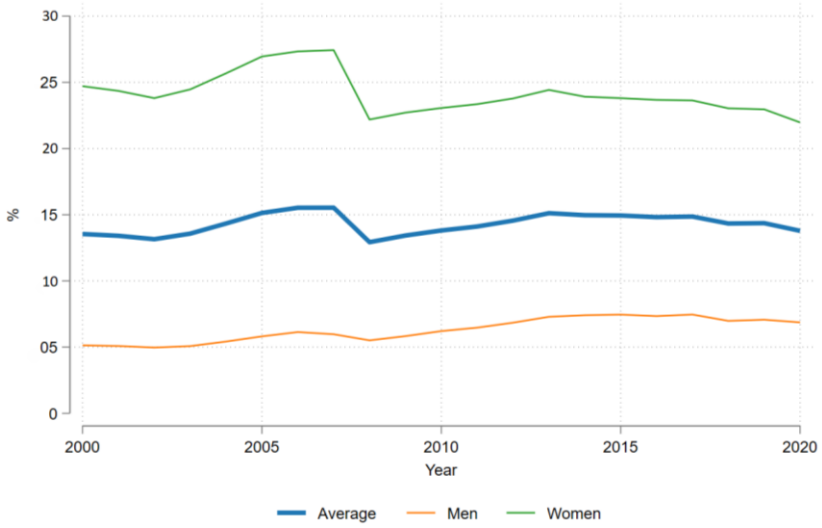
Definition

Within the framework of the EU-LFS, data regarding part-time employment pertains exclusively to an individual's primary job while actively employed. This main job may consist of either full-time or part-time employment, with the differentiation contingent upon the respondent's personal perception of their typical work hours. As such, the distinction relies on individuals' subjective evaluations of their work circumstances. A person engaged in part-time employment is presumed to work fewer hours than a comparable full-time employee occupying a position within the same occupation and organisational context ('local unit'). Typically, part-time employees work less than 30 to 35 hours per week, although specific delineations may diverge, based on differences in regional regulations and corporate policies. Part-time work arrangements offer flexibility for individuals who may have other commitments such as education, caregiving responsibilities, or pursuing personal interests alongside their employment. However, part-time workers may receive fewer benefits and opportunities for career advancement than full-time employees.

Overview from 2000 to 2020

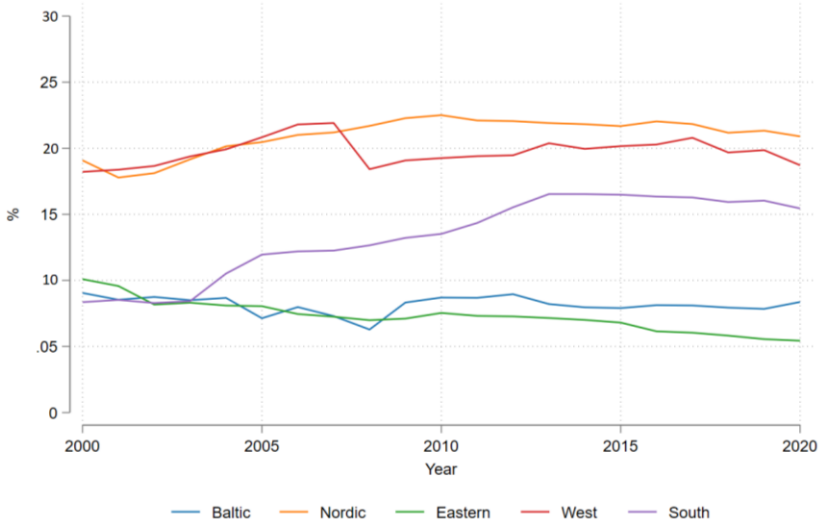
Between 2000 and 2007, the proportion of part-time workers among those aged 15-64 rose from 13.5% to 15.5%. However, in 2008, amid the global financial crisis, this figure dropped to 12.9%. Subsequently, there was a modest increase until 2012, followed by a slight decline over the next five years (2013-2018), with the figure settling at 14.3% in 2018 and remaining stable in 2019. With the onset of the COVID-19 pandemic in 2020, part-time employment dipped to 13.8% in the EU labour market. The gender disparity is wide, with 22% of women employed part-time compared to 6.9% of men in 2020. The decline in part-time work in 2008 was particularly notable for women, with the proportion dropping from 27.4% in 2007 to 22.2% in 2008; for men, the decrease was much less pronounced, from 6% to 5.5%. Over the span of two decades (2000-2020), the proportion of women working part-time saw a slight decrease from 24.7% to 22%, while for men, it increased from 5.1% to 6.9%.

Figure 1. Part-time employment as percentage of total employment by gender, EU27 (excl. Cyprus and Malta), 2000-2020



Source: EU-LFS weighted data (variable FTPT). Respondents aged 15-64.

Figure 2. Part-time employment as percentage of total employment by country group, EU27 (excl. Cyprus and Malta), 2000-2020



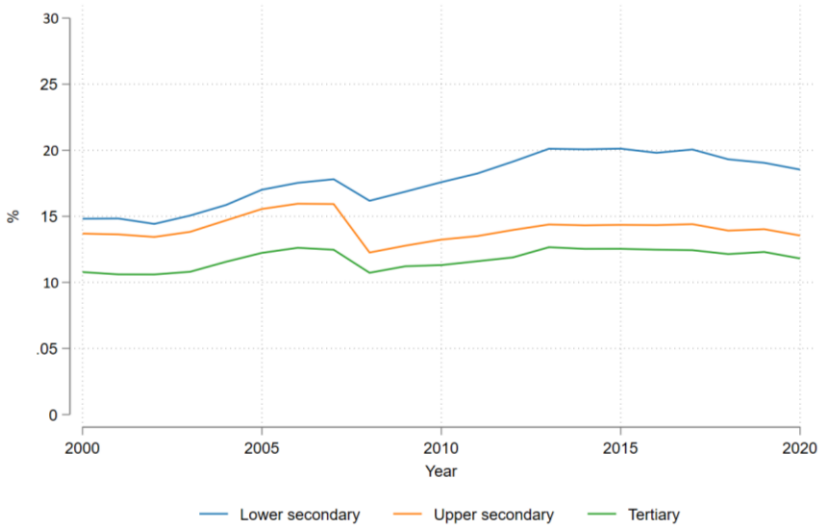
Source: EU-LFS weighted data (variable FTPT). Respondents aged 15-64.

The share of part-time employment varies across different groups of EU countries, as depicted in Figure 2. Between 2000 and 2003, two distinct clusters emerge: Nordic and Western nations exhibit a higher proportion, at around 18%, whereas Eastern, Baltic and Southern countries show a lower share, closer to 8%. From 2003 to 2020, Nordic and Western countries consistently maintain the highest proportion of part-time workers, with their shares at 20.9% and 18.7%, respectively, in 2020. Among Southern countries, there's a notable surge in the share of part-time employment, nearly doubling from 8.4% in

2003 to 15.4% in 2020. For Baltic countries, the figures are relatively stable over the period, at around 8%, while Eastern countries see a halving of the proportion, dropping to 5.4% in 2020.

Variations in part-time employment are observable across different educational levels, with a clear trend: the lower the education level, the greater the proportion of part-time workers. In 2020, for instance, the share of part-time employment among respondents with a lower secondary education stands at 18.5%, compared with 13.5% for those with an upper secondary education and 11.8% for those with tertiary education, as illustrated in Figure 3.

Figure 3. Part-time employment as percentage of total employment by education level, EU27 (excl. Cyprus and Malta), 2000-2020



Source: EU-LFS weighted data (variable FTPT). Respondents aged 15-64.

2.1.3. Temporary employment

Definition

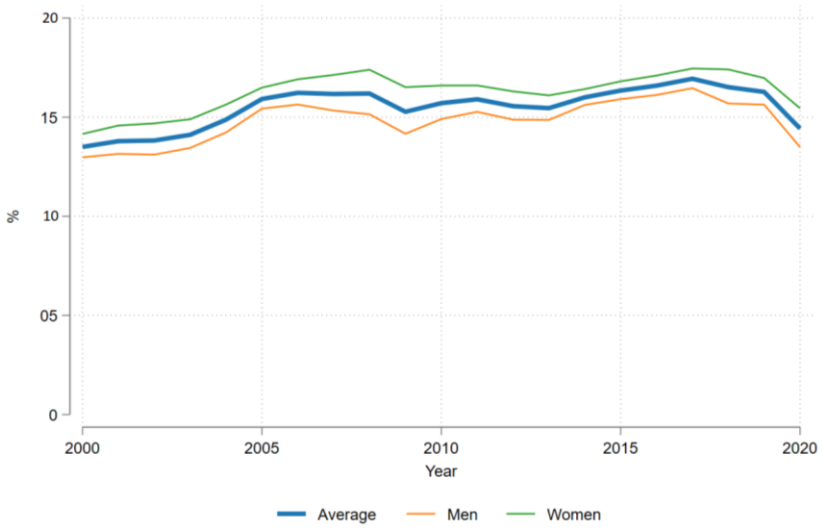
A job may be considered temporary employment (and its holder a temporary employee) if both employer and employee agree that its end is decided by objective rules (usually written down in a work contract of limited duration). These rules can be a specific date, the end of a task, or the return of another employee who has been temporarily replaced. Typical cases can be people in seasonal employment; people engaged first by an agency or employment exchange and then hired out to a third party to do a specific task (unless there is a written work contract of unlimited duration); and people with specific training contracts. Unlike permanent employees, temporary workers may not receive the same benefits or job security, and their employment status is contingent upon the duration of the temporary assignment. Temporary employment provides flexibility for both employers and employees, but may lack the stability associated with

permanent positions. In this study, temporary employment is represented by the number of employees with fix term contract only, and do not cover people working for an interim agency.

Overview from 2000 to 2020

Between 2000 and 2007, the percentage of temporary workers aged 15-64 experienced a rise from 13.5% to 16.2%, as depicted in Figure 4. However, in 2009, during the global financial crisis, this proportion decreased to 15.3%. Subsequently, there was an uptick until 2017, reaching 16.9%, followed by a slight decline the following year to 16.3%. As the COVID-19 pandemic unfolded in 2020, temporary employment saw a further decline, to 14.4%. Notably, there exists a gender gap, with 15.4% of women engaged in temporary employment in 2020, but only 13.5% of men.

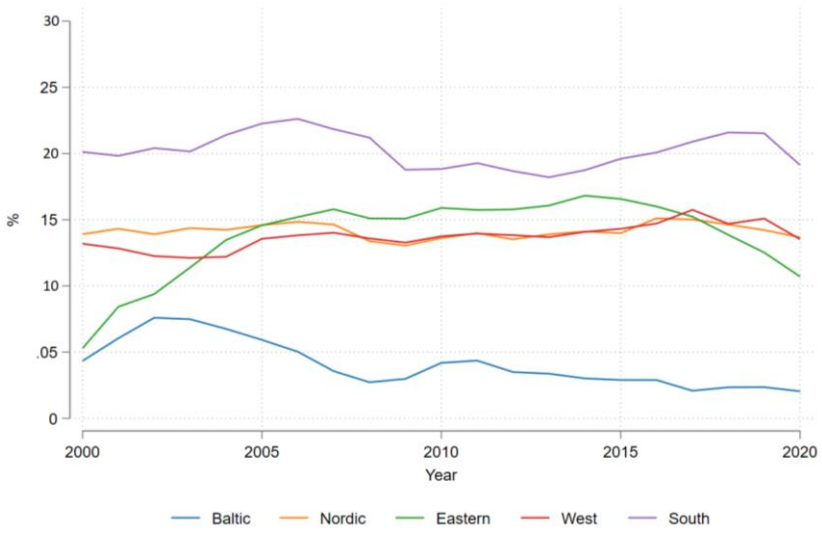
Figure 4. Temporary employment work as percentage of total employment by gender, EU27 (excl. Cyprus and Malta), 2000-2020



Source: EU-LFS weighted data (variable TEMP). Respondents aged 15-64.

Significant disparities in temporary employment rates are evident across various EU countries (Figure 5). Southern nations exhibit the highest share of temporary employment, hovering around 20%. In contrast, Baltic countries display the lowest proportion, declining from 4% in 2000 to 2% in 2020. Eastern countries experienced a notable surge from 5.3% in 2000 to 16.8% in 2014, followed by a decrease to 10.7% in 2020. Meanwhile, Nordic and Western countries follow similar and relatively stable trends, maintaining rates around 14% over the period.

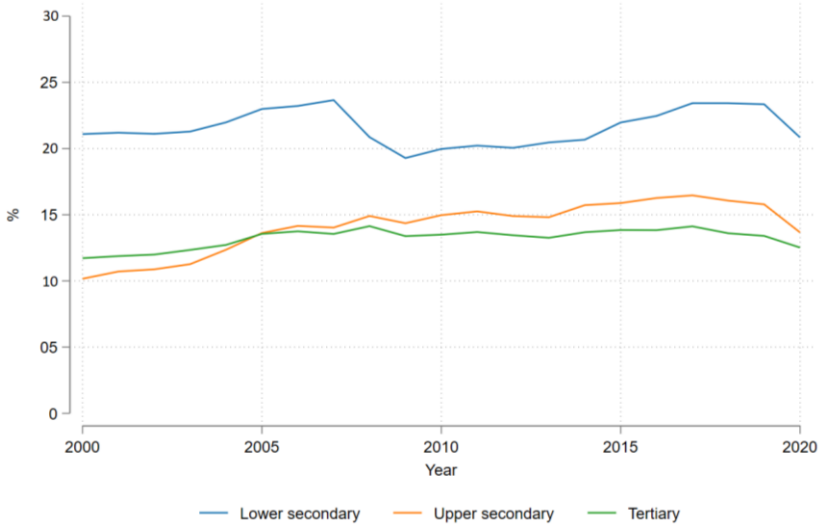
Figure 5. Temporary employment as percentage of total employment by country group, EU27 (excl. Cyprus and Malta), 2000-2020



Source: EU-LFS weighted data (variable TEMP). Respondents aged 15-64.

Temporary employment also exhibits variations across different levels of education (Figure 6). Individuals with the lowest educational attainment tend to have the highest representation, averaging above 20% over the 20-year period. Following the 2008 financial crisis, the share of temporary workers among the least educated declined from 23.7% in 2007 to 19.3% in 2009, subsequently rising to stand at 23.3% in 2019. However, with the onset of the COVID-19 pandemic, the share of temporary employment among the least-educated workers decreased to 20.8% in 2020.

Figure 6. Temporary employment as percentage of the total employment by education level, EU27 (excl. Cyprus and Malta), 2000-2020



Source: EU-LFS weighted data (variable TEMP). Respondents aged 15-64.

For workers with upper secondary and tertiary education, the trends are similar. Those with upper secondary education have slightly higher representation in temporary work than those with tertiary education. In 2020 the respective figures stood at 13.7% and 12.5%.

2.1.4. Self-employment

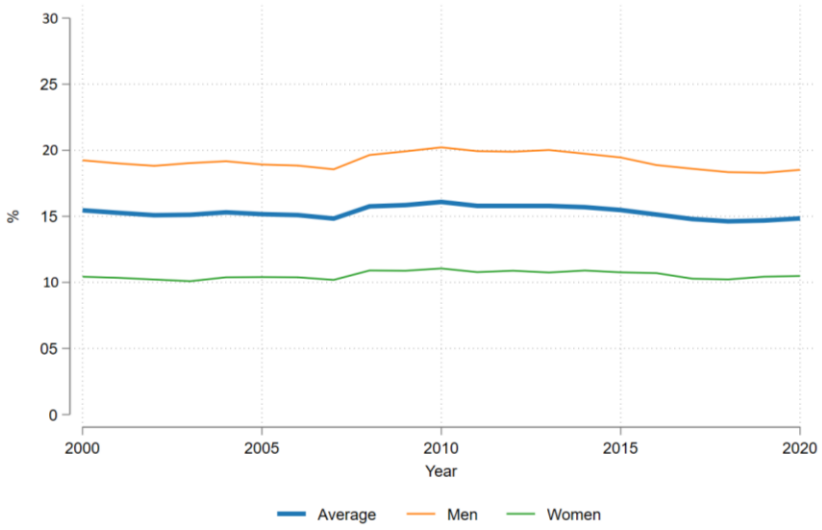
Definition

Self-employment refers to a professional situation where an individual operates their own business or works as an independent contractor, freelancer or sole proprietor, rather than being employed by another entity. In self-employment, individuals are responsible for managing their own workload, finances, taxes and other administrative tasks associated with running a business. This arrangement offers autonomy and flexibility, but also entails bearing the risks and responsibilities of entrepreneurship. In EU-LFS data, the self-employed with and without employees are combined in a single category.

Overview from 2000 to 2020

The proportion of self-employment within the EU remains relatively consistent from 2000 to 2020, at around 15% of total employment. Notably, the proportion of self-employed men significantly exceeds that of women, at 18.5% and 10.5% respectively in 2020 (Figure 7).

Figure 7. Self-employment as percentage of total employment by gender, EU27 (excl. Cyprus and Malta), 2000-2020



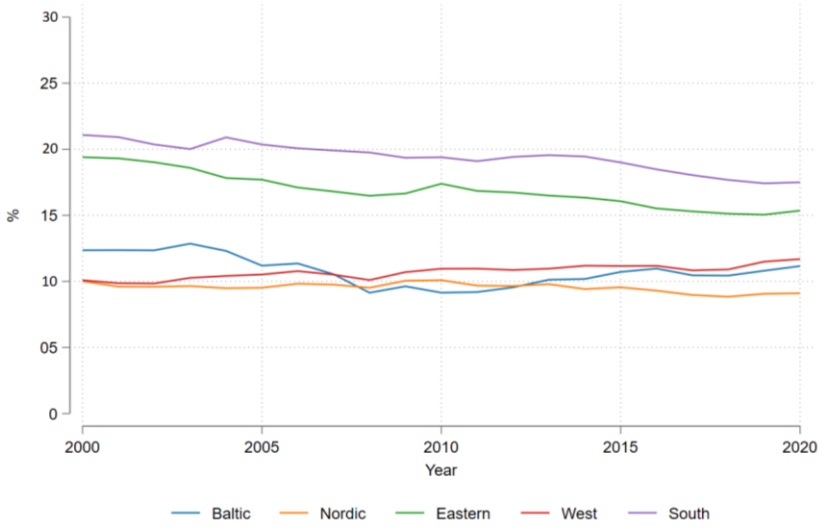
Source: EU-LFS weighted data (variable STAPRO). Respondents aged 15-64.

Variations in self-employment trends are apparent across different country groups (Figure 8). The highest proportions are observed in Southern countries, at 17.5% in 2020, and Eastern countries, at 15.4% in 2020.

Both of these groups witnessed a decrease from their 2000 levels of 21.1% for Southern countries and 19.4% for Eastern countries.

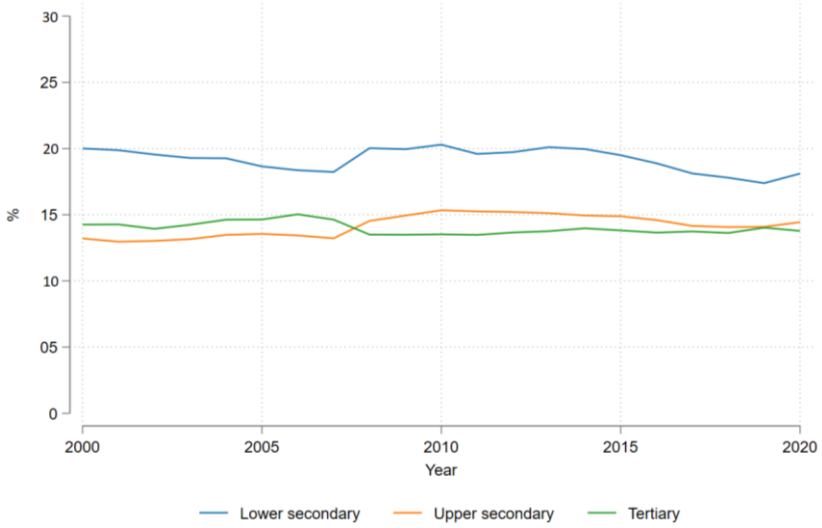
In Baltic countries, the share of self-employed individuals declined from 12.9% in 2003 to 9.1% in 2008 before rebounding to stand at 11.2% in 2020. Meanwhile, Nordic and Western countries show similar trends, with the share hovering around 10%. Western countries had a slightly higher proportion of self-employed individuals (11.7% in 2020) than Nordic countries (9.1%).

Figure 8. Self-employment as percentage of total employment by country group, EU27 (excl. Cyprus and Malta), 2000-2020



Source: EU-LFS weighted data (variable STAPRO). Respondents aged 15-64.

Figure 9. Self-employment as percentage of total employment by education level, EU27 (excl. Cyprus and Malta), 2000-2020



Source: EU-LFS weighted data (variable STAPRO). Respondents aged 15-64.

Self-employment remains prevalent among lower-educated workers, with a proportion of 18.1% in 2020 (Figure 9). Interestingly, the share for higher-educated workers is not far below this, hovering around 14%. From 2000 to 2007, the share of self-employed individuals was higher among workers with tertiary education than those with upper secondary education. Since then, the trend has reversed.

2.1.5. Working from home

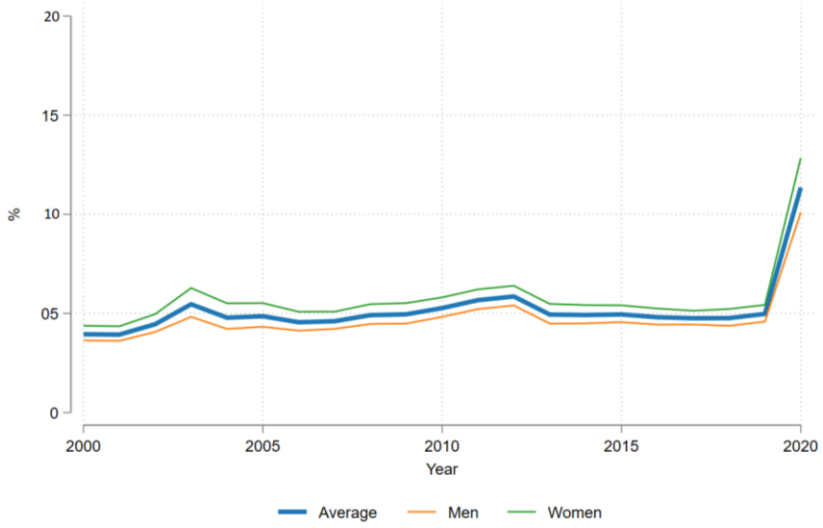
Definition

In this report, we report the share of persons 'mainly working at home', defined as doing at home any productive work related to the current main job for at least half of the days worked in a reference period of four weeks.

Overview from 2000 to 2020

The proportion of respondents primarily working from home remains consistent from 2000 to 2019, at around 5% (Figure 10). However, with the onset of the COVID-19 pandemic in 2020, this figure more than doubled to 11.4%. Notably, women tend to work from home more frequently than men, with rates reaching 12.8% for women and 10.1% for men in 2020.

Figure 10. Working from work as percentage of total employment by gender, EU27 (excl. Cyprus and Malta), 2000-2020

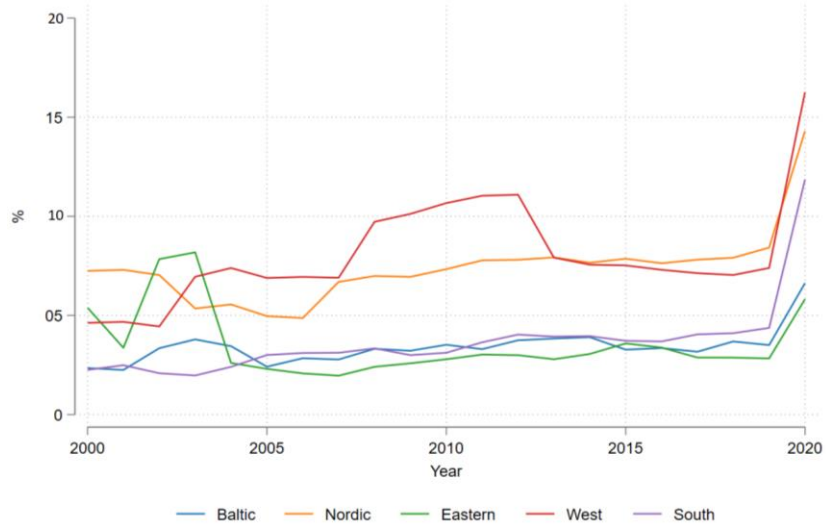


Source: EU-LFS weighted data (variable HOMEWORK). Respondents aged 15-64.

The prevalence of working from home varies across different country groups, with Western and Nordic countries having the highest share, at around 15% in 2020 (Figure 11). Conversely, Baltic, Southern, and Eastern countries have historically exhibited relatively similar (and lower) shares, although the post-

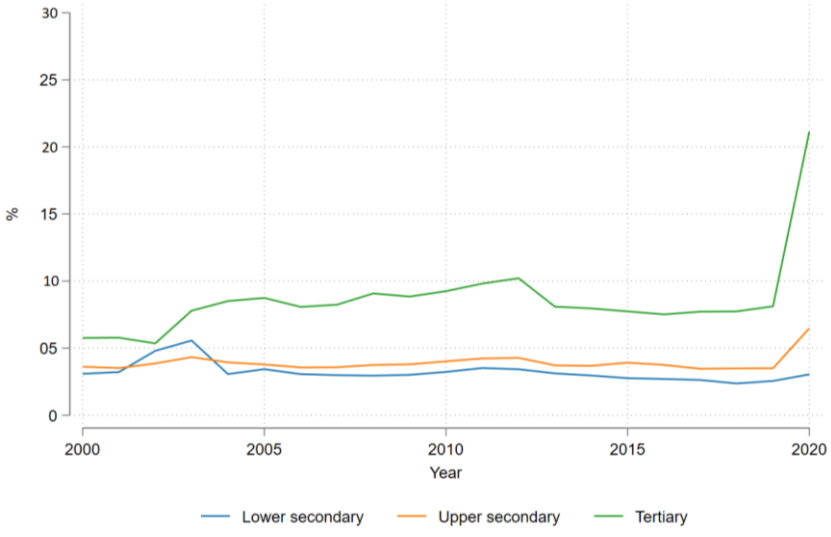
COVID increase is more pronounced in Southern countries, with the rate reaching 12% in 2020, against approximately 6% for Eastern and Baltic countries.

Figure 11. Working from home as percentage of total employment by country group, EU27 (excl. Cyprus and Malta), 2000-2020



Source: EU-LFS weighted data (variable HOMEWORK). Respondents aged 15-64.

Figure 12. Working from home as percentage of total employment by education level, EU27 (excl. Cyprus and Malta), 2000-2020



Source: EU-LFS weighted data (variable HOMEWORK). Respondents aged 15-64.

Working from home is more prevalent among workers with tertiary education, indicating that individuals in this group tend to hold jobs that are more conducive to remote work than those with lower or upper secondary education, as illustrated in Figure 12. This disparity is particularly evident in 2020, amid the COVID-19 pandemic, with 21% of workers with tertiary education engaged in working from home,

contrasting with 6% for those with upper secondary education and only 3% for those with lower secondary education.

2.2. Intra-EU migration

The movement of people within EU member states is pivotal to the functioning of the EU labour market, as it helps to alleviate economic disparities across countries and regions (Kahanec and Fabo, 2013) and is an important means through which to adjust to labour/skill shortages and respond to demographic change (Zaiceva and Zimmermann, 2008).

The dynamics of intra-EU migration are complex, shaped by factors related to regulatory frameworks, economic conditions and social networks, but also individual characteristics and motivations. For example, individuals may choose to migrate if they expect higher earnings or better employment opportunities abroad than in their home country. This decision is influenced by weighing the expected costs and benefits, which vary according to demographic and socioeconomic factors, and local networks. For example, higher education potentially reduces migration costs and unemployment increases them (Harris and Todaro, 1970; Hadler, 2006; Zaiceva and Zimmermann, 2008; Salamónska and Czeranowska, 2019).

The period 2000 to 2020 is a particularly interesting one in which to study intra-EU migration patterns, as it was marked by the eastern enlargement and also by the global financial crisis, which hit Europe in 2008, with Southern EU countries taking the hardest blows.[1]The first eastern enlargement round in 2004, in particular, spurred fears of wage dumping and a deterioration of employment conditions owing to an influx of (cheap) labour into the European single market (Wagner and Hassel, 2017). However, research on the short-run impact of the eastern enlargement on bordering regions in Germany indicate that these fears were exaggerated as employment and wage effects were minimal and isolated within specific sectors (Braakmann and Vogel, 2011). In addition, Dorn and Zweimüller (2021) find evidence for a gradual equalisation of wages across countries and modest economic benefits from East-West migration for both sending and receiving countries.

The global financial crises and the subsequent recession led to rising unemployment rates across many EU member states. Although rising unemployment typically increases migration pressures, economic instability and financial hardship tend to act as constraints on relocation. In the context of intra-EU migration, the latter effect seemed to have dominated. Not only did former destination countries such as

[1] Brexit and COVID-19 will not be considered in this study as their long-run effects have yet to unfold.

Spain, Italy and Ireland experience drastically reduced migration inflows, but there was also a general temporary slowdown in intra-EU migration (Chaloff et al., 2012).

Although migration rates picked up again over the past decade, intra-EU migration rates still fall significantly behind migration rates within the United States, while cross-regional economic disparities remain comparatively high (Dorn and Zweimüller, 2021). This heterogeneity across EU countries, including cultural and language diversity, poor transferability of qualifications across national education systems, and significant differences in terms of employment conditions, pose considerable challenges towards a more integrated EU labour market (Dorn and Zweimüller, 2021).

2.2.1. Data

Data on migration flows by citizenship were obtained from Eurostat, OECD and ILO, as well as national statistics to fill data gaps in the cases of Germany Poland and Ireland (see Table 4 in Appendix A for details). Population data to derive migration rates were obtained from Eurostat (*demo_pjan*). Remaining data gaps were filled by linear interpolation. Results are presented by the same country groups as before, and by gender. However, owing to lack of data on flows by citizenship, Malta and Cyprus again had to be excluded.

2.2.2. Intra-EU migration flows 2000-2020

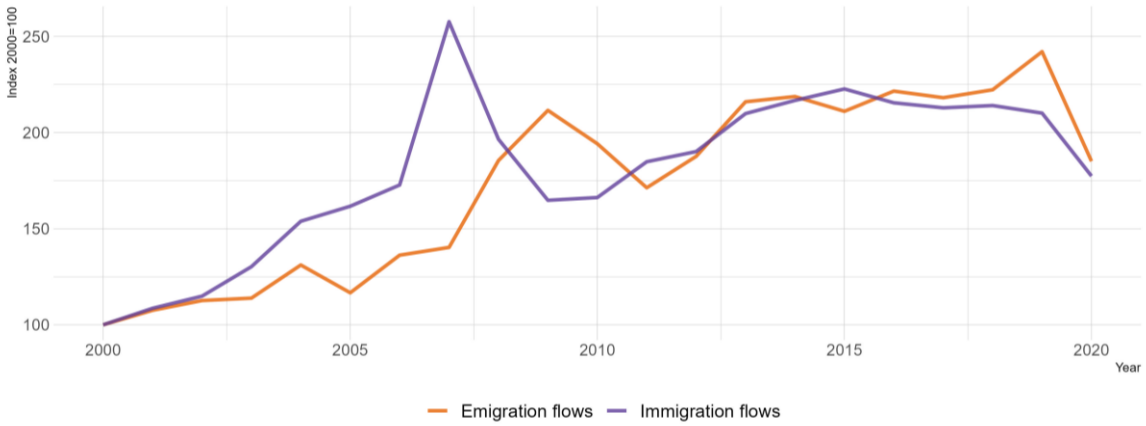
Definition

Eurostat defines immigration as *the action by which a person establishes his or her usual residence in the territory of a Member State for a period that is, or is expected to be, of at least 12 months, having previously been usually resident in another Member State or third country*. Equivalently, emigration is defined as *the action by which a person, having previously been usually resident in the territory of a Member State, ceases to have his or her usual residence in that Member State for a period that is, or is expected to be, of at least 12 months*. Hence migration flow data do not cover cross-border workers or other short-run migration movements.

Overview of intra-EU migration flows from 2000-2020

The following figures provide an overview of general trends regarding immigration and emigration flows of EU27 citizens within the EU.[2]

Figure 13. Intra-EU emigration and immigration flows, 2000-2020 (Index 2000=100)



Source: Eurostat; OECD; ILO; Statistisches Bundesamt; Central Statistics Office (Ireland); Statistics Poland.

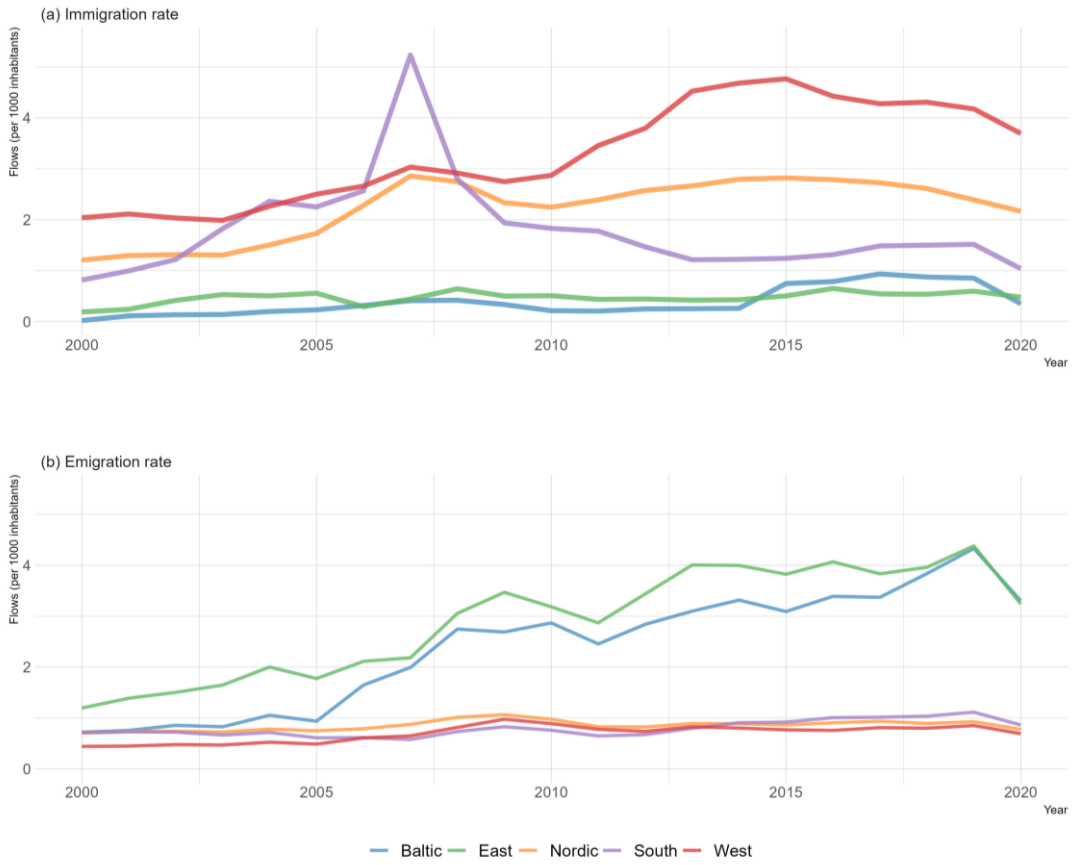
Figure 13 shows that intra-EU immigration and emigration flows increased over the past two decades, which were characterised by the EU enlargement and the global financial crisis. Whereas the former had a positive effect on intra-EU migration, the latter negatively affected immigration and emigration flows.

More precisely, the purple line shows that intra-EU immigration rates increased steadily between 2000 and 2006, with a significant spike in 2007 caused by the first round of the eastern enlargement resulting in immigration rates 2.5 times higher than in 2000. This was followed by a substantial drop due to the effects of the global financial crisis. Although intra-EU immigration flows picked up again after 2010, a slight decrease can be observed from 2015 onwards. The drop in 2020 is due to the travel restrictions following the onset of the COVID-19 pandemic.

The orange solid line shows that intra-EU emigration flows started to increase substantially from 2007 to 2009, followed by a decrease until 2011. From 2012 emigration flows started to increase again and reached a peak in 2019, when the rate was more than 2.25 times higher than in 2000.

[2] To obtain the number of immigrants and emigrants with EU citizenship reported by EU member states, immigration flows are aggregated by the reporting country whereas emigration flows are aggregated by country of citizenship. While flows by citizenship do not necessarily reflect actual movement within the EU (for example, immigrants with EU citizenship may also arrive from countries outside the EU), we refer to migration flows of EU27 citizens reported by EU member states as intra-EU migration.

Figure 14. Intra-EU immigration and emigration rate, by country group, 2000-2020



Source: Eurostat; OECD; ILO; Statistisches Bundesamt; Central Statistics Office (Ireland); Statistics Poland.

Figure 14 shows that immigration and emigration rates vary considerably across different country groups. Whereas immigration flows per 1,000 inhabitants tend to be highest in Western member states, emigration flows per 1,000 inhabitants are highest from the Baltics and Eastern member states.

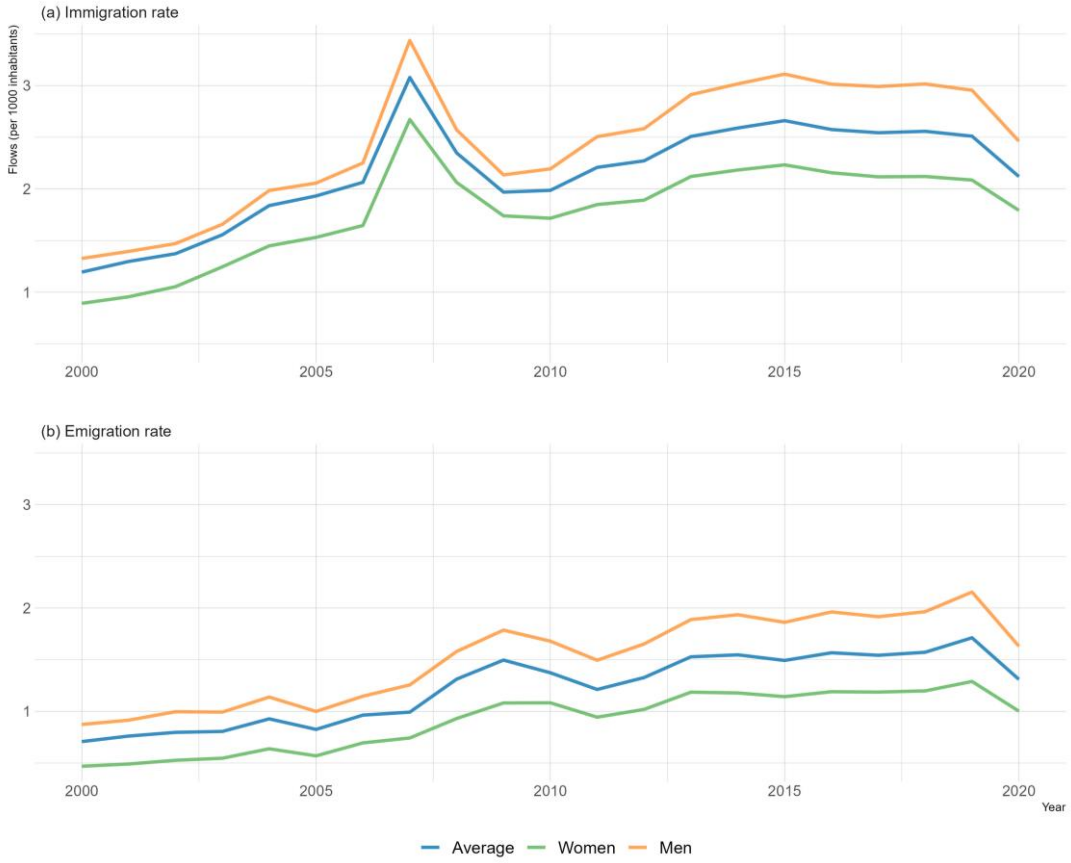
Regarding immigration flows, the top panel in Figure 14 reveals that the early 2000s were marked by an increase in immigration flows to Southern member states, with a marked spike in 2007 following eastern enlargement. However, as the Southern member states were hit hardest by the global financial crisis, they lost popularity as destination countries and the immigration rate declined from more than five per 1,000 inhabitants in 2007 to around 1.5 per 1,000 in 2019. Immigration flows to Western member states increased slowly until 2010, followed by a more pronounced increase between 2010 and 2015, reaching a high of almost five immigrants per 1,000 inhabitants in 2015.

The bottom panel shows that emigration rates are highest in Eastern member states, closely followed by the Baltics. As expected, emigration rates started to rise from 2005 onwards in the Baltics, whereas emigration flows from Eastern member states began to grow more strongly in 2007. A slight slowdown

can be observed in 2011 in emigration from both the Baltics and Eastern member states, but emigration rates recovered quickly, peaking in 2019 at more than four per 1,000 inhabitants.

As can be seen from Figure 15, both immigration and emigration rates tend to be higher for men than for women, but they move in parallel. Although the gender gaps were narrowing pre-2010, immigration and emigration rates for men recovered faster after the drop that followed the financial crisis.

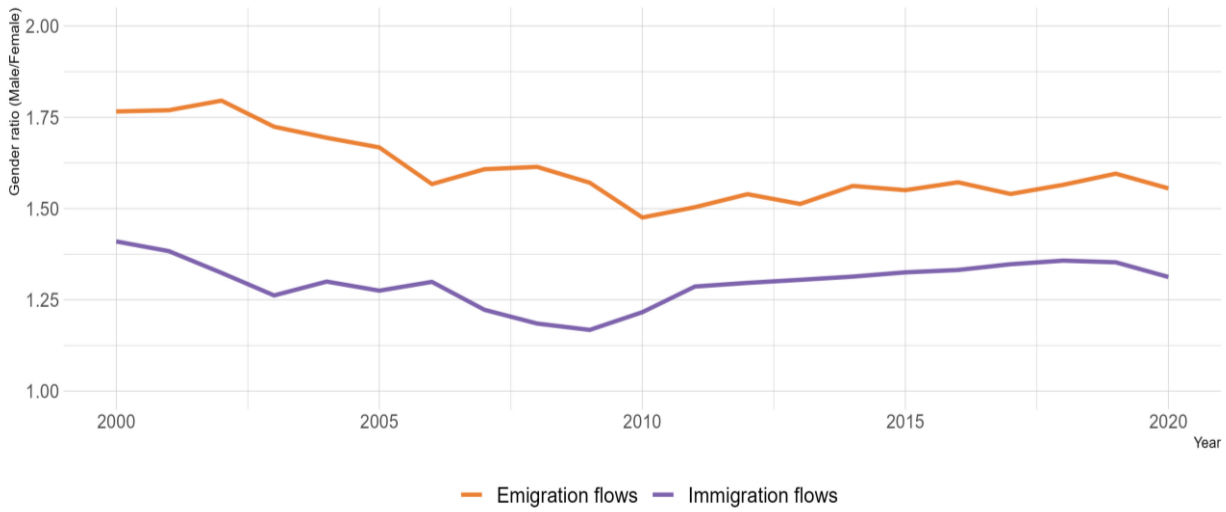
Figure 15. Intra-EU immigration and emigration rate, by gender, 2000-2020



Source: Eurostat; OECD; ILO; Statistisches Bundesamt; Central Statistics Office (Ireland); Statistics Poland.

Figure 16 displays the gender ratio, which provides information on the gender distribution of immigration and emigration flows by comparing the number of male immigrants (emigrants) with the number of female immigrants (emigrants). A value greater than one indicates that more men than women migrated in the year under consideration.

Figure 16. Gender ratio of intra-EU immigrants and emigrants, 2000-2020



Source: Eurostat; OECD; ILO; Statistisches Bundesamt; Central Statistics Office (Ireland); Statistics Poland.

This figure shows that intra-EU migration is dominated by men, with a more pronounced difference for emigration than for immigration flows. In 2000, for example, there were 175 male emigrants for every 100 female emigrants whereas the ratio for immigration flows indicates that there were around 140 male immigrants for every 100 female immigrants.

The figure further reveals that the gender ratio decreased during 2000-2010 for both emigration and immigration flows. However, during 2011-2020 the gender ratio started to increase slightly, but has remained comparatively stable at around 1.5 to 1.6 for emigration flows and around 1.3 to 1.35 for immigration flows.

2.3. Summary

Part I of this study explores trends in atypical work and intra-EU migration from 2000 to 2020.

The descriptive analysis shows that part-time and temporary employment increased until 2007, but dropped in 2008 owing to the global financial crisis, as employers usually release less attached workers first during a recession. From 2010 until 2017, the proportion of temporary workers increased slowly but steadily but has been on decline ever since. The part-time share, however, increased moderately for men and decreased slightly for women, but it nonetheless remains much higher for women (22% in 2020) than for men (6.9% in 2020). The proportions for self-employment and working from home remained generally stable, at around 15% and 5% respectively, but with a sharp increase in the latter in 2020 due to the pandemic.

Significant differences are observed between country groups. Nordic and Western EU countries exhibit higher part-time employment shares and homework rates, while Southern and Eastern EU countries are characterised by higher temporary employment and self-employment shares. Among Southern countries, the part-time employment share nearly doubled between 2003 and 2020, whereas in the Baltics it remained stable, and in Eastern countries it halved between 2000 and 2020. The proportion of temporary employment increased significantly in the Eastern member states until 2014, but has been declining ever since, whereas it remained stable in the Nordics and Western EU countries. In the Baltics, the share of temporary employment is the lowest, and it decreased over the observation period. The self-employment shares declined in both the Eastern and Western EU member states, remained stable in the Baltics and the Nordics, and increased marginally in the Western EU member states. The prevalence of working from home is low across all country groups, with an upward trend in the Nordics, the Baltics, and the Southern and Eastern member states. In the Western EU member states, however, a significant increase in working from home can be observed around the time of the global financial crisis, followed by a sharp drop and then a slight downward trend from 2010 onwards until the onset of the pandemic. Finally, part-time work, temporary work, and self-employment is most prevalent among those with lower secondary education, while working from home is more prevalent among those with tertiary education.

General trends regarding intra-EU migration patterns were shaped by the enlargement process as well as the global financial crisis. Although the eastern enlargement boosted intra-EU migration, migration rates decreased during the financial crisis, and have been growing at a slower pace ever since. The Nordics and Western EU member states are the main destination countries, whereas emigration rates are highest from the Baltics and Eastern EU member states. There are gender differences in terms of levels of migration (with men more mobile than women), however, migration rates develop more or less in parallel for both sexes.

Having outlined the main trends in atypical work and intra-EU migration flows over the period 2000 to 2020, we proceed to examine their interrelationship in Part II of our analysis.

3. PART II: Assessing the interrelationship between atypical work and net migration within the EU

Free movement of people within the EU is one of the defining features of the European single market. This fundamental principle allows citizens of EU member states to move, reside and work freely within the EU, with (hardly any) regulatory restrictions. The EU therefore constitutes a unique migration space, characterised by open borders within the EU, whereas strict controls are maintained for its external borders (Windzio, Teney and Lenkewitz, 2019). From a labour supply perspective, free movement of people facilitates labour mobility and thus reduces labour market frictions, such as skill and geographical mismatch. Moreover, a high degree of labour mobility is expected to improve external labour market adjustment to economic shocks or structural transformations of the labour market, thereby enhancing economic resilience and efficiency within the EU. Consequently, understanding how shifts in labour market structures, such as the changing patterns of atypical work, influence migration flows and vice versa becomes crucial.

Atypical or non-standard employment refers to forms of work that differ from the standard employment relationship, an 'institution built around the permanently, full-time employed male breadwinner working for a fixed employer' (Dingeldey and Gerlitz, 2022, p. 247). This encompasses part-time employment, temporary employment, self-employment and remote work, among others. The rise of atypical work, which started in the 1980s, is closely related to general trends such as the deregulation of labour markets, the expansion of (female) labour supply, globalisation, technological change (Doellgast et al., 2018; Peck and Theodore, 2015; Dingeldey and Gerlitz, 2022).

The relationship between atypical work and migration is highly complex, but surprisingly under-researched. Although there is extensive literature on the relationship between other labour market conditions, such as wages, unemployment and human capital, and migration (for an overview, see Landesmann and Leitner, 2015), surprisingly little has been written on the relationship between atypical work and migration flows. One notable exception is the study by Monastriotis and Sakkas (2021), which analyses the relationship between employment flexibility and inter-regional migration. Their findings suggest that employment flexibility, such as part-time work and temporary work, directly reduces inter-regional outmigration, but also reduces it indirectly by weakening the responsiveness of outmigration to unemployment. This suggests that internal labour market adjustment (via employment flexibility) in response to unemployment tends to substitute for external labour market adjustment (via inter-regional

outmigration). Consequently, employment flexibility reduces the dynamics that could reduce cross-regional disparities, which impairs the functioning of the national labour market.

Given the cross-country disparities regarding the prevalence and developments of atypical work, as documented in Part I, it is therefore crucial to understand the relationship between different forms of atypical work and intra-EU migration. We thus extend the literature on intra-EU migration by shedding light on the role of different forms of atypical work and whether they increase or decrease migration dynamics and vice versa.

To be precise, we investigate the following research questions:

- What is the impact of different forms of atypical work (part-time work, self-employment, short fixed-term work) on intra-EU migration?
- What is the impact of net migration on these different forms of atypical work differentials?

To do so, we closely follow the approach in Landesmann and Leitner (2015) and use country-level panel data from Eurostat, OECD and ILO and estimate a panel vector autoregressive model (pVAR), which allows us to simultaneously analyse the dynamic interdependencies among multiple time series variables. We can therefore estimate how differences in labour market conditions affect bilateral net migration and how net migration affects differences in labour market conditions. Apart from atypical work, we study the role of unemployment rates, real wages, activity rates, human capital endowments, union densities and employment protection legislation.

The remainder of Part II is structured as follows. Section 3.1 provides a literature review. Section 3.2 describes the data and methodology used for the econometric analysis. Section 3.3 presents the results. Section 3.4 sets out our conclusions.

3.1. Literature review

The drivers and consequences of international migration have been studied intensively since the late 19th century across different disciplines, such as economics, geography, anthropology, demography and sociology. De Haas (2021) categorises the early migration theories that have emerged from the research carried out within these different disciplines into two paradigms of social theory – the *functionalist* and *historical-structural* paradigms.

The *functionalist* paradigm encompasses those theories that understand migration as an optimisation strategy, where individuals or households make migration decisions based on weighing the costs against the (expected) benefits. This applies to early push-pull models from geography (Lee, 1966), the highly

influential neoclassical migration theory from economics (Harris and Todero, 1970), the new economics of migration theory (Stark 1978; 1991), and migration network theories popularised in sociology (de Haas, 2021).

The main assumption underlying neoclassical migration theory is that migration is driven by differences in labour market conditions between countries. Macroeconomic theories focus on wage differentials caused by differences in relative supply of and relative demand for labour between countries, with workers moving from low-wage to high-wage countries. These migration flows continue as long as wage differentials persist but cease when wage rates converge (Massey et al., 1993).

From a microeconomic perspective, neoclassical migration theory assumes that utility-maximising individuals compare the economic conditions in their current country of residence to those in the destination country. Rational individuals are assumed to migrate if they expect to improve their economic situation by weighing the costs against the (expected) benefits of migration (Massey et al., 1993; Hadler, 2006). Consequently, macro-level determinants such as wage differentials and differentials in employment opportunities are considered as main drivers of migration (Harris and Todaro, 1970). However, within countries, individuals show different propensities to migrate, depending on their human capital endowments (e.g. education, work experience), and social, economic and structural constraints (Sjaastad, 1962; de Haas, 2021). These factors are accounted for in neoclassical migration theory through their effect on the time-discounted net return to migration (Massey et al., 1993; Borjas, 1987, 1991).

The new economics of labour migration (NELM) theory developed by Stark (1978; 1991) shifts the perspective from optimising individuals to optimising households. NELM understands migration as the collective decision of a family or household that seeks to minimise risks to the household in the presence of market failures. For example, if insurance mechanisms against local risks are insufficient (such as in the case of a poorly developed welfare state), some household members are sent abroad so that, should income loss of household members in the home country occur, the household can still rely on migrant remittances (Massey et al., 1993). Moreover, NELM emphasises the role of relative deprivation as a driver of migration – households want to improve their relative economic position compared with some reference group. NELM can therefore help to explain migration patterns that persist even in the absence of significant wage differentials.

Migration network theory highlights the path dependency of migration patterns and helps to explain the emergence of chain migration (Hadler, 2006). Migrant networks refer to 'sets of interpersonal ties that link migrants, former migrants, and non-migrants in origin and destination areas through the bonds of

kinship, friendship, and shared community origin' (Massey, 1988 p. 396). Migrants usually maintain social ties with friends and family in the country of origin, thereby establishing a social network between the home country and the destination country. These networks are assumed to significantly reduce costs related to migration – not only information costs, but also emotional or psychological costs – ultimately leading to an agglomeration of migrants from the same country of origin (Massey et al., 1993; Ryan, 2004).

Although functional migration theories have proven to be particularly useful to explain mobility when there are relatively few external constraints, such as in the case of intra-EU migration, they are ill-equipped to account for the influence of structural change (de Haas, 2021). For example, much migration to the EU in the second half of the 20th century was driven by active government efforts to recruit foreign labour to combat labour shortages, especially in the secondary labour market segment (Piore, 1979).

Such structural drivers of migration are addressed by theories falling under the *historical-structural* paradigm (or conflict theory), which understands migration as 'being shaped by structural economic and power inequalities, both within and between societies, as well as the ways in which migration plays a key role in reproducing and reinforcing such inequalities' (de Haas, 2021, p. 4). De Haas (2021) places within this paradigm dependency theory (Frank, 1966), world systems theory (Wallerstein, 1974; 1980) and dual labour market theory (Piore, 1979), among others. These theories emphasise how existing power imbalances shape migration patterns as the powerful (businesses) exploit the powerless (cheap labour), leaving little to no role for wage or employment differentials as a determinant of migration flows.

In the context of atypical work, the dual labour market hypothesis is of particular interest. According to this theory, labour markets in developed economies provide primary and secondary jobs, with the latter characterised by lower wages, lower social status, lower career prospects and overall greater instability. Piore (1986) argues that migrant workers from less developed economies have different aspirations and motivations than native workers, in particular if they see themselves as temporary migrants, and therefore settle for the secondary jobs. Although some migrant workers return, others stay and start a family in the destination country, with their children ultimately competing for primary jobs, thereby 're-creating a vacuum in the secondary sector' (Piore, 1986, p. 25). Thus, in contrast to neoclassical migration theories, migration flows do not cease even in the absence of wage differentials because of the existence of secondary jobs that cannot be filled with native or second-generation migrants.

Although all these theories of migration have their merits, none of them provides a general theory of migration. However, elements of the different theories can be used to explain empirical observations. For example, in line with neoclassical theories of migration, the empirical literature in economics consistently

points toward wage differentials (e.g. Clark et al., 2007; Ortega and Peri, 2009), unemployment differentials (e.g. Harris and Todaro, 1970; Hatton and Tani, 2005; Islam, 2007; Boubtane et al., 2013), human capital differentials (e.g. Borjas, 1987; 1991), and migration networks in the destination country (e.g. Clark et al., 2007; Pedersen et al., 2008) as important drivers of migration.

There is considerably less understanding about the role of atypical work as a (potential) driver of migration. Monastiriotis and Sakkas (2021) study atypical employment – which they conceptualise as flexible employment – and its relationship with cross-regional migration as a means of labour market adjustment to labour market frictions. From a theoretical perspective, the relationship between greater labour market flexibility and migration is ambiguous, and Monastiriotis and Sakkas (2021) differentiate between a *demand-side* and a *supply-side* mechanism. On the one hand, increased flexibility may help to stabilise local labour market disequilibria, thereby reducing the necessity to move. In other words, flexibility facilitates internal adjustment by lowering unemployment (e.g. introduction of short-time work schemes to prevent mass layoffs in times of economic crisis) and increasing employment opportunities in the local labour market (e.g. job creation through self-employment). This, in turn, reduces the *demand for outmigration* in the overall economy. On the other hand, higher levels of flexibility are associated with weakened labour market attachment. As a result, the opportunity cost of migration decreases as a consequence of the reduced employment stability in the local job market, leading to an increased *supply of outmigrants*. The analysis by Monastiriotis and Sakkas (2021) of cross-regional migration in 11 EU countries shows that greater levels of employment flexibility decrease outmigration, supporting the demand-side mechanism. In addition, they find that the role of unemployment as a push factor is reduced by greater employment flexibility. These results suggest that internal adjustment processes (via employment flexibility) dominate external adjustment processes (via outmigration).

Similar to the role of atypical work, evidence on the impact of labour market institutions on migration is scarce although it is reasonable to assume that labour market institutions, such as employment protection legislation or union density, may influence the appeal of destination country to immigrants. However, the direction of the impact is uncertain. While strict employment protection legislation and strong unions typically lead to improved employment quality, thus attracting immigrants, they may also impede immigrant labour market entry (Geis et al., 2013). Geis et al. (2013) find some evidence of this "insider-outsider" dynamic and show that higher union density tends to discourage immigration to a country, but encourages those who have already immigrated to stay. However, their findings on employment protection legislation are inconclusive.

Regarding the consequences of migration, much of the literature focuses on the impact of migration on the native population and economic growth (see also Kerr and Kerr, 2011). Research on the impact of outmigration on sending countries finds that high outward mobility reduces local unemployment rates and has positive economic effects arising from remittances (Katseli et al., 2006; Ratha et al., 2011; Imai et al., 2014). However, there are also potential negative effects related to 'brain drain', with the most educated leaving the country in pursuit of better employment opportunities (see also Beine et al., 2006; Bhardwaj and Sharma, 2023).

Studies on the effects of immigration in the receiving countries highlight that migration does not have long-lasting negative effects for the native population (see, for example, Kerr and Kerr, 2011; Kahanec and Zimmermann, 2010). However, depending on the skill endowment and the degree of complementarity/substitutability among the skills of immigrants and of natives, different skill groups are differently affected (Borjas, 2005). But owing to imperfect transferability of human capital between countries, migrants may not actually compete with similarly skilled natives but instead settle for jobs below their skill level, which is reflected in a higher prevalence of over-qualification among migrants than among natives (Chiswick and Miller, 2009; Fernández and Ortega, 2008). The large body of research on the labour market integration of immigrants further highlights that recent migrants often earn lower wages and are more likely to be unemployed or less likely to be in stable employment, although these gaps in labour market outcomes between natives and migrants tend to diminish over time (see, for example, Constant and Massey, 2005; Lubotsky, 2007). Despite some convergence of employment rates and wages between immigrants and natives, the incidence of non-standard employment is persistently higher among immigrants than natives (Eurostat, 2023).

Finally, macroeconomic studies on the productivity effect of migration find mixed results, with some studies identifying small but positive productivity effects (e.g. Peri, 2012; Boubtane et al., 2013), while others find no effects (Ortega and Peri, 2009).

3.2. Data, variables and methodology

3.2.1. Data and variables

To analyse the interrelationship between labour market conditions, atypical work, and net migration, we construct a panel data set covering as many countries and as many years as possible. We combine country-level data from Eurostat, ILO and OECD. We further draw on national sources and use linear interpolation to fill remaining data gaps. All variables and their sources are described in detail in Table 4 in Appendix A. The choice of variables follows the theoretical and empirical literature discussed in the literature review.

Net migration

The main variable of interest is bilateral migration flows. However, data on migration flows between countries on the level of destination and origin is scarce. Recent research by Abel and Cohen (2019) presents various methods based on stock differencing to estimate five-year bilateral migration flows for 200 countries using information on migration stocks by country of birth. Other research uses yearly immigration and emigration flow data (Mitze, 2012; Landesmann and Leitner, 2015) as these are not distorted by return migration, deaths or naturalisation (Beine et al., 2016).

As we are interested in intra-EU migration patterns, we can draw on comparable Eurostat data on immigration and emigration flows by citizenship. Because of missing data on migration flows by citizenship for Poland and Germany, national sources were used for these countries. If feasible, remaining data gaps were filled by linear interpolation. Net migration is then derived as the differences between the number of immigrants and the number of emigrants by country of citizenship. The reporting country represents the receiving country, and the country of citizenship is assumed to represent the sending country.[3]

[3] In contrast to part I, which presents aggregated migration flow data, part II requires immigration and emigration flows for each country differentiated by each individual country of citizenship. This reduces data availability significantly.

Atypical work[4]

In this second part, three indicators of atypical or non-standard work are considered: the number of self-declared part-time workers as a percentage of total employment; the self-employment share; and the number of employees with short fixed-term contracts[5] (duration less than three months). In terms of labour market flexibility, part-time and temporary work can be considered as numerical and self-employment as functional dimensions of flexibility. All data are obtained from Eurostat.

Labour market conditions

Data on labour market conditions are obtained from Eurostat. Following the theoretical and empirical literature on the drivers of migration, we use activity rates, unemployment rates, real wages and a human capital indicator. The latter is constructed based on the simple mean of three indicators capturing the share of upper secondary and post-secondary non-tertiary education among the age group 15 to 19; the number of people aged 25 to 29 with tertiary education as a ratio of the total population in this age group; and the number of people aged 15 to 64 with tertiary education as a percentage of total employment. The inclusion of labour productivity was also considered, but owing to its almost perfect correlation with real wages (see Table 6 and Table 7 in Appendix A), it was dropped from the analysis.

Labour market institutions

To study labour market institutions, we include trade union densities obtained from ILO and a synthetic indicator developed by the OECD, measuring the strictness of dismissal regulations, i.e. employment protection legislation (see OECD, 2020). Each of these variables is available only for (different) subsets of countries.

Based on data availability, we therefore construct two panel data sets, with their main characteristics described in Table 1, where 'N' refers to the number of country-pairs and 'T' refers to the number of years.

[4] Note that atypical work is not equivalent to the concept of precarious work. Atypical work is defined as any form of work that is different from the traditional full-time, permanent employment model, whereas precarious work consists of work arrangements characterised by instability and insecurity, which can be encountered in atypical as well as traditional forms of work.

[5] We initially considered the share of employees with a limited duration contract. However, the Im-Pesaran-Shin (IPS) unit test suggested non-stationarity, so we replaced it with the short fixed-term share.

Table 1. Sample composition and characteristics

Sample	Period	Countries covered	Variables	N	T	Obs.
A. Main sample	2004-2019	AT, BE, CZ, DE, DK, EE, ES, FI, HU, IT, LT, LU, NL, PL, SE, SI, SK	Net migration (MNET)	272	16	4352
			Labour market conditions (RW, UR, AR, HC)			
			Atypical employment (PT, SELF, FIX)			
B. Institutions sample	2003-2018	AT, CZ, DE, DK, FI, IT, NL, SE, SK	Net migration (MNET)	72	16	1152
			Labour market conditions (RW, UR, AR, HC)			
			Atypical employment (PT, SELF, FIX)			

3.2.2. Methods: Panel vector autoregressive model

The interrelationships between net migration and atypical work and other labour market indicators are analysed using a panel vector autoregressive (pVAR) model. This approach models current observations of a variable as a function of its past observations as well as of past observations of all other variables in the system. Hence, it allows simultaneous estimation of the dynamic interrelationships between a set of endogenous variables (see also Landesmann and Leitner, 2015).

Following Mitze (2012) and Landesmann and Leitner (2015), net migration between countries for the countries and years covered by sample A can be specified as follows:

$$MNET_{ij,t} = \alpha_{10} + \alpha_{11}(L)MNET_{ij,t-1} + \alpha_{12}(L)RW_{ij,t-1} + \alpha_{13}(L)UR_{ij,t-1} + \alpha_{14}(L)AR_{ij,t-1} + \alpha_{15}(L)HC_{ij,t-1} + \alpha_{16}(L)PT_{ij,t-1} + \alpha_{17}(L)SELF_{ij,t-1} + \alpha_{18}(L)FIX_{ij,t-1} + \varepsilon_{ij,t} \quad (1A)$$

(L) is the lag operator, $MNETij,t$ refers to net migration (as defined above) between the sending country i and receiving country j at time t. Before entering the model, net migration is standardised by applying the arctan transformation (to stabilise the variance) and the min-max normalisation (to scale to a common range). All independent variables, except for past net migration, are expressed as logged differential between the sending country i and receiving country j at time $t-1$. Hence, $RW_{ij,t-1}$ denotes the real wage differential between the sending and the receiving country and is equivalent to $\log(RW_{i,t-1}) - \log(RW_{j,t-1})$. The unemployment rate differential $UR_{ij,t-1}$, the activity rate differential $AR_{ij,t-1}$, the human capital differential $HC_{ij,t-1}$, the part-time share differential $PT_{ij,t-1}$, the self-employment share

differential $SELF_{ij,t-1}$, and the short fixed-term share differential $FIX_{ij,t-1}$ between the sending and the receiving country are defined analogously as $\log(x_{i,t-1}) - \log(x_{j,t-1})$.

To account for the impact of net migration (together with other variables) on labour market outcomes, the following systems of equations is specified:

$$RW_{ij,t} = \alpha_{20} + \alpha_{21}MNET_{ij,t-1} + \alpha_{22}(L)RW_{ij,t-1} + \alpha_{23}(L)UR_{ij,t-1} + \alpha_{24}(L)AR_{ij,t-1} + \alpha_{25}(L)HC_{ij,t-1} + \alpha_{26}(L)PT_{ij,t-1} + \alpha_{27}(L)SELF_{ij,t-1} + \alpha_{28}(L)FIX_{ij,t-1} + \varepsilon_{ij,t} \quad (2A)$$

$$UR_{ij,t} = \alpha_{30} + \alpha_{31}MNET_{ij,t-1} + \alpha_{32}(L)RW_{ij,t-1} + \alpha_{33}(L)UR_{ij,t-1} + \alpha_{34}(L)AR_{ij,t-1} + \alpha_{35}(L)HC_{ij,t-1} + \alpha_{36}(L)PT_{ij,t-1} + \alpha_{37}(L)SELF_{ij,t-1} + \alpha_{38}(L)FIX_{ij,t-1} + \varepsilon_{ij,t} \quad (3A)$$

$$AR_{ij,t} = \alpha_{40} + \alpha_{41}MNET_{ij,t-1} + \alpha_{42}(L)RW_{ij,t-1} + \alpha_{43}(L)UR_{ij,t-1} + \alpha_{44}(L)AR_{ij,t-1} + \alpha_{45}(L)HC_{ij,t-1} + \alpha_{46}(L)PT_{ij,t-1} + \alpha_{47}(L)SELF_{ij,t-1} + \alpha_{48}(L)FIX_{ij,t-1} + \varepsilon_{ij,t} \quad (4A)$$

$$HC_{ij,t} = \alpha_{50} + \alpha_{51}MNET_{ij,t-1} + \alpha_{52}(L)RW_{ij,t-1} + \alpha_{53}(L)UR_{ij,t-1} + \alpha_{54}(L)AR_{ij,t-1} + \alpha_{55}(L)HC_{ij,t-1} + \alpha_{56}(L)PT_{ij,t-1} + \alpha_{57}(L)SELF_{ij,t-1} + \alpha_{58}(L)FIX_{ij,t-1} + \varepsilon_{ij,t} \quad (5A)$$

$$PT_{ij,t} = \alpha_{60} + \alpha_{61}MNET_{ij,t-1} + \alpha_{62}(L)RW_{ij,t-1} + \alpha_{63}(L)UR_{ij,t-1} + \alpha_{64}(L)AR_{ij,t-1} + \alpha_{65}(L)HC_{ij,t-1} + \alpha_{66}(L)PT_{ij,t-1} + \alpha_{67}(L)SELF_{ij,t-1} + \alpha_{68}(L)FIX_{ij,t-1} + \varepsilon_{ij,t} \quad (6A)$$

$$SELF_{ij,t} = \alpha_{70} + \alpha_{71}MNET_{ij,t-1} + \alpha_{72}(L)RW_{ij,t-1} + \alpha_{73}(L)UR_{ij,t-1} + \alpha_{74}(L)AR_{ij,t-1} + \alpha_{75}(L)HC_{ij,t-1} + \alpha_{76}(L)PT_{ij,t-1} + \alpha_{77}(L)SELF_{ij,t-1} + \alpha_{78}(L)FIX_{ij,t-1} + \varepsilon_{ij,t} \quad (7A)$$

$$FIX_{ij,t} = \alpha_{80} + \alpha_{81}MNET_{ij,t-1} + \alpha_{82}(L)RW_{ij,t-1} + \alpha_{83}(L)UR_{ij,t-1} + \alpha_{84}(L)AR_{ij,t-1} + \alpha_{85}(L)HC_{ij,t-1} + \alpha_{86}(L)PT_{ij,t-1} + \alpha_{57}(L)SELF_{ij,t-1} + \alpha_{88}(L)FIX_{ij,t-1} + \varepsilon_{ij,t} \quad (8A)$$

The model described by the system of equations (1A) to (8A) will be referred to as model A henceforth.

In addition to model A, a second model, which includes policy variables is specified for the countries and years covered by sample B:

$$\begin{aligned} MNET_{ij,t} = \alpha_{10} + \alpha_{11}(L)\Delta MNET_{ij,t-1} + \alpha_{12}(L)\Delta RW_{ij,t-1} + \alpha_{13}(L)\Delta UR_{ij,t-1} \\ + \alpha_{14}(L)\Delta AR_{ij,t-1} + \alpha_{15}(L)\Delta HC_{ij,t-1} + \alpha_{16}(L)\Delta PT_{ij,t-1} + \alpha_{17}(L)\Delta SELF_{ij,t-1} \\ + \alpha_{18}(L)\Delta FIX_{ij,t-1} + \alpha_{19}(L)\Delta UDENS_{ij,t-1} + \alpha_{110}(L)\Delta EPL_{ij,t-1} + \varepsilon_{ij,t} \end{aligned} \quad (1B)$$

All variables are defined as before, with $UDENS_{ij,t-1}$ representing the union density differential and $EPL_{ij,t-1}$ denoting the employment protection legislation differential between the sending and the receiving country. However, as the Im-Pesaran-Shin (IPS) unit root test indicates that both union density and employment protection legislation are non-stationary, all variables enter the model (1B) in first differences as indicated by Δ. The remaining equations in model B follow a similar structure to those describing model A, but with the addition of the union density differential and the employment legislation differential (omitted here for brevity). This model will be referred to as model B from this point on.

Both models A and B are estimated via the generalised method of moments (GMM). To control for country-fixed effects, the Helmert forward mean-differencing transformation as proposed by Arellano and Bover (1995) is applied to all variables before estimation.[6] The Helmert transformation removes country-specific fixed effects, while preserving the orthogonality (i.e. independence) between endogenous variables and their lags (see also Kolev and Āzacis, 2023). This property ensures that the latter can be used as instruments in GMM estimations.

Based on the literature review, we summarise the expected relationships between the explanatory variables and net migration from the sending country to the receiving country in Table 2.

[6] The estimations were conducted in STATA 17 using the package pvar2, an extension of pvar developed in Abrigo and Love (2016), which was written by Ryan A. Decker. This package estimates a pVAR as described in Holtz-Eakin et al. (1998).

Table 2. Expected relationships between explanatory variables and net migration and possible explanations

Explanatory variable	Dependent variable	Expected sign	Possible explanations
Past net migration	Net migration	positive	Former net migration from sending to receiving country induces further net migration from sending to receiving country, owing to network effects.
Real wage level differential	Net migration	negative	When the sending country experiences a relative increase in real wage levels, net migration from sending to receiving country decreases.
Unemployment rate differential	Net migration	positive	When the sending country experiences a relative increase in unemployment, net migration from sending to receiving country tends to rise.
Activity rate differential	Net migration	positive	When the sending country experiences a relative increase in the activity rate (=expansion of labour supply), net migration from sending to receiving country tends to rise.
Human capital index differential	Net migration	positive	When the sending country experiences a relative increase in human capital endowments, net migration from sending to receiving country may rise (according to human capital theory).
		negative	When the sending country experiences a relative increase in human capital endowments, net migration from sending to receiving country may decrease (decreased complementarity).
Part-time share differential	Net migration	positive	When the sending country experiences a relative increase in part-time employment, net migration from the sending to the receiving country may increase, because, for example, part-time workers tend to be less attached to the labour market and/or they may expect more opportunities for full-time employment in the receiving country.
		negative	When the sending country experiences a relative increase in the part-time share, net migration from the sending to the receiving country may decrease owing to improved internal adjustment associated with greater labour market flexibility, decreasing the necessity of external adjustment. From a dual labour market perspective, it might indicate that a relative decrease of the secondary segment in the receiving country reduces its demand for migrant workers.
Self-employment differential	Net migration	positive	When the sending country experiences a relative increase in self-employment, net migration from the sending to the receiving country may rise, because, for example, self-employed individuals tend to be less attached to the local labour market and/or they may expect more secure employment prospects in the receiving country.
		negative	When the sending country experiences a relative increase in self-employment, net migration from the sending to the receiving country may decrease owing to improved internal adjustment associated with greater labour market flexibility, decreasing the necessity of external adjustment. From a dual labour market perspective, it might indicate that a relative decrease of the secondary segment in the receiving country decreases its demand for migrant workers (thus reducing net migration).

Contd.

Table 2. Continued

Explanatory variable	Dependent variable	Expected sign	Possible explanations
Short fixed-term share differential	Net migration	positive	When the sending country experiences a relative increase in the share of short fixed-term employment, net migration from the sending to the receiving country may rise because temporary workers are less attached to the labour market and/or they may expect more secure employment opportunities in the receiving country.
		negative	When the sending country experiences a relative increase in the share of short fixed-term employment, net migration from the sending to the receiving country may decrease owing to improved internal adjustment associated with greater flexibility, decreasing the necessity of external adjustment. It may also decrease because temporary workers lack employment stability and therefore also lack the economic resources to migrate. From a dual labour market perspective, it might indicate that a relative decrease of the secondary segment in the receiving country decreases its demand for migrant workers (thus reducing net migration).
Union density differential	Net migration	positive	When the sending country experiences a relative increase in union density, net migration from the sending country to the receiving country may increase owing to a weakening of internal adjustment processes (increased protection of 'insiders' against 'outsiders').
		negative	When the sending country experiences a relative increase in union density, net migration from the sending country to the receiving country may decrease owing to an improvement in employment conditions in the sending country.
Employment protection legislation differential	Net migration	positive	When the sending country experiences a relative increase in strictness of employment protection, net migration from the sending country to the receiving country may increase owing to a weakening of internal adjustment processes.
		negative	When the sending country experiences a relative increase in strictness of employment protection, net migration from the sending country to the receiving country may decrease owing to improved employment conditions in the home country.

As for the impact of increased net migration from the sending country to the receiving country on atypical employment, possible relationships are summarised in Table 3:

Table 3. Expected relationships between net migration and atypical employment differentials

Explanatory variable	Dependent variable	Expected sign	Possible explanations
Net migration	Part-time share differential	positive	When net migration from sending country to receiving country increases, the sending country may experience a relative increase in the part-time share, if external adjustment (increased net migration) and internal adjustment (increased flexibility) are complementary.
		negative	When net migration from sending country to receiving country increases, the sending country may experience a relative decrease in the part-time share because the reduction of labour supply may be compensated for through an increase in work hours for those who stayed. It may also suggest that, in line with dual labour market theory, the influx of migrants increases the size of the secondary labour market segment in the receiving country, leading to a relative decrease of the part-time share in the sending country.
Net migration	Self-employment share differential	positive	When net migration from sending country to receiving country increases, the sending country may experience a relative increase in the self-employment share, if external adjustment and internal adjustment are complementary.
		negative	When net migration from sending country to receiving country increases, the sending country may experience a relative decrease in the self-employment share because the decrease in labour supply might be compensated for through increased employment flexibility.
Net migration	Short fixed-term share differential	positive	When net migration from sending country to receiving country increases, the sending country may experience a relative increase in the short fixed-term share, if external adjustment and internal adjustment are complementary.
		negative	When net migration from sending country to receiving country increases, the sending country may experience a relative decrease in the short fixed-term share, if external adjustment and internal adjustment are substitutes. It may also suggest that the influx of migrants increases the size of the secondary labour market segment in the receiving country (equivalent to a relative decrease in the sending country).

3.3. Results

In this section, we present the main results derived from the estimation of the pVAR models using impulse response functions (IRFs) and the forecast error variance decomposition (FEVD) matrix.[7]

IRFs are useful to show how one variable dynamically affects the evolution of other variables in the system. The IRFs are presented graphically, with each graph plotting the response of a variable (e.g. net migration) to a one standard deviation shock in another variable (e.g. part-time share differential), holding all other shocks equal to zero.

The FEVD breaks down the variance of forecast errors into contributions from specific exogenous shocks. It therefore shows the importance of a shock in explaining variable variations in a model and its evolution over time. We compare the contributions of labour market shocks to net migration and the contribution of net migration shocks to atypical employment differentials after five and 10 years, respectively.

3.3.1. Evidence from Sample A

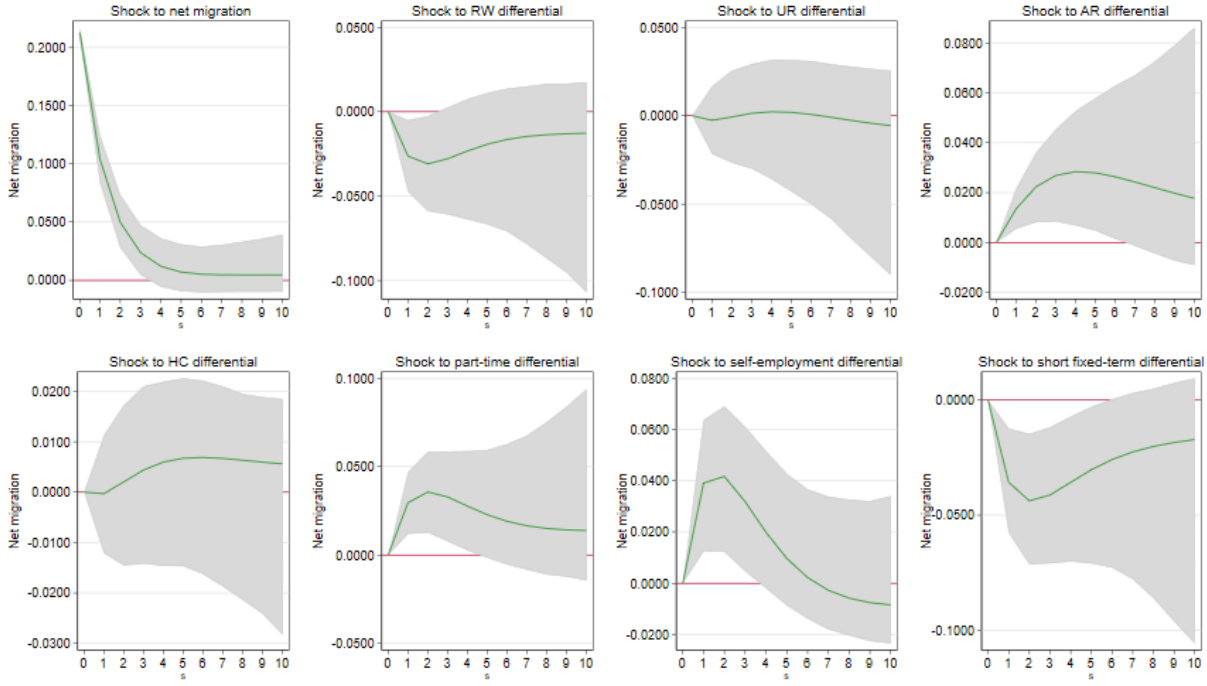
The IRFs in Figure 17 show the response of net migration to different labour market shocks for a period of 10 years.

The main findings on standard labour market variables are in line with neoclassical theories of migration and empirical results found in the literature.

The first panel in the top row in Figure 17 shows that past net migration flows induce further net migration flows, with the response fading out after four periods, which is in line with network theories of migration. The second panel shows that a reduction of the real wage differential reduces net migration in the short run, i.e. higher relative wages in the sending country increase the incentive to stay. The third panel shows no statistically significant effect of the unemployment rate differential on net migration. The fourth panel indicates that a reduction in the activity rate differential, i.e. a relative increase (decrease) of the activity rate in the sending (receiving) country, encourages net migration persistently. This indicates that net migration increases in the presence of tightening labour markets. The first panel in the second row shows that a shock to the human capital differential is not statistically significant.

[7] The regression tables can be found in Appendix A (Table 9 and Table 10), but will not be discussed in greater detail here.

Figure 17. Sample A – IRFs – Response of net migration to labour market shocks: full model

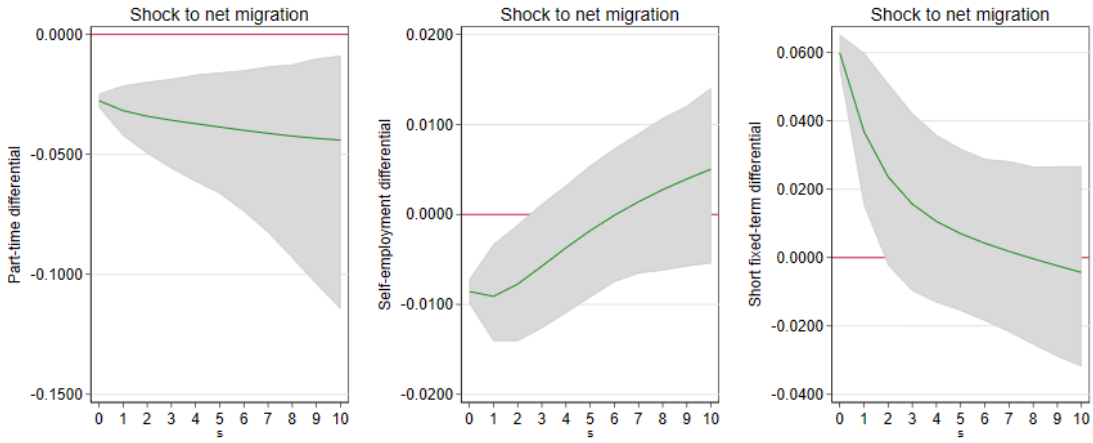


Note: The green line shows the impulse response, the grey area represents the 95% confidence interval, and errors are derived from a 1,000-run Monte Carlo simulation.

As for the potentially ambiguous relationships between atypical employment and net migration, we find support for different mechanisms, depending on the form of non-standard employment. The second panel in the second row shows that a one-time reduction of the part-time share differential, i.e. a relative increase (decrease) of the part-time share in the sending (receiving) country, increases net migration. This supports the supply-side mechanism described in Monastiriotis and Sakkas (2021), namely that greater labour market flexibility facilitates labour mobility because of weaker labour market attachment of part-time workers. Similarly, the third panel in the second row shows that a relative increase of the self-employment share in the sending country facilitates labour mobility.

In contrast to the self-employment and part-time share differentials, a one-time shock to the short fixed-term differential has a negative effect on net migration. This supports the demand-side mechanism discussed by Monastiriotis and Sakkas (2021), i.e. a relative increase of the short fixed-term share in the sending country might facilitate internal adjustment processes, thereby reducing the necessity of external adjustment via outmigration. However, from a dual labour market perspective, it might also indicate that a relative decrease of the secondary segment in the receiving country decreases its demand for migrant workers (thus reducing net migration).

Figure 18. Sample A – IRFs – Response of atypical employment to net migration shocks: full model



Note: The green line shows the impulse response, the grey area represents the 95% confidence interval, and errors are derived from a 1,000-run Monte Carlo simulation.

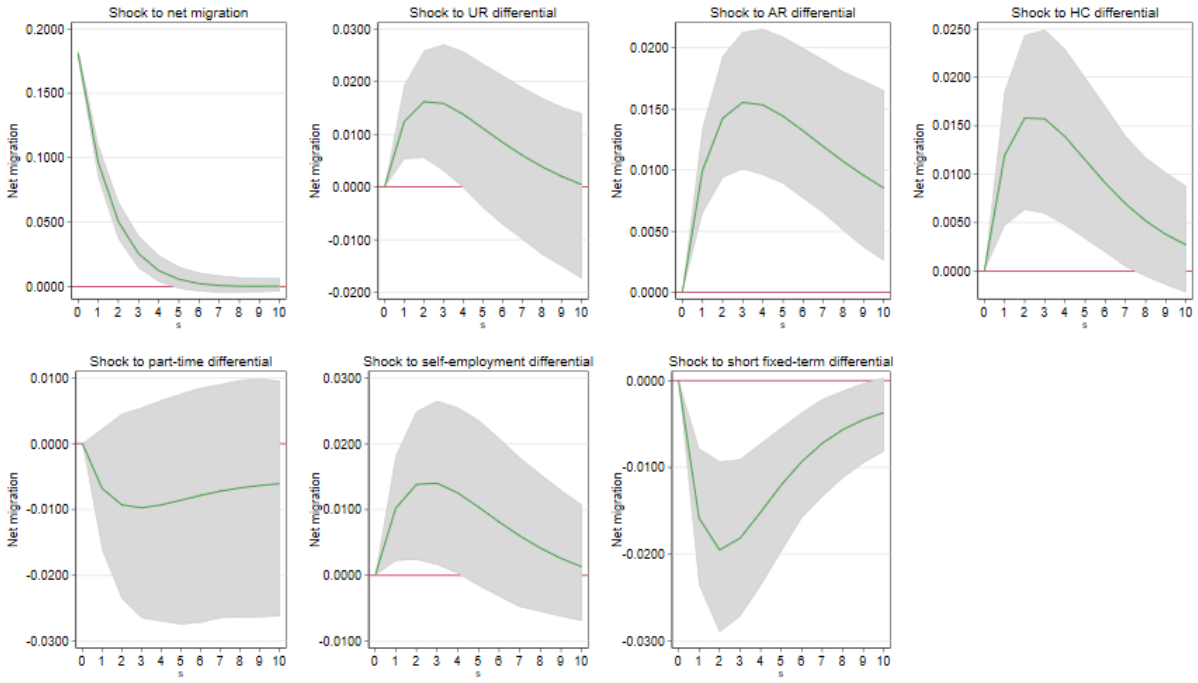
Figure 18 presents the response of atypical employment differentials to a one-time shock to net migration, i.e. an increase in migration from the sending to the receiving country. The first panel shows that a shock to net migration persistently reduces the part-time differential between the sending and the receiving country. Hence, increased migration flows from the sending to the receiving country reduce the relative part-time share in the sending country while increasing the relative part-time share in the receiving country. This is in line with the dual labour market hypothesis, given the long-lasting statistically significant effect. Similarly, a shock to net migration reduces the self-employment differential but in contrast to the effect on the part-time share differential, it is only statistically significant initially.

The effect of net migration on the short fixed-term differential, however, is positive, i.e. the short fixed-term share increases in the sending country relative to the receiving country. This effect is only statistically significant initially. This indicates that in the short run, net emigration induces a relative increase in temporal employment flexibility in the sending country, suggesting that the relative reduction in the labour supply in the sending country is counterbalanced by increasing labour market flexibility.

Robustness checks[8]

Given the high correlation between the part-time share and real wages, we estimated two alternative specifications of model A, where each variable was left out one at a time to see how this affected the results.

Figure 19. Sample A – IRFs – Response of net migration to labour market shocks: reduced model (no real wages)



Note: The green line shows the impulse response, the grey area represents the 95% confidence interval, and errors are derived from a 1,000-run Monte Carlo simulation.

Figure 19 shows the IRFs for the model, leaving out the real wage differential. The results for shocks to net migration, activity rate differentials, self-employment share differentials and short fixed-term share differentials are the same. However, a one-time shock to the unemployment rate differential is now statistically significant and shows, in line with the literature on push-and-pull factors, that a relative increase (decrease) of the unemployment rate in the sending (receiving) country increases net migration. In addition, the shock to the human capital differential turned also statistically significant and shows that an increase of the human capital index in the sending country increases net migration, suggesting that the

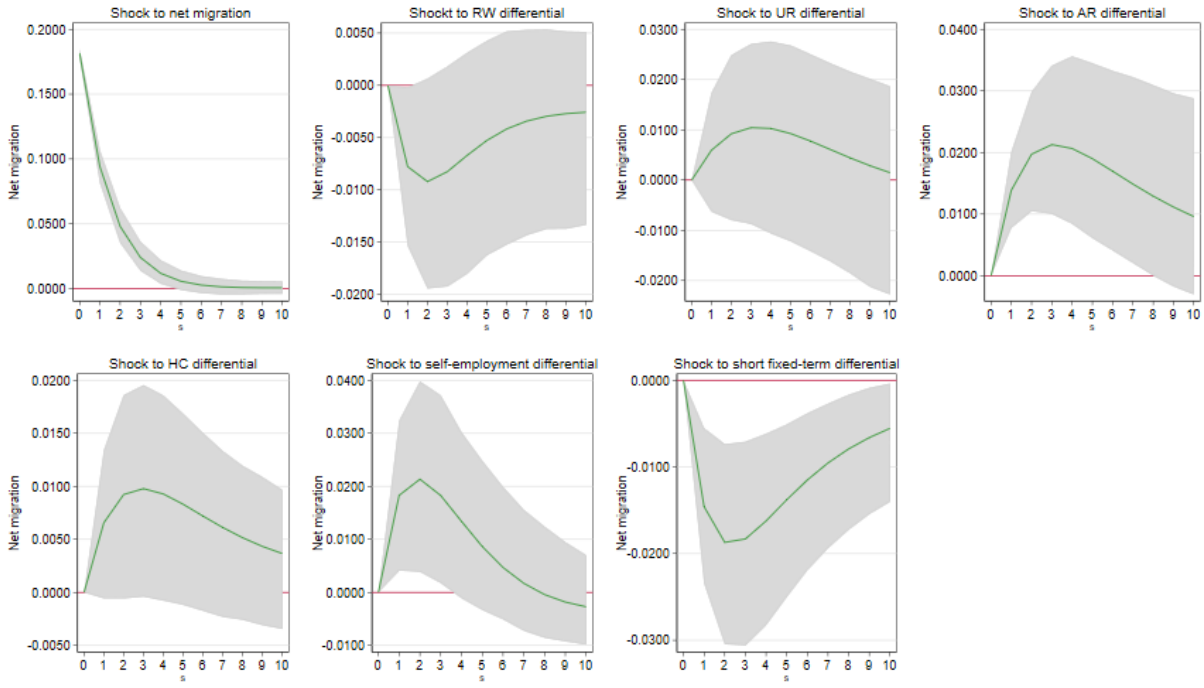
[8] Further robustness checks were conducted with estimations of net migration from CEE countries to Western EU member states, as well as separate estimations for the period after the crisis. The main results were generally robust and they are available upon request.

highly skilled tend to migrate, which is in line with human capital theory. The part-time share differential turns statistically insignificant once real wages are left out.

The response of atypical employment differentials to net migration shocks are the same as in the full model (see Figure 21), except that the effect on the part-time differential is now insignificant.

Similarly, as can be seen in Figure 20, leaving out the part-time share does not change the results from those obtained from the full model. It can thus be concluded that, despite the high correlation between real wages and the part-time share, their effects do not cancel each other out. Controlling for real wages is therefore essential to capture the impact of both the part-time share and the real wage differential.

Figure 20. Sample A – IRFs – Response of net migration to labour market shocks: reduced model (no part-time share)



Note: The green line shows the impulse response, the grey area represents the 95% confidence interval, and errors are derived from a 1,000-run Monte Carlo simulation.

Results from variance decomposition

Although IRFs are useful for showing how variables change in response to a shock to another variable, they cannot be used to determine the importance of such a shock in explaining variation in other variables. We therefore use a variance decomposition analysis to quantify how much of the forecast error variance of each variable can be explained by exogenous shocks to the other variables. The results of the decomposition, examined five and 10 years following the shock, are presented in Table 11 in Appendix A.

Comparing the full model with either version of the reduced model shows that for either of the latter almost all of the variance is accounted for by past net migration after five years (90.8% when the real wage differential is excluded and 90.3% when the part-time share differential is excluded, compared with 74.5% in the full model), as well as after 10 years (87.1% excluding the real wage differential and 86.4% excluding the part-time share differential, compared with 67.1% in the full model).

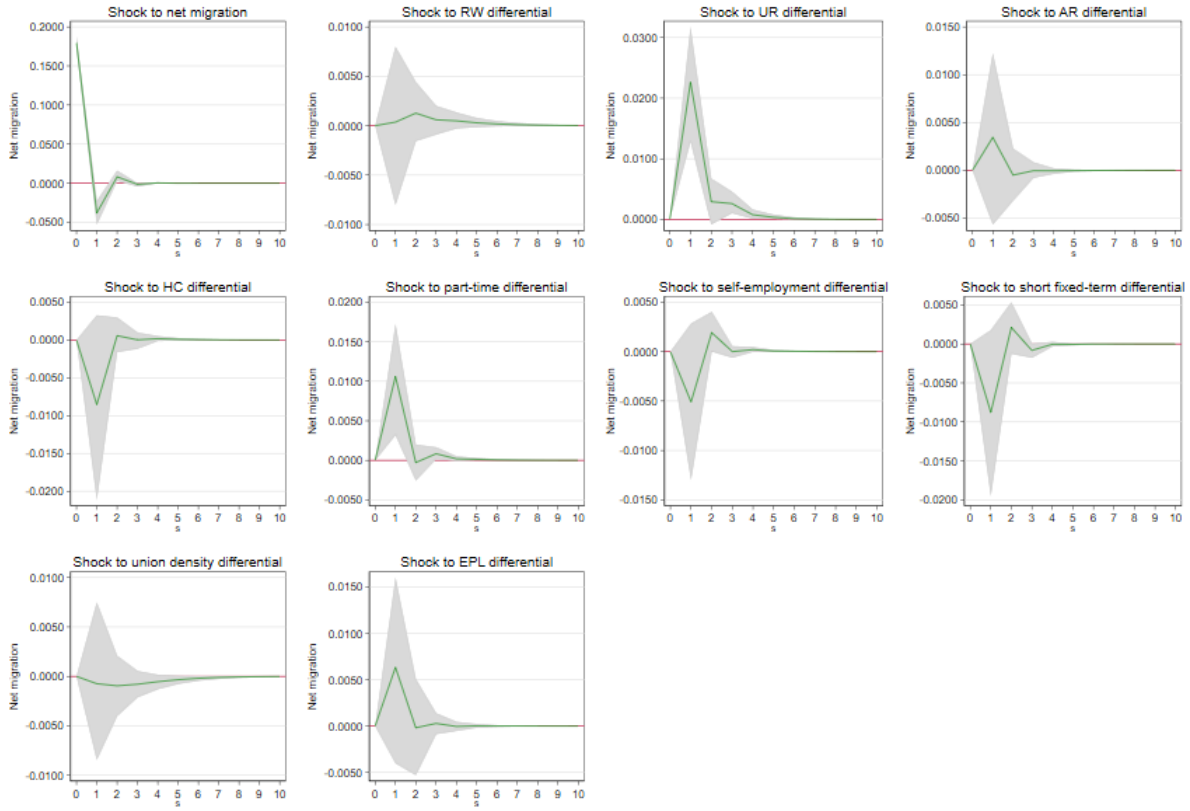
Zooming in on the results of the variance decomposition for the full model, the first row in Table 11 in Appendix A shows the relative contribution of each variable in explaining fluctuations of net migration. Although past net migration explains most of the variance, the relative contribution of atypical employment differentials is higher than that of other labour market differentials. Specifically, after five years, the part-time share differential accounts for 5%, the self-employment share differential accounts for 5.9% and the short fixed-term share differential accounts for 7.8%. After 10 years, these percentages change slightly to 6.3% for the part-time share differential, 5.5% for the self-employment share differential and 10.2% for the short fixed-term share differential. Among the other variables, the real wage differential, and the activity rate differential account for 4.7% and 5.8% of the variation in net migration after 10 years, while the contribution of the unemployment rate differential is close to zero and that of the human capital differential is negligible at 0.3%.

Comparing the impact of net migration on atypical employment differentials five years and 10 years after the initial shock, as shown in Table 11 in Appendix A (columns one and nine, respectively), we observe that net migration explains 9% of the variation in the part-time share differential, 3.6% of the variation in the self-employment share differential and 6.2% of the variation in the short fixed-term share differential after five years. However, the relative contribution of net migration diminishes over time, accounting for 6.8% of the variation in the part-time share differential, 2.8% of variation in the self-employment share differential, and 5.3% of variation in the short fixed-term share differential after 10 years.

3.3.2. Evidence from Sample B

Figure 21 shows the response of net migration to the same labour market shocks as in the previous section, with the addition of two policy variables, namely trade union density differentials and employment protection legislation differentials. Owing to the inclusion of the latter two variables, the country sample comprises only nine countries, which, other than Czechia and Slovakia, are mainly older EU member states. Because of non-stationarity, all results are based on estimations using the first differences of all variables.

Figure 21. Sample B – IRFs – Response of net migration to labour market shocks: full model



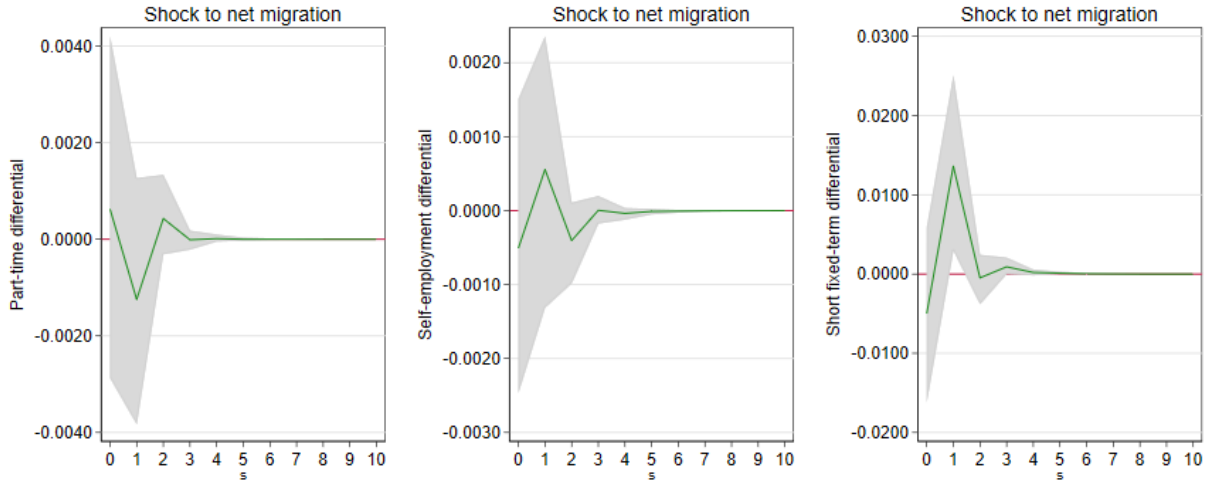
Note: The green line shows the impulse response, the grey area represents the 95% confidence interval, and errors are derived from a 1,000-run Monte Carlo simulation.

Similar to the results for sample A, a shock to net migration induces further migration initially. However, a small yet statistically significant negative effect emerges one year after the shock, implying the occurrence of some return migration.

Regarding other labour market shocks, only the unemployment rate differential and the part-time share differential are statistically significant, and they have the same effect as in sample A, i.e. relative increases of the unemployment rate as well as of the part-time share in the sending country act to increase net migration.

Finally, as can be seen from the last row in Figure 21, neither the union density differential nor the employment protection legislation differential has a statistically significant effect on net migration.

Figure 22. Sample B – IRFs – Response of atypical employment net migration shock: full model



Note: The green line shows the impulse response, the grey area represents the 95% confidence interval, and errors are derived from a 1,000-run Monte Carlo simulation.

Figure 22 shows that an increase in net emigration from the sending country to the receiving country has hardly any significant effects on atypical employment except for an initial relative increase in the short fixed-term differential, suggesting that labour market frictions caused by the decrease in labour supply in the sending country may be counterbalanced by increased employment flexibility.

As with sample A, robustness checks were conducted in which the real wage differential and the part-time share differential were left out. This had no effect on the results, as can be seen from the respective IRFs in Appendix B (Figures 25-28).

Finally, the variance decomposition reported in Table 12 in Appendix A shows that none of the variables appears to significantly influence variations in net migration. Likewise, net migration seems to have little impact on fluctuations in other variables. In particular, the fluctuations in net migration are primarily explained by net migration itself (97.5%), with little to no contribution from other variables. Moreover, this hardly changes over time (owing to rounding, the values appear to be the same).

3.4. Summary

Part II of this study analyses the interrelationship between various forms of atypical employment that are linked to enhanced labour market flexibility – specifically, part-time work, self-employment and short fixed-term work – and labour mobility patterns within the EU from 2004 to 2019. In addition to the main analysis covering 17 EU member states (i.e. 272 country pairs), we further investigate the role of labour

market institutions, namely union densities and employment protection legislation, for a sub-sample of nine EU member states (i.e. 72 country pairs) for the period from 2003 to 2018.

Our results confirm standard findings in the literature on the effect of labour market differentials: a relative increase of real wages in the sending country reduces the incentive to migrate, whereas a relative expansion of the labour supply (activity rate) in the sending country increases net migration. However, neither union densities nor employment protection legislation seems to play a role as determinants of net migration.

The effects of atypical work on net migration differ, depending on the type of atypical work. A relative increase in the part-time and self-employment shares in the sending country increases net migration, suggesting that increased labour market flexibility (internal adjustment) facilitates labour mobility (external adjustment) as the former weakens labour market attachment. Conversely, a relative increase in the short fixed-term employment share reduces outmigration. However, from a dual labour market perspective, a relative decrease in the secondary segment in the receiving country might also indicate that its demand for migrant workers decreased, thus slowing down net migration.

Our findings further reveal that net migration significantly affects atypical employment share differentials. Specifically, an increase in net migration from the sending to the receiving country persistently reduces the part-time share differential, whereas the self-employment share differential is reduced only initially. Conversely, a shock to net migration positively affects the short fixed-term share differential, indicating that net emigration induces a relative increase (decrease) in employment flexibility in the sending (receiving) country in the short run.

The variance decomposition analysis shows that, although past net migration explains most of the fluctuations in net migration five and 10 years after the exogenous shock, the three atypical employment share differentials in combination account for around 20% of the remaining variation, with the short fixed-term differential explaining around 10% of variation in net migration after 10 years. This underscores the noteworthy impact of atypical work on net migration patterns.

4. Conclusion

Overall, part I of this study shows that the landscape of atypical work in the EU has undergone only moderate changes between 2000 and 2020, characterised more by geographical and demographic variations rather than significant shifts over time.

Specifically, in 2020, part-time employment accounted for 14% of total employment, showing relative stability since 2010. Women comprised a significantly larger proportion of part-time workers than men, with rates of 22% compared to 7%. The prevalence of part-time work varied across regions, being higher in Western and Nordic countries and lower in Baltic and Eastern countries. Among Southern countries, there was a notable increase in part-time employment, almost doubling from 8.4% in 2003 to 15.4% in 2020. Additionally, part-time work was more common among those with lower levels of education.

Temporary employment has been on the decline since 2017. Southern countries had the highest rates of temporary employment in 2020 at 19%, contrasting with only 2% in the Baltic countries. Eastern countries saw a decrease in temporary work from 16% in 2014 to 11% in 2020. Similar to part-time work, temporary employment was more prevalent among those with lower educational attainment.

The proportion of self-employed individuals has remained stable around 15% since 2000, with men having higher rates (19-20%) than women (10%). Self-employment was also more common among those with lower levels of education.

The percentage of individuals primarily working from home remained steady from 2000 to 2019 at around 5%. However, with the onset of the COVID-19 pandemic in 2020, this figure more than doubled to 11.4%. Working from home was more prevalent among those with tertiary education, suggesting that individuals in this group held jobs more conducive to remote work compared to those with lower or upper secondary education levels.

Compared to the different forms of atypical work, intra-EU migration patterns were characterized by greater fluctuations over time. While the enlargement process spurred intra-EU migration in the first half of the observation period, migration rates dropped during the financial crisis, and have been growing at a slower rate ever since.

However, based on the results in part II of this study, it can be concluded that atypical work has been a relevant factor in explaining variations in net migration, with part-time work and self-employment fostering net migration, and short fixed-term employment having the opposite effect. Working from home was not included in the second part because it has only gained importance in recent years with its impact yet to unfold. However, this and other evolving forms of atypical work should be addressed in future research.

Finally, our results emphasize that any policies aimed at increasing labour market flexibility must not only take into account the demographic and geographical differences regarding the prevalence and trends of atypical work, but also the partly opposing relationships between different forms of atypical work and net

migration uncovered by our analysis. For example, policies designed to facilitate temporary work should consider the potential trade-off between internal adjustment and external adjustment, which becomes especially important during periods characterised by significant (regional) labour shortages and skill mismatch.

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Appendix A: Tables

Table 4. List of variables

	Variable	Definition	Data sources
Migration flows	immig	Immigration flows by citizenship	Eurostat (migr_emi1ctz, migr_imm1ctz), OECD (DIOC_CITIZEN_AGE, ILO (MFL_NCIT_SEX_CCT_NB_A), Statistisches Bundesamt (12711-0009), Central Statistics Office Ireland (PEA24; PEA23), Statistics Poland (K3-G8)
	emig	Emigration flows by citizenship	
	MNET	Net migration: difference between immigration and emigration by citizenship	
Labour market	LP	real GDP at market prices, chain-linked (2015=100) in million euro divided by total employment (in thousand persons)	Eurostat (nama_10_gdp; nama_10_a10_e)
	RW	Average real (CPI-deflated in 2015 prices) wages and salaries per 1,000 employees (domestic concept)	Eurostat (nama_10_a10;nama_10_a10_e; prc_hicp_aind)
	UR	Unemployment rate: number of unemployed persons (international definition) as percentage of active population (labour force); age group 15-64 years	Eurostat (lfs_urgan)
	AR	Activity rate (age group 15-64 years)	Eurostat (lfs_argan)
Human capital	hc1	Share of ISCED11-levels 3-4 in age group from 15-19 years	Eurostat (lfs_pgaed)
	hc2	Number of ISCED11-levels 5-8 aged 25-29 years per 1,000 population aged 25-29 years	Eurostat (lfs_pgaed)
	hc3	Share of ISCED11-levels 5-8 aged 15-64 years in total employment aged 15-64 years	Eurostat (lfsa_egaed; lfsi_emp_a_h)
	HC	Simple mean of hc1, hc2, hc3	Eurostat
Atypical employment	PT	Part-time workers (self-declared) as percentage of total employment, age group 15-64	Eurostat (lfsi_pt_a_h)
	TEMP	Employees with a limited duration contract as percentage of total employment, age group 15-64	Eurostat (lfsi_pt_a_h)
	SELF	Self-employed persons as percentage of total employment, age group 15-64	Eurostat (lfsa_esgan)
	FIX	Employees with a short fixed-term contract (< 3 months) as percentage of total employment, age group 15-64 years	Eurostat (lfsa_qoe_4ax1r2;lfsa_qoe_4ax1r1)
Institutions	UDENS	Trade union density rate (employee union members as percentage of total employees)	ILO (ILR_TUMT_NOC_RT_A)
	EPL	Strictness of dismissal regulation for workers on regular contracts (individual and collective dismissals)	OECD (EPL_OV)

Note: For the pVAR analysis, MNET between the sending country (i) and the receiving country (j) is arctan transformed and normalised. All other variables used in the pVAR analysis enter as log differentials between the sending and the receiving country, i.e. $\log(x_i) - \log(x_j)$

Table 5. Summary stats

Variable	Obs.	Mean	Std Dev.	Min.	Max.
Sample A					
Net migration	4352	0.588	0.225	0	0.693
Real wage differential	4352	0	0.888	-2.098	2.098
Unemployment rate differential	4352	0	0.558	-1.911	1.911
Activity rate differential	4352	0	0.101	-0.287	0.287
Human capital differential	4352	0	0.317	-0.941	0.941
Part-time differential	4352	0	1.013	-2.933	2.933
Self-employment differential	4352	0	0.432	-1.307	1.307
Short fixed-term differential	4352	0	1.122	-2.686	2.686
Sample B					
Net migration	1152	0.602	0.228	0	0.693
Real wage differential	1152	0	0.782	-2.069	2.069
Unemployment rate differential	1152	0	0.522	-1.564	1.564
Activity rate differential	1152	0	0.106	-0.254	0.254
Human capital differential	1152	0	0.319	-0.844	0.844
Part-time differential	1152	0	1.177	-3.009	3.009
Self-employment differential	1152	0	0.455	-1.175	1.175
Short fixed-term differential	1152	0	1.124	-2.663	2.663
Union density differential	1152	0	0.921	-1.83	1.83
EPL differential	1152	0	0.306	-0.908	0.908

Table 6. Correlation table – Sample A

Variables	Net mig.	RW diff.	LP diff.	ER diff.	UR diff.	AR diff.	HC diff.	Part-time diff.	Temp. diff.	Self-emp. diff.	Short fixed-term diff.
Net mig.	1.00										
RW diff.	-0.12	1.00									
LP diff.	-0.14	0.98	1.00								
ER diff.	-0.05	0.44	0.39	1.00							
UR diff.	0.08	-0.31	-0.27	-0.66	1.00						
AR diff.	-0.01	0.38	0.34	0.88	-0.26	1.00					
HC diff.	0.00	0.21	0.17	0.11	0.12	0.21	1.00				
Part-time diff.	-0.06	0.84	0.81	0.49	-0.28	0.46	0.31	1.00			
Temp. diff.	-0.09	0.37	0.34	0.02	0.07	0.09	0.02	0.37	1.00		
Self-emp. diff.	-0.07	-0.32	-0.29	-0.55	0.34	-0.50	-0.27	-0.22	0.35	1.00	
Short fixed-term diff.	-0.01	0.02	-0.01	-0.38	0.46	-0.26	0.34	-0.05	0.51	0.25	1.00

Table 7. Correlation table - Sample B

Variables	Net mig.	RW diff.	LP diff.	ER diff.	UR diff.	AR diff.	HC diff.	Part-time diff.	Temp. diff.	Self-emp. diff.	Short fixed-term diff.	Union density diff.	EPL diff.
Net mig.	1.00												
RW diff.	0.04	1.00											
LP diff.	0.02	0.99	1.00										
ER diff.	0.02	0.58	0.52	1.00									
UR diff.	0.07	-0.41	-0.33	-0.70	1.00								
AR diff.	0.06	0.51	0.47	0.95	-0.47	1.00							
HC diff.	-0.10	0.58	0.59	0.66	-0.25	0.70	1.00						
Part-time diff.	0.05	0.89	0.87	0.60	-0.49	0.52	0.56	1.00					
Temp. diff.	-0.02	0.67	0.68	0.47	-0.22	0.46	0.62	0.75	1.00				
Self-emp. diff.	-0.15	-0.51	-0.47	-0.75	0.28	-0.83	-0.46	-0.39	-0.16	1.00			
Short fixed-term diff.	-0.14	0.32	0.43	-0.07	0.41	0.05	0.43	0.13	0.43	-0.05	1.00		
Union density diff.	-0.02	0.67	0.72	0.27	0.05	0.32	0.47	0.35	0.37	-0.46	0.73	1.00	
EPL diff.	-0.02	-0.54	-0.51	-0.44	0.18	-0.46	-0.35	-0.27	0.02	0.67	-0.20	-0.56	1.00

Table 8. Im-Pesaran-Shin unit root tests

	W-t-bar	p-value	Lags*
Sample A			
Net migration	-91.605	0.000	0.294
ER differential	-0.274	0.392	0.757
UR differential	-7.469	0.000	0.735
RW differential	-3.536	0.000	0.404
LP differential	-8.286	0.000	0.515
AR differential	-10.079	0.000	0.368
HC differential	-7.07	0.000	0.279
Part-time differential	-7.263	0.000	0.404
Temporary differential	5.058	1.000	0.404
Self-employment differential	-5.329	0.000	0.301
Short fixed-term differential	-10.854	0.000	0.338
Sample B			
Net migration	-350.1	0.000	0.264
ER differential	2.045	0.98	0.556
UR differential	-1.347	0.089	0.639
RW differential	0.031	0.512	0.361
LP differential	-3.618	0.000	0.528
AR differential	-5.786	0.000	0.361
HC differential	-0.849	0.198	0.167
Part-time differential	-8.857	0.000	0.306
Temporary differential	-2.18	0.015	0.528
Self-employment differential	-7.117	0.000	0.194
Short fixed-term differential	-5.065	0.000	0.333
Union density differential	6.936	1.000	0.278
EPL differential	1.183	0.882	0.25

Note: * optimal lag length selected according to AIC, including a constant term. H0: all panels contain unit roots; H1: some panels are stationary.

Table 9. Regression Table Sample A

Dep.var: Net migration$_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Net migration$_{ij,t-1}$	0.503***	0.054	0.54***	0.044	0.518***	0.043
RW diff$_{ij,t-1}$	0.7**	0.321			-0.234*	0.156
UR diff$_{ij,t-1}$	0.002	0.058	0.093***	0.022	0.056*	0.038
AR diff$_{ij,t-1}$	2.9***	0.896	1.321***	0.223	1.54***	0.408
HC diff$_{ij,t-1}$	-0.075	0.125	0.188**	0.074	0.151**	0.063
PT diff$_{ij,t-1}$	0.262**	0.103	0.051	0.063	0	
SELF diff$_{ij,t-1}$	0.92***	0.353	0.257***	0.096	0.449**	0.207
FIX diff$_{ij,t-1}$	0.195***	0.074	0.09***	0.027	-0.079***	0.031
Dep.var: RW diff$_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Net migration$_{ij,t-1}$	0.008	0.01			-0.014	0.013
RW diff$_{ij,t-1}$	0.877***	0.07			0.701***	0.044
UR diff$_{ij,t-1}$	0.016	0.01			-0.038***	0.010
AR diff$_{ij,t-1}$	0.298*	0.21			0.216**	0.123
HC diff$_{ij,t-1}$	0.041*	0.03			-0.045***	0.015
PT diff$_{ij,t-1}$	0.099***	0.02			0	
SELF diff$_{ij,t-1}$	0.036	0.08			0.213***	0.062
FIX diff$_{ij,t-1}$	0.047***	0.02			0.003	0.008
Dep.var: UR diff$_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Net migration$_{ij,t-1}$	0.017	0.044	-0.003	0.041	0.011	0.041
RW diff$_{ij,t-1}$	0.386*	0.245			0.183*	0.137
UR diff$_{ij,t-1}$	0.952***	0.043	0.9***	0.017	0.927***	0.030
AR diff$_{ij,t-1}$	1.381**	0.701	0.51**	0.217	-0.788**	0.401
HC diff$_{ij,t-1}$	0.087	0.088	0.058	0.067	-0.012	0.046
PT diff$_{ij,t-1}$	0.114*	0.078	0.059	0.055	0	
SELF diff$_{ij,t-1}$	0.441*	0.280	0.075	0.100	-0.236	0.196
FIX diff$_{ij,t-1}$	0.028	0.053	0.03*	0.022	-0.023	0.024
Dep.var: AR diff$_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Net migration$_{ij,t-1}$	0.000	0.004	0.002	0.003	0.001	0.003
RW diff$_{ij,t-1}$	0.039**	0.021			-0.001	0.010
UR diff$_{ij,t-1}$	0.01***	0.004	0.005***	0.001	-0.006**	0.002
AR diff$_{ij,t-1}$	1.003***	0.062	0.916***	0.017	0.894***	0.030
HC diff$_{ij,t-1}$	0.025***	0.008	0.011**	0.005	-0.007**	0.003
PT diff$_{ij,t-1}$	0.021***	0.007	0.004	0.004	0	
SELF diff$_{ij,t-1}$	0.011	0.024	0.026***	0.006	-0.027**	0.014
FIX diff$_{ij,t-1}$	0.013***	0.005	0.007***	0.002	-0.003**	0.002

Contd.

Table 9. Continued

Dep.var: HC $diff_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Net migration$_{ij,t-1}$	0.004	0.022	0.017	0.018	-0.008	0.019
RW diff$_{ij,t-1}$	0.252**	0.118			0.104**	0.057
UR diff$_{ij,t-1}$	0.058***	0.021	0.023***	0.008	0.039***	0.013
AR diff$_{ij,t-1}$	0.88***	0.338	-0.311***	0.085	-0.448***	0.167
HC diff$_{ij,t-1}$	0.957***	0.048	0.862***	0.031	0.886***	0.024
PT diff$_{ij,t-1}$	0.083**	0.038	0.03*	0.023	0	
SELF diff$_{ij,t-1}$	0.208*	0.132	0.031	0.039	-0.058	0.081
FIX diff$_{ij,t-1}$	0.053**	0.027	0.015*	0.010	0.016*	0.012
Dep.var: PT $diff_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Net migration$_{ij,t-1}$	0.005	0.028	0.028	0.024		
RW diff$_{ij,t-1}$	0.447***	0.160				
UR diff$_{ij,t-1}$	0.103***	0.029	0.042***	0.010		
AR diff$_{ij,t-1}$	0.904**	0.446	0.104	0.126		
HC diff$_{ij,t-1}$	0.191***	0.056	0.023	0.041		
PT diff$_{ij,t-1}$	0.767***	0.050	0.967***	0.033		
SELF diff$_{ij,t-1}$	0.438**	0.182	0.015	0.054		
FIX diff$_{ij,t-1}$	0.048*	0.034	0.019*	0.013		
Dep.var: SELF $diff_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Net migration$_{ij,t-1}$	0.016	0.014	0.026**	0.014	-0.021*	0.013
RW diff$_{ij,t-1}$	0.185**	0.080			0.044	0.046
UR diff$_{ij,t-1}$	0.028**	0.014	0.003	0.006	0.011	0.010
AR diff$_{ij,t-1}$	0.108	0.227	0.309***	0.072	0.302**	0.133
HC diff$_{ij,t-1}$	0.038*	0.027	0.032*	0.021	-0.03**	0.014
PT diff$_{ij,t-1}$	0.079***	0.025	0.004	0.019	0	
SELF diff$_{ij,t-1}$	0.695***	0.092	0.87***	0.031	0.837***	0.064
FIX diff$_{ij,t-1}$	0.039**	0.018	0.012*	0.008	0.004	0.008
Dep.var: FIX $diff_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
Net migration$_{ij,t-1}$	0.022	0.058	0.008	0.052	-0.005	0.051
RW diff$_{ij,t-1}$	0.271	0.311			0.275**	0.167
UR diff$_{ij,t-1}$	0.062	0.056	0.099***	0.023	0.13***	0.037
AR diff$_{ij,t-1}$	1.473*	0.905	0.862***	0.261	-0.12	0.487
HC diff$_{ij,t-1}$	0.284**	0.121	0.183**	0.086	-0.02	0.058
PT diff$_{ij,t-1}$	0.307***	0.103	0.186***	0.071	0	
SELF diff$_{ij,t-1}$	0.103	0.355	0.153*	0.118	-0.448**	0.242
FIX diff$_{ij,t-1}$	0.598***	0.070	0.638***	0.029	0.733***	0.031
No. of obs.	3808		3808		3808	

Note: *p<0.10, ** p < 0.05, *** p < 0.01

Table 10. Regression Table Sample B

Dep.var: ΔNet migration$_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
ΔNet migration$_{ij,t-1}$	-0.223***	0.051	-0.222***	0.051	-0.222***	0.051
ΔRW diff$_{ij,t-1}$	0.193*	0.123	0.051		0.16	0.124
ΔUR diff$_{ij,t-1}$	0.205***	0.054	0.124***	0.053	0.204	0.055
ΔAR diff$_{ij,t-1}$	0.195	0.600	0.055	0.599	0.544	0.575
ΔHC diff$_{ij,t-1}$	-0.13	0.105	0.575	0.104	-0.12	0.106
ΔPT diff$_{ij,t-1}$	0.202**	0.081	0.106**	0.081	0	
ΔSELF diff$_{ij,t-1}$	-0.101	0.150	0	0.146	-0.04	0.146
ΔFIX diff$_{ij,t-1}$	-0.044	0.039	0.146	0.039	-0.019	0.035
ΔUDENS diffij,t-1	0.002	0.166	0.035	0.162	0.011	0.167
ΔEPL diffij,t-1	0.092	0.091	0.167	0.091	0.115	0.091
Dep.var: ΔRW diff$_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
ΔNet migration$_{ij,t-1}$	-0.006	0.006			-0.006	0.006
ΔRW diff$_{ij,t-1}$	0.366***	0.047			0.372***	0.045
ΔUR diff$_{ij,t-1}$	-0.006	0.011			-0.006	0.011
ΔAR diff$_{ij,t-1}$	-0.476***	0.134			-0.55***	0.122
ΔHC diff$_{ij,t-1}$	0.007	0.012			0.005	0.012
ΔPT diff$_{ij,t-1}$	-0.042*	0.027			0	
ΔSELF diff$_{ij,t-1}$	0.131***	0.031			0.118***	0.030
ΔFIX diff$_{ij,t-1}$	-0.001	0.007			-0.007	0.005
ΔUDENS diffij,t-1	-0.314***	0.061			-0.316***	0.061
ΔEPL diffij,t-1	-0.004	0.020			-0.009	0.020
Dep.var: ΔUR diff$_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
ΔNet migration$_{ij,t-1}$	0.011	0.019	0.011	0.019	0.012	0.020
ΔRW diff$_{ij,t-1}$	0.042	0.087			0.012	0.088
ΔUR diff$_{ij,t-1}$	0.42***	0.034	0.418***	0.034	0.42***	0.034
ΔAR diff$_{ij,t-1}$	0	0.397	-0.022	0.395	0.312	0.384
ΔHC diff$_{ij,t-1}$	0.018	0.035	0.02	0.035	0.028	0.035
ΔPT diff$_{ij,t-1}$	0.18***	0.055	0.177***	0.054		
ΔSELF diff$_{ij,t-1}$	0.132*	0.101	0.142*	0.100	0.187**	0.099
ΔFIX diff$_{ij,t-1}$	-0.058***	0.018	-0.059***	0.018	-0.036**	0.017
ΔUDENS diff$_{ij,t-1}$	-0.146	0.122	-0.153	0.126	-0.138	0.125
ΔEPL diff$_{ij,t-1}$	-0.079	0.066	-0.081	0.069	-0.058	0.066

Contd.

Table 10. Continued

Dep.var: ΔAR $diff_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
$\Delta Net\ migration_{ij,t-1}$	0.002	0.002	0.002	0.002	0.002	0.002
$\Delta RW\ diff_{ij,t-1}$	-0.066***	0.009			-0.064***	0.009
$\Delta UR\ diff_{ij,t-1}$	-0.009***	0.003	-0.006**	0.003	-0.009***	0.003
$\Delta AR\ diff_{ij,t-1}$	0.022	0.047	0.058	0.049	-0.004	0.046
$\Delta HC\ diff_{ij,t-1}$	0.006*	0.004	0.004	0.004	0.005*	0.004
$\Delta PT\ diff_{ij,t-1}$	-0.015***	0.006	-0.01**	0.005		
$\Delta SELF\ diff_{ij,t-1}$	0	0.009	-0.015*	0.010	-0.005	0.009
$\Delta FIX\ diff_{ij,t-1}$	0.007***	0.002	0.008***	0.002	0.005**	0.002
$\Delta UDENS\ diff_{ij,t-1}$	-0.022**	0.011	-0.011	0.012	-0.023**	0.011
$\Delta EPL\ diff_{ij,t-1}$	-0.002	0.003	0.003	0.003	-0.003	0.003
Dep.var: ΔHC $diff_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
$\Delta Net\ migration_{ij,t-1}$	0.002	0.014	0.003	0.014	0.003	0.014
$\Delta RW\ diff_{ij,t-1}$	0.058	0.048			0.047	0.049
$\Delta UR\ diff_{ij,t-1}$	0	0.021	-0.003	0.021	0	0.021
$\Delta AR\ diff_{ij,t-1}$	-0.101	0.278	-0.133	0.276	0.013	0.276
$\Delta HC\ diff_{ij,t-1}$	0.112***	0.026	0.114***	0.026	0.116***	0.026
$\Delta PT\ diff_{ij,t-1}$	0.066**	0.034	0.062**	0.034		
$\Delta SELF\ diff_{ij,t-1}$	0.113**	0.059	0.126**	0.057	0.133**	0.058
$\Delta FIX\ diff_{ij,t-1}$	-0.045***	0.012	-0.046***	0.012	-0.037***	0.012
$\Delta UDENS\ diff_{ij,t-1}$	-0.276***	0.073	-0.286***	0.074	-0.273***	0.073
$\Delta EPL\ diff_{ij,t-1}$	-0.37***	0.075	-0.374***	0.074	-0.363***	0.074
Dep.var: ΔPT $diff_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
$\Delta Net\ migration_{ij,t-1}$	-0.005	0.009	-0.005	0.009		
$\Delta RW\ diff_{ij,t-1}$	0.036	0.057				
$\Delta UR\ diff_{ij,t-1}$	-0.018	0.017	-0.02	0.017		
$\Delta AR\ diff_{ij,t-1}$	0.049	0.218	0.029	0.220		
$\Delta HC\ diff_{ij,t-1}$	0.037*	0.024	0.038*	0.025		
$\Delta PT\ diff_{ij,t-1}$	0.057*	0.039	0.055*	0.039		
$\Delta SELF\ diff_{ij,t-1}$	-0.012	0.066	-0.004	0.069		
$\Delta FIX\ diff_{ij,t-1}$	0.033***	0.013	0.033***	0.013		
$\Delta UDENS\ diff_{ij,t-1}$	0.08	0.099	0.074	0.103		
$\Delta EPL\ diff_{ij,t-1}$	-0.092***	0.030	-0.094***	0.030		

Contd.

Table 10. Continued

Dep.var: ΔSELF $diff_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
$\Delta Net\ migration_{ij,t-1}$	0.001	0.006	0.002	0.006	0.001	0.006
$\Delta RW\ diff_{ij,t-1}$	0.083**	0.034			0.089***	0.034
$\Delta UR\ diff_{ij,t-1}$	0.014	0.012	0.01	0.012	0.014	0.012
$\Delta AR\ diff_{ij,t-1}$	0.281**	0.112	0.235**	0.112	0.222**	0.106
$\Delta HC\ diff_{ij,t-1}$	0.025**	0.013	0.028**	0.013	0.023**	0.012
$\Delta PT\ diff_{ij,t-1}$	-0.034**	0.020	-0.04**	0.020		
$\Delta SELF\ diff_{ij,t-1}$	0.13***	0.031	0.149***	0.032	0.12***	0.030
$\Delta FIX\ diff_{ij,t-1}$	-0.026***	0.005	-0.027***	0.005	-0.03***	0.006
$\Delta UDENS\ diff_{ij,t-1}$	-0.069*	0.050	-0.083*	0.051	-0.07*	0.050
$\Delta EPL\ diff_{ij,t-1}$	0.102***	0.014	0.096***	0.014	0.098***	0.014
Dep.var: ΔFIX $diff_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
$\Delta Net\ migration_{ij,t-1}$	0.065**	0.036	0.063**	0.036	0.066**	0.036
$\Delta RW\ diff_{ij,t-1}$	-0.4***	0.130			-0.431***	0.125
$\Delta UR\ diff_{ij,t-1}$	0.206***	0.053	0.224***	0.054	0.205***	0.053
$\Delta AR\ diff_{ij,t-1}$	-0.794*	0.614	-0.576	0.627	-0.464	0.585
$\Delta HC\ diff_{ij,t-1}$	0.134**	0.080	0.12*	0.079	0.144**	0.079
$\Delta PT\ diff_{ij,t-1}$	0.191**	0.094	0.218**	0.094		
$\Delta SELF\ diff_{ij,t-1}$	-0.172	0.152	-0.263**	0.152	-0.114	0.149
$\Delta FIX\ diff_{ij,t-1}$	0.066**	0.034	0.072**	0.035	0.089**	0.038
$\Delta UDENS\ diff_{ij,t-1}$	0.325*	0.242	0.394*	0.247	0.334*	0.243
$\Delta EPL\ diff_{ij,t-1}$	-0.162**	0.082	-0.134**	0.081	-0.139**	0.083
Dep.var: ΔUDENS $diff_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
$\Delta Net\ migration_{ij,t-1}$	-0.011**	0.005	-0.012**	0.005	-0.012**	0.005
$\Delta RW\ diff_{ij,t-1}$	-0.048**	0.024			-0.043**	0.023
$\Delta UR\ diff_{ij,t-1}$	0	0.007	0.002	0.007	0	0.007
$\Delta AR\ diff_{ij,t-1}$	-0.002	0.096	0.024	0.097	-0.05	0.086
$\Delta HC\ diff_{ij,t-1}$	-0.048***	0.015	-0.05***	0.015	-0.049***	0.015
$\Delta PT\ diff_{ij,t-1}$	-0.027*	0.018	-0.024*	0.018		
$\Delta SELF\ diff_{ij,t-1}$	-0.016	0.026	-0.027	0.026	-0.025	0.024
$\Delta FIX\ diff_{ij,t-1}$	-0.005	0.005	-0.005	0.005	-0.009*	0.006
$\Delta UDENS\ diff_{ij,t-1}$	0.215***	0.050	0.223***	0.051	0.214***	0.050
$\Delta EPL\ diff_{ij,t-1}$	-0.034**	0.016	-0.031**	0.016	-0.037**	0.016

Contd.

Table 10. Continued

Dep.var: ΔEPL $diff_{ij,t}$	Full model		Reduced model (excl. RW)		Reduced model (excl. PT)	
	Coeff.	S.E.	Coeff.	S.E.	Coeff.	S.E.
$\Delta Net\ migration_{ij,t-1}$	-0.015**	0.006	-0.014**	0.006	-0.014**	0.006
$\Delta RW\ diff_{ij,t-1}$	0.043	0.048			0.036	0.048
$\Delta UR\ diff_{ij,t-1}$	0.008	0.020	0.006	0.019	0.008	0.020
$\Delta AR\ diff_{ij,t-1}$	0.346**	0.193	0.323**	0.191	0.412**	0.188
$\Delta HC\ diff_{ij,t-1}$	-0.082***	0.027	-0.081***	0.027	-0.08***	0.027
$\Delta PT\ diff_{ij,t-1}$	0.038**	0.021	0.035*	0.022		
$\Delta SELF\ diff_{ij,t-1}$	0.019	0.035	0.028	0.032	0.03	0.033
$\Delta FIX\ diff_{ij,t-1}$	-0.013**	0.007	-0.014**	0.007	-0.009*	0.006
$\Delta UDENS\ diff_{ij,t-1}$	0.181***	0.062	0.174***	0.061	0.183***	0.063
$\Delta EPL\ diff_{ij,t-1}$	0.094***	0.027	0.091***	0.026	0.099***	0.027
No. of obs.	936		936		936	

Note: *p<0.10, ** p < 0.05, *** p < 0.01

Table 11. Variance decomposition matrix Sample A

	after 5 periods							
Full model	Net mig.	RW diff.	UR diff.	AR diff.	HC diff.	Part-time diff.	Self-emp. diff.	Short fixed-term diff.
Net mig.	0.747	0.037	0.000	0.028	0.001	0.050	0.059	0.078
RW diff.	0.027	0.782	0.035	0.003	0.004	0.048	0.023	0.077
UR diff.	0.021	0.034	0.843	0.027	0.005	0.036	0.027	0.007
AR diff.	0.086	0.178	0.118	0.482	0.016	0.046	0.001	0.074
HC diff.	0.073	0.118	0.134	0.083	0.488	0.040	0.020	0.045
Part-time diff.	0.090	0.131	0.229	0.096	0.089	0.259	0.071	0.034
Self-emp. diff.	0.036	0.240	0.007	0.006	0.010	0.055	0.569	0.078
Short fixed-term diff.	0.062	0.053	0.013	0.117	0.048	0.168	0.006	0.533
Reduced model (excl. real wage)								
Net mig.	0.908		0.017	0.016	0.017	0.006	0.013	0.024
UR diff.	0.000		0.983	0.010	0.001	0.001	0.002	0.003
AR diff.	0.009		0.051	0.831	0.002	0.012	0.061	0.034
HC diff.	0.007		0.072	0.021	0.865	0.025	0.004	0.006
Part-time diff.	0.007		0.088	0.000	0.003	0.897	0.001	0.003
Self-emp. diff.	0.018		0.002	0.025	0.061	0.095	0.795	0.003
Short fixed-term diff.	0.004		0.063	0.074	0.026	0.172	0.016	0.645
Reduced model (excl. part-time)								
Net mig.	0.903	0.005	0.007	0.029	0.006		0.026	0.023
RW diff.	0.004	0.708	0.089	0.025	0.049		0.124	0.001
UR diff.	0.000	0.004	0.965	0.017	0.000		0.011	0.002
AR diff.	0.004	0.029	0.071	0.836	0.001		0.048	0.011
HC diff.	0.003	0.008	0.098	0.039	0.843		0.002	0.007
Self-emp. diff.	0.007	0.108	0.003	0.025	0.077		0.780	0.001
Short fixed-term diff.	0.003	0.001	0.094	0.018	0.001		0.031	0.851

Contd.

Table 11. Continued

	after 10 periods							
Full model	Net mig.	RW diff.	UR diff.	AR diff.	HC diff.	Part-time diff.	Self-emp. diff.	Short fixed-term diff.
Net mig.	0.671	0.047	0.000	0.058	0.003	0.063	0.055	0.102
RW diff.	0.025	0.515	0.150	0.036	0.049	0.051	0.093	0.080
UR diff.	0.025	0.088	0.648	0.081	0.009	0.092	0.023	0.032
AR diff.	0.060	0.212	0.162	0.307	0.016	0.112	0.001	0.129
HC diff.	0.058	0.176	0.179	0.122	0.259	0.098	0.014	0.095
Part-time diff.	0.068	0.206	0.257	0.139	0.082	0.114	0.050	0.084
Self-emp. diff.	0.028	0.222	0.014	0.019	0.044	0.085	0.479	0.108
Short fixed-term diff.	0.053	0.059	0.039	0.109	0.045	0.210	0.033	0.452
Reduced model (excl. real wage)								
Net mig.	0.871		0.021	0.029	0.022	0.011	0.017	0.029
UR diff.	0.000		0.952	0.032	0.001	0.008	0.003	0.003
AR diff.	0.017		0.141	0.631	0.002	0.042	0.115	0.053
HC diff.	0.013		0.174	0.047	0.655	0.091	0.009	0.011
Part-time diff.	0.010		0.154	0.003	0.006	0.819	0.004	0.005
Self-emp. diff.	0.019		0.015	0.080	0.105	0.093	0.686	0.003
Short fixed-term diff.	0.004		0.098	0.073	0.030	0.193	0.040	0.561
Reduced model (excl. part-time)								
Net mig.	0.864	0.006	0.010	0.050	0.010		0.027	0.032
RW diff.	0.004	0.449	0.210	0.093	0.099		0.144	0.001
UR diff.	0.000	0.005	0.930	0.050	0.001		0.011	0.003
AR diff.	0.007	0.054	0.182	0.656	0.001		0.081	0.020
HC diff.	0.004	0.029	0.211	0.095	0.645		0.002	0.015
Self-emp. diff.	0.007	0.100	0.021	0.076	0.125		0.670	0.001
Short fixed-term diff.	0.003	0.002	0.166	0.024	0.002		0.049	0.754

Table 12. Variance decomposition matrix Sample B

	after 5 periods									
Full model	Net mig.	RW diff.	UR diff.	AR diff.	HC diff.	Part-time diff.	Self-emp. diff.	Short fixed-term diff.	Union density diff.	EPL diff.
Net mig.	0.975	0.000	0.015	0.000	0.002	0.003	0.001	0.002	0.000	0.001
RW diff.	0.002	0.918	0.000	0.009	0.001	0.000	0.003	0.003	0.061	0.002
UR diff.	0.007	0.024	0.950	0.000	0.001	0.007	0.000	0.006	0.002	0.002
AR diff.	0.002	0.109	0.023	0.836	0.001	0.003	0.001	0.018	0.007	0.000
HC diff.	0.000	0.005	0.003	0.005	0.875	0.001	0.001	0.001	0.009	0.102
Part-time diff.	0.000	0.062	0.039	0.052	0.002	0.821	0.000	0.009	0.002	0.011
Self-emp. diff.	0.001	0.010	0.047	0.008	0.007	0.015	0.844	0.020	0.009	0.038
Short fixed-term diff.	0.005	0.021	0.029	0.062	0.008	0.036	0.024	0.806	0.004	0.005
Union density diff.	0.005	0.006	0.001	0.023	0.012	0.040	0.037	0.072	0.799	0.005
EPL diff.	0.001	0.006	0.006	0.002	0.007	0.009	0.002	0.020	0.019	0.926
Reduced model (excl. real wage)										
Net mig.	0.976		0.015	0.000	0.002	0.003	0.000	0.002	0.000	0.001
UR diff.	0.007		0.973	0.000	0.001	0.007	0.001	0.006	0.002	0.003
AR diff.	0.001		0.025	0.950	0.000	0.001	0.001	0.020	0.001	0.001
HC diff.	0.000		0.002	0.005	0.877	0.000	0.001	0.001	0.009	0.105
Part-time diff.	0.001		0.056	0.065	0.002	0.853	0.001	0.009	0.002	0.011
Self-emp. diff.	0.000		0.045	0.014	0.007	0.015	0.854	0.021	0.009	0.034
Short fixed-term diff.	0.005		0.035	0.078	0.008	0.035	0.023	0.808	0.004	0.005
Union density diff.	0.005		0.000	0.026	0.012	0.041	0.035	0.069	0.807	0.004
EPL diff.	0.002		0.004	0.001	0.007	0.013	0.003	0.020	0.018	0.932
Reduced model (excl. part-time)										
Net mig.	0.981	0.000	0.014	0.001	0.002		0.000	0.001	0.000	0.002
RW diff.	0.003	0.918	0.000	0.010	0.001		0.003	0.002	0.063	0.001
UR diff.	0.009	0.025	0.958	0.000	0.001		0.002	0.002	0.003	0.001
AR diff.	0.001	0.110	0.020	0.846	0.001		0.000	0.012	0.008	0.001
HC diff.	0.000	0.005	0.002	0.004	0.879		0.001	0.001	0.008	0.099
Self-emp. diff.	0.001	0.011	0.045	0.007	0.007		0.860	0.024	0.010	0.035
Short fixed-term diff.	0.005	0.022	0.029	0.060	0.008		0.029	0.841	0.004	0.004
Union density diff.	0.005	0.005	0.001	0.025	0.012		0.028	0.093	0.826	0.006
EPL diff.	0.002	0.006	0.006	0.003	0.007		0.002	0.014	0.023	0.938

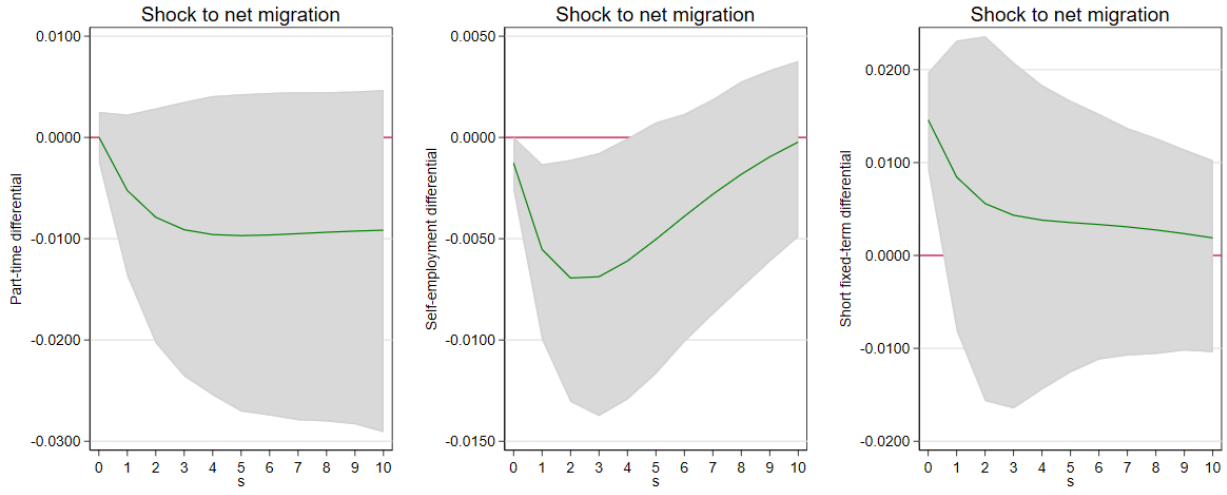
Contd.

Table 12. Continued

	after 10 periods									
Full model	Net mig.	RW diff.	UR diff.	AR diff.	HC diff.	Part-time diff.	Self-emp. diff.	Short fixed-term diff.	Union density diff.	EPL diff.
Net mig.	0.975	0.000	0.015	0.000	0.002	0.003	0.001	0.002	0.000	0.001
RW diff.	0.002	0.917	0.000	0.009	0.001	0.001	0.003	0.003	0.062	0.002
UR diff.	0.007	0.025	0.950	0.000	0.001	0.007	0.000	0.006	0.003	0.002
AR diff.	0.002	0.110	0.023	0.836	0.001	0.003	0.001	0.018	0.008	0.000
HC diff.	0.000	0.005	0.003	0.005	0.875	0.001	0.001	0.001	0.009	0.102
Part-time diff.	0.000	0.062	0.039	0.052	0.002	0.821	0.000	0.009	0.002	0.011
Self-emp. diff.	0.001	0.010	0.047	0.008	0.007	0.015	0.844	0.020	0.009	0.038
Short fixed-term diff.	0.005	0.021	0.029	0.062	0.008	0.036	0.024	0.806	0.004	0.005
Union density diff.	0.005	0.006	0.001	0.023	0.012	0.040	0.037	0.072	0.799	0.005
EPL diff.	0.001	0.006	0.006	0.002	0.007	0.009	0.002	0.020	0.019	0.926
Reduced model (excl. real wage)										
Net mig.	0.976		0.015	0.000	0.002	0.003	0.000	0.002	0.000	0.001
UR diff.	0.007		0.973	0.000	0.001	0.007	0.001	0.006	0.002	0.003
AR diff.	0.001		0.025	0.950	0.000	0.001	0.001	0.020	0.001	0.001
HC diff.	0.000		0.002	0.005	0.876	0.000	0.001	0.001	0.009	0.105
Part-time diff.	0.001		0.056	0.065	0.002	0.853	0.001	0.009	0.002	0.011
Self-emp. diff.	0.000		0.045	0.014	0.007	0.015	0.854	0.021	0.009	0.035
Short fixed-term diff.	0.005		0.035	0.078	0.008	0.035	0.023	0.808	0.004	0.005
Union density diff.	0.005		0.000	0.026	0.012	0.041	0.035	0.069	0.807	0.004
EPL diff.	0.002		0.004	0.001	0.007	0.013	0.003	0.020	0.018	0.932
Reduced model (excl. part-time)										
Net mig.	0.981	0.000	0.014	0.001		0.002	0.000	0.001	0.000	0.002
RW diff.	0.003	0.917	0.000	0.010		0.001	0.003	0.002	0.063	0.001
UR diff.	0.009	0.025	0.958	0.000		0.001	0.002	0.002	0.003	0.001
AR diff.	0.001	0.111	0.020	0.846		0.001	0.000	0.012	0.008	0.001
HC diff.	0.000	0.005	0.002	0.004		0.879	0.001	0.001	0.008	0.099
Self-emp. diff.	0.001	0.011	0.045	0.007		0.007	0.860	0.024	0.010	0.035
Short fixed-term diff.	0.005	0.022	0.029	0.060		0.008	0.029	0.841	0.004	0.004
Union density diff.	0.005	0.005	0.001	0.025		0.012	0.028	0.093	0.826	0.006
EPL diff.	0.002	0.006	0.006	0.003		0.007	0.002	0.014	0.023	0.938

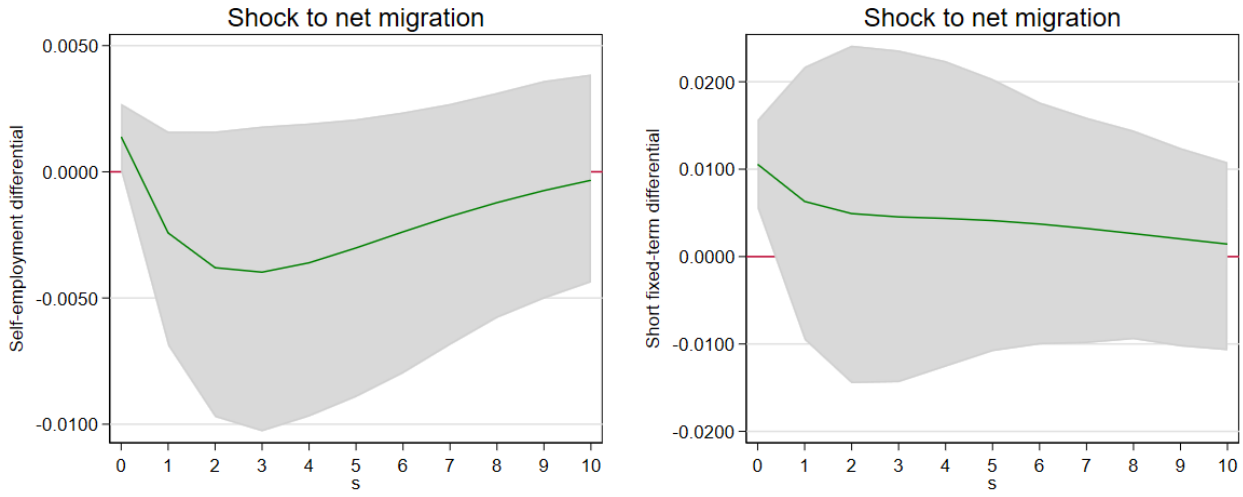
Appendix B: Figures

Figure 23. Sample A – IRFs – Response of atypical employment to net migration shock: reduced model (excl. real wage differentials)



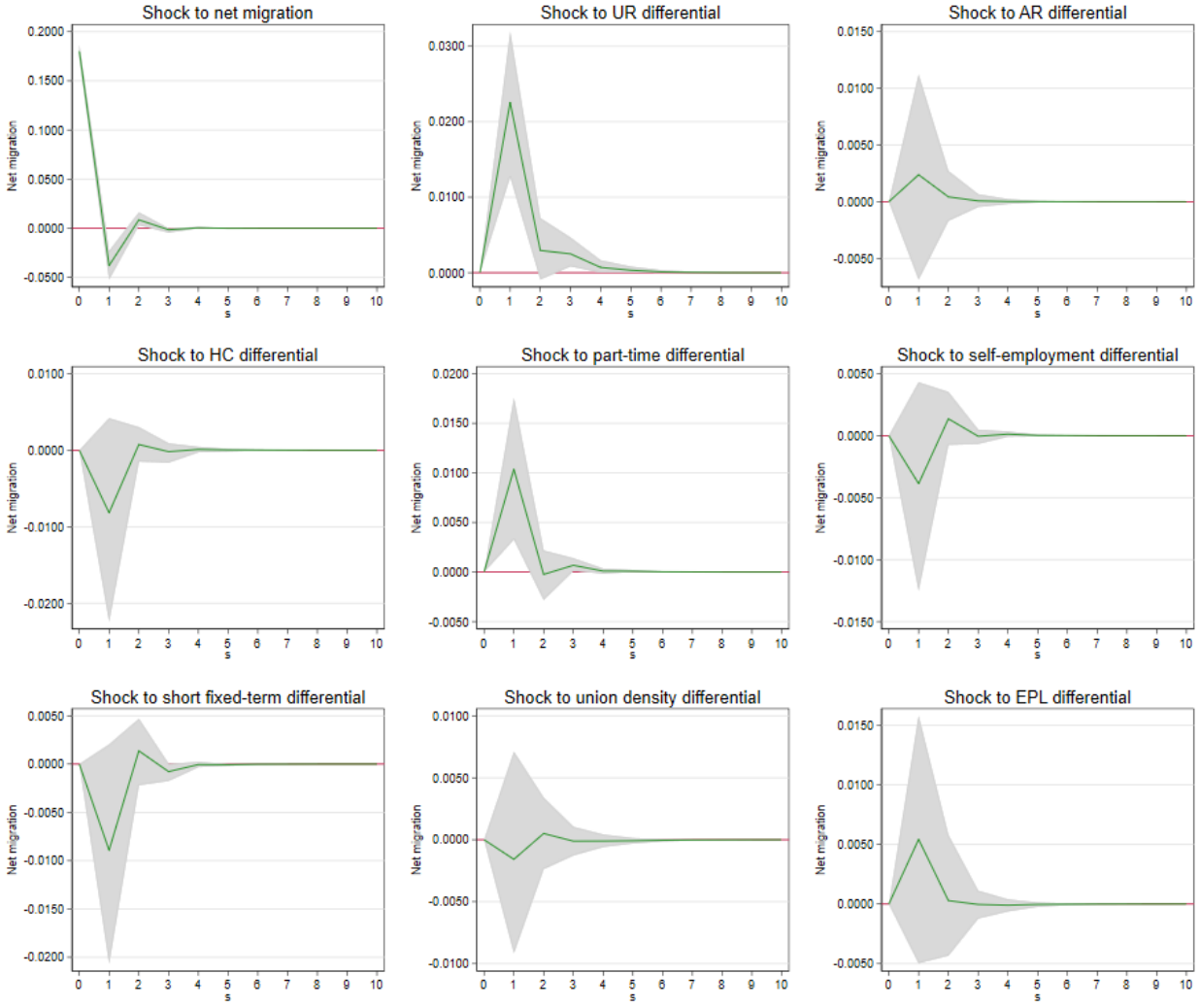
Note: The green line shows the impulse response, the grey area represents the 95% confidence interval, and errors are derived from a 1,000-run Monte Carlo simulation.

Figure 24. Sample A – IRFs – Response of atypical employment to net migration shock: reduced model (excl. part-time share differentials)



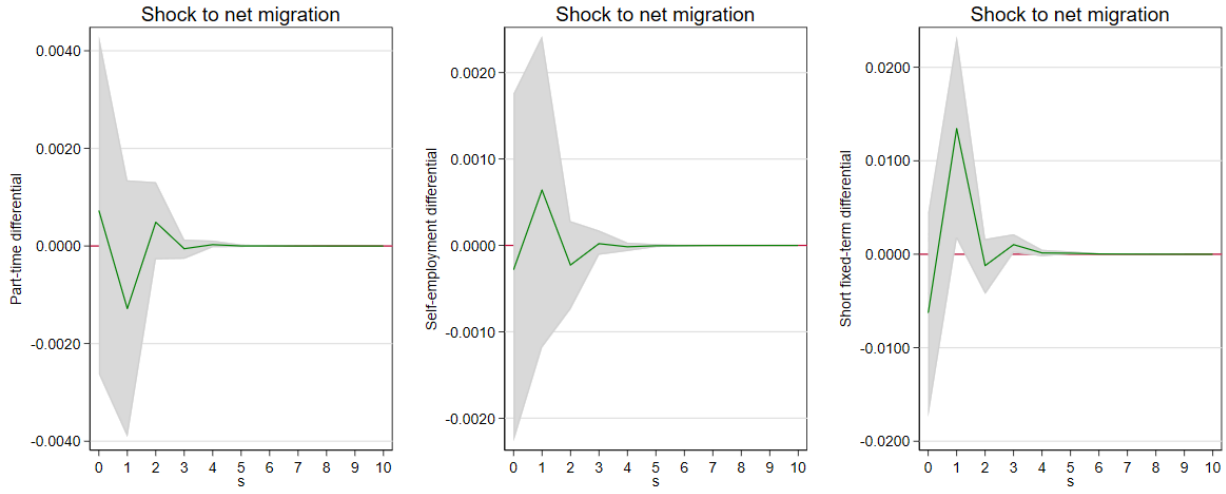
Note: The green line shows the impulse response, the grey area represents the 95% confidence interval, and errors are derived from a 1,000-run Monte Carlo simulation.

Figure 25. Sample B – IRFs – Response of net migration to labour market shocks: reduced model (excl. real wage differentials)



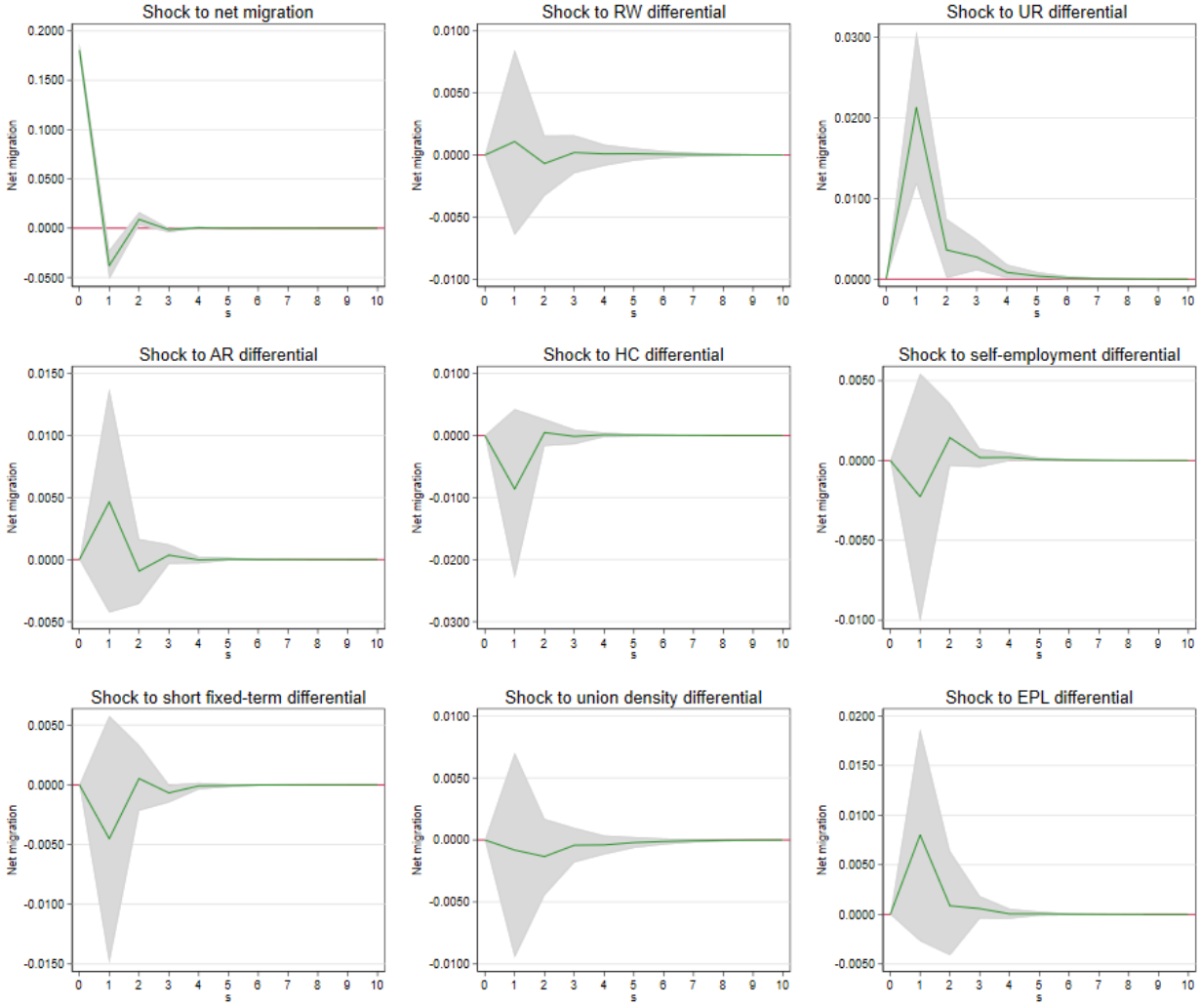
Note: The green line shows the impulse response, the grey area represents the 95% confidence interval, and errors are derived from a 1,000-run Monte Carlo simulation.

Figure 26. Sample B – IRFs – Response of atypical employment to net migration shock: reduced model (excl. real wage differentials)



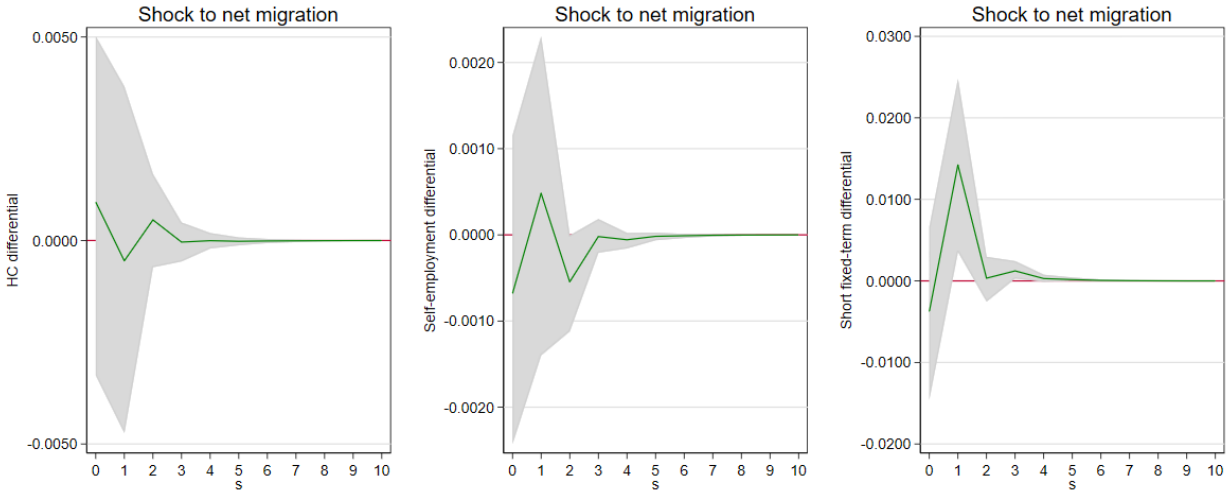
Note: The green line shows the impulse response, the grey area represents the 95% confidence interval, and errors are derived from a 1,000-run Monte Carlo simulation.

Figure 27. Sample B – IRFs – Response of net migration to labour market shocks: reduced model (excl. part-time share differentials)



Note: The green line shows the impulse response, the grey area represents the 95% confidence interval, and errors are derived from a 1,000-run Monte Carlo simulation.

Figure 28. Sample B – IRFs – Response of atypical employment to net migration shock: reduced model (excl. part-time share differentials)



Note: The green line shows the impulse response, the grey area represents the 95% confidence interval, and errors are derived from a 1,000-run Monte Carlo simulation.

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WeLaR is a Horizon Europe research project examining the impact of digitalisation, globalisation, climate change and demographic shifts on labour markets and welfare states in Europe. It aims to improve the understanding of the individual and combined effects of these trends and to develop policy proposals fostering economic growth that is distributed fairly across society and generates opportunities for all.

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