

The Albanian Labour Market through the Lens of the Matching Function: Quo Vadis Albania?

Anisa Plepi

University of Tirana, Faculty of Economics, Department of Economics, Albania

Abstract

This paper provides the first attempt to study the dynamics of the Albanian labour market through the lens of the empirical matching function, by simultaneously taking into consideration both sides of the matching process: the demand side represented by firms with job openings and the supply side represented by unemployed job seekers. In this regard the aim of this paper is three-fold: First, to provide an assessment of labour market conditions in Albania in terms of unfilled vacancies and unemployed workers. Second, an examination of the job finding rate developments in Albania since the aftermath of the last recession. Third, provide a measure of the extent of externalities in the Albanian labour market and their implications for the job finding rate. In addition, by relying on a Cobb-Douglas matching function with constant returns to scale and data that cover a time period from 2010:Q1-2020:4 obtained from the National Agency for Employment and Skills, I am able to model the two-sided search and matching process that takes place between firms with job openings and unemployed workers in Albania. The findings reveal a significant negative congestion externality caused by the pool of unemployed on the job finding probability of an unemployed job seeker in Albania which results bigger than the congestion effects caused by firms on each other.

Keywords: matching function, search and matching process, labour market

1. Introduction

Since the collapse of the communist regime, Albania now an official candidate for EU accession has made significant progress in labour market outcomes (ILO, 2021). Even though currently characterized by the highest employment rate and among the lowest unemployment rates in the Balkan region (World Bank, 2021), Albania still lags behind EU peer countries such as Croatia and Bulgaria.

Furthermore, an issue of growing concern has been the significant decrease in the Albanian population over the years, which has its roots in the vast emigration and demographic decline (Domachowska, 2021). Following the socio-economic and cultural transformations of the Albanian society, the total fertility rate has been on a decreasing trend since 2011, from 1.65 children for woman to 1.34 in 2020 (INSTAT, 2021 ; Domachowska, 2021).

Emigration also remains a pressing problem. According to an INSTAT¹ (2019) estimation nearly 1.64 million Albanians live outside their country of origin and based on a recent 2020 survey, Albania appears as the sole country in the Balkans region in which the number of people willing to leave surpasses that of people willing to stay (Domachowska, 2021). The principal push factor behind the massive emigration is “unemployment and lack of opportunities to have a decent work, career and wellbeing in the country” (United Nations Network on Migration, 2021, p. 7).

In addition, the significant number of Albanian asylum claimants to particular European countries is of equal concern. According to European Policy Institute of Kosovo (2020) from 2009-2019 Albania ranked first among the Balkans countries for the number of first time asylum applications and although the number has considerably declined during the COVID-19 pandemic, it still remains significant, second only to Syria (Domachowska, 2021). Similar circumstances can also be observed in the United Kingdom where Albania apart from appearing as the country designated as safe with the highest number of asylum applicants in 2020, has also raised concerns about a number of economic migrants that go to the UK claiming to be refugees (Thomas, 2021).

In this context, an analysis of the labour market ability to match unemployed workers to existing vacant jobs, as the main source of income for most Albanians is of major importance for designing policy interventions aimed at addressing the prevailing employment and unemployment challenges in Albania. This paper, to the best of my knowledge provides the first attempt to study the dynamics of the Albanian labour market by simultaneously taking into consideration both sides of the matching process: the demand side represented by firms with vacant jobs and the supply side represented by unemployed workers. More specifically, by relying on the matching function, a modelling device widely employed in the literature of labour markets (see Petronglo and Pissarides (2001) and Yashiv (2007) for an extensive survey), I am able to capture the two-sided search and matching process that takes place between firms with available vacancies and unemployed workers in Albania. This in turn provides new lens for examining the capacity of the Albanian labour market to generate sufficient job opportunities and the ability to match existing jobs to unemployed job seekers.

In this regard, the aim of this paper is three-fold: *First*, to provide an assessment of the labour market conditions in Albania in terms of unfilled vacancies and unemployed workers. A particular focus is put on how the ratio of vacancies to unemployment (a measure of labour market tightness) has evolved throughout the different stages of the Albanian economy. *Second*, examine the dynamics of the job finding rate for the average Albanian after the global financial and economic crisis of 2008. *Third*, provide a measure of the extent of the externalities in the Albanian labour market and their implications for the job finding rate.

The rest of the paper proceeds as follows. Section 2 introduces the empirical strategy and the data employed for the estimation of the matching function in Albania. Section 3 provides a brief overview of labour market conditions in Albania based on observed data. Section 4 presents the results and discusses their implications on labour market outcomes in Albania. Section 5 finally concludes.

¹ Diaspora e Shqipërisë në Shifra, INSTAT 2019, s. <http://www.instat.gov.al/media/6547/diaspora-2019.pdf> [26.08.2021].

2. Methodology

2.1 Empirical Strategy

Following the findings of the empirical literature, which for the most part support a log-linear approximation to the matching function with constant returns to scale (see Petrongolo and Pissarides, 2001), the number of new hires (m_t) in Albania is modelled through a Cobb-Douglas matching function with constant returns to scale:

$$m(U_t, V_t) = \mu U_t^\alpha V_t^{1-\alpha} \quad (1)$$

Where v_t and u_t refer to the vacancies and the unemployed at time t and μ is a parameter that represents the aggregate matching efficiency.

In order to reveal information about the job finding rate and provide a measure of the extent of externalities in the labour market, the empirical matching function (1) undergoes the following transformations (see Kanik et al., 2013; Christl, 2020):

$$\ln f_t = (1-\alpha) \ln(\theta_t) + \ln(\mu) + \varepsilon_t \quad (2)$$

In equation (2), the job finding rate $f_t = m(U_t, V_t)/U_t = \mu(V_t/U_t)^{1-\alpha}$ is determined as the new hires $m(U_t, V_t)$ from the pool of unemployed U_t (Christl, 2020) and labour market tightness θ_t as the ratio of vacancies to unemployed.

Based on this characterization of the matching function, the elasticity of job finding with respect to aggregate unemployment would be:

$$\frac{\delta f_t}{\delta U_t} \frac{U_t}{f_t} = \alpha - 1 < 0 \quad (3)$$

Where the absolute value of $\alpha - 1$ represents the extent of the negative externality (congestion) that is caused by the pool of unemployed on the job finding probability of an individual job seeker (Petrongolo and Pissarides, 2001; Kanik et al., 2013).

Similarly, the elasticity of job finding with respect to vacancies can be determined as:

$$\frac{\delta f_t}{\delta V_t} \frac{V_t}{f_t} = 1 - \alpha > 0 \quad (4)$$

In addition, closely following the estimation strategy of Barnichon and Figura (2011), Christl (2020), two models are specified. In the first model, the OLS method is utilized whereas in the second, I employ the GMM estimation strategy in which the lagged values of U_t, V_t and f_t are used as instruments to address potential endogeneity problems resulting from the agents' endogenous behaviour (see Borowczyk-Martins et al., 2013; Barnichon and Figura, 2015).

2.2 Data Description

To estimate the matching function, a measure of labour market tightness and job finding rate are required. In addition, to generate these series, data on unemployment, employment and vacancies are used. The only source of vacancy data in Albania is the National Agency for Employment and Skills² (NAES) which collects the data from the Employment Offices at

² Formerly known as the National Employment Service.

a county level. The data provided by NAES only cover the vacancies notified by the subjects (in the public and private sector) that are registered at the local employment offices, or in other words registered vacancies.

Other bodies such as online job advertising sites (Dua Punë and Çelësi among others), register in their databases data on vacancies but they are not made available as a periodically published series. Furthermore, the number of subjects registered at these online job advertising sites (6564 in September 2019 and 7674 in September 2020 in Dua Punë³) remains modest compared to those registered at the local Employment Offices (45,254 at the end of 2019).

But, even though the number of subjects registered at the local Employment Offices is significant (even when compared to other bodies), it still represents only a fraction of the overall enterprises in the economy (43 percent in 2019). Similar problems with vacancy data were faced by the European Union before 2008 (see Elbsy and Ratner, 2016). Even alternative measures of vacancies such as the Help Wanted Index and the Job Openings and Labor Turnover Survey (JOLTS) in United States are not immune to measurement issues (see Shimer, 2005; Davis et al, 2010, Davis et al., 2013; Elbsy and Ratner, 2016).

In this context, to characterize vacancy developments in Albania, quarterly data provided by the National Agency for Employment and Skills that cover registered vacancies over a time period from 2010:Q1-2020:Q1, are used. Considering the lack of long time-series data on unemployment and employment (quarterly⁴ data on unemployment and employment were made available by the Institute of Statistics of Albania through the Labour Force Survey starting from 2012; Between 2007 and 2011 the Labour Force Survey in Albania was carried out annually) and to avoid biased results⁵, I also use administrative data to characterize unemployment and employment dynamics in Albania. More specifically, quarterly data on the number of unemployed job seekers registered at the Employment Offices at the county level (for unemployment) and the number of registered unemployed job seekers that are declared employed by the General Directorate of Taxation (employment), are obtained by the database of the National Agency for Employment and Skills⁶ over the same time period as vacancies 2010:Q1-2020:Q1. In this regard, the estimated matching function models the two-sided search and matching process of firms with unfilled vacancies and unemployed workers in Albania in the case when this process is (also) mediated through the Employment Offices.

³ Employment Index, Dua Punë 2021, <https://duapune.com/employment-index> [26.08.2021].

⁴ Anketa e Forcave të Punës, INSTAT 2020, <http://www.instat.gov.al/media/7311/anketa-e-forcave-t%C3%AB-pun%C3%ABs.pdf> [27.08.2021].

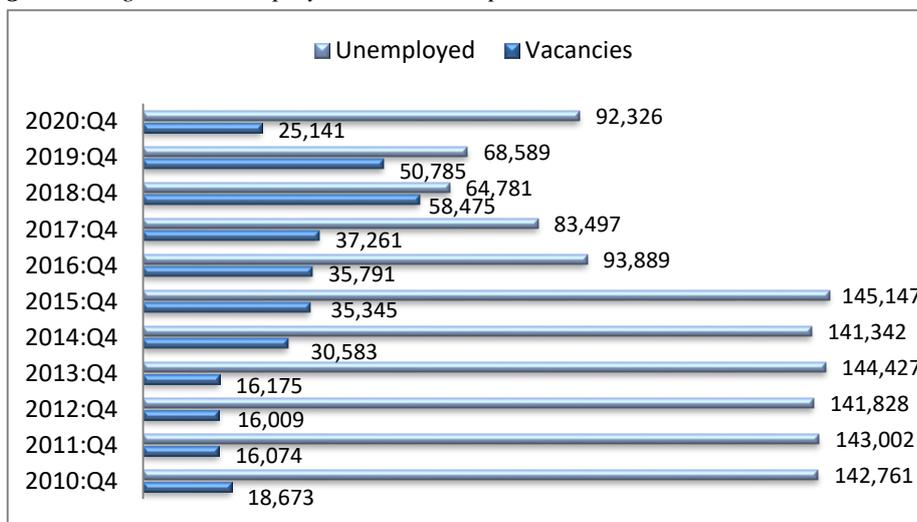
⁵ The data on vacancies only cover registered vacancies, thus capture the behavior of firms that conduct the search and matching process through the Employment Offices, whereas in the case of unemployment and employment data provided by the LFS, the agents are not necessarily limited to the Employment Offices in their search and matching process.

⁶ The data (on vacancies, unemployment and employment) were obtained with the kind permission and help of the National Agency for Employment and Skills in Albania.

3. The Dynamics of the Albanian Labour Market

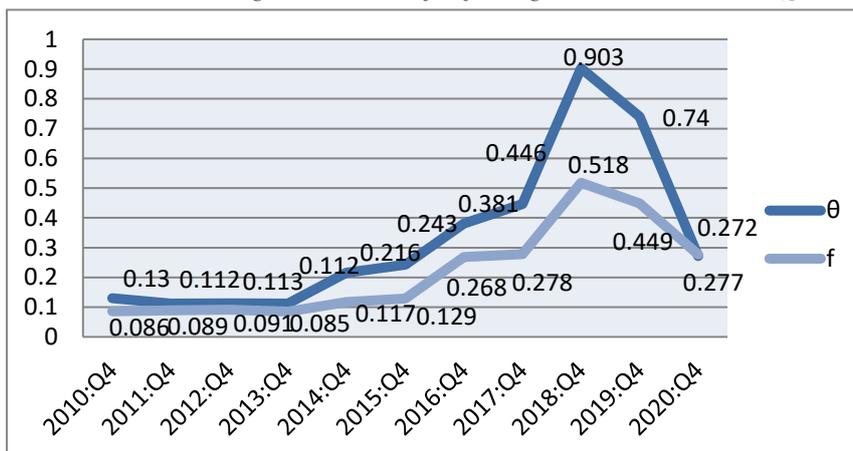
Through a first look at the data on registered vacancies that represent the demand side and those on registered unemployed job seekers that characterize the supply side, a significant demand deficiency can be observed in the Albanian labour market throughout all the available time span (2010:Q4-2020:Q4, Figure 1). The demand deficiency is even more pronounced in the fourth quarter of 2020 (2020:Q4) with the labour demand (vacancies) consisting of only 27 percent of labour supply (unemployed job seekers).

Figure 1: Registered unemployed workers compared to available vacancies in Albania



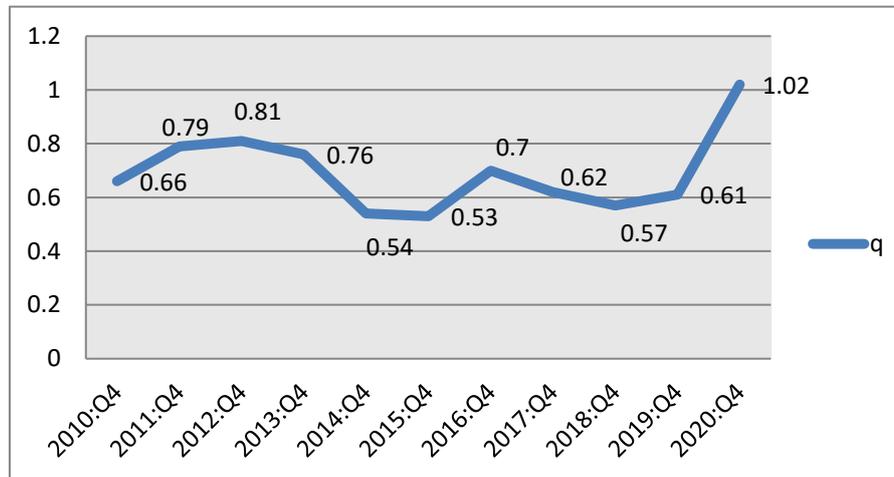
Source: Author based on data from NAES 2010:Q4-2020:Q4

Figure 2: Labour market tightness and the job finding rate in Albania 2010:Q4-2020:Q4



Source: Author's calculations based on data from NAES 2010:Q4-2020:Q4; Labour market tightness is determined as the ratio of registered vacancies to unemployed job seekers. The job finding rate is determined as the ratio of new hires to registered unemployed jobseekers.

Figure 3: Job filling rate in Albania 2010:Q4-2020:Q4



Source: Author's calculations based on data from NAES 2010:Q4-2020:Q; The job filling rate is determined as the ratio of new hires to vacancies.

The loose Albanian labour market may reflect the combined effect of the 26 November 2019 earthquake and the beginning of the global pandemic COVID-19 in the first quarter of 2020, for if compared to the same period in 2018-2019, the gap between job openings and unemployed is less pronounced.

The same labour market condition is observed even by relying on a more formal indicator, the labour market tightness (Figure 2). The registered vacancy-unemployment ratio, a measure of labour market tightness has more than quadrupled since the last recession (2008), but still remains low (<1 throughout all the time span available) when compared to the labour market of the European Union as a whole and the labour market of particular destination countries for Albanian emigrants and asylum seekers (see Consolo and da Silva (2019) for an estimation of labour market tightness in EU countries).

A loose labour market is favorable for employers that can choose their future employees from a wider pool of unemployed, but less favorable for unemployed job seekers who, given the scarce job openings, have to compete with a larger number of unemployed for the same vacant job. In this regard, the current labour market conditions in Albania suggest the presence of a negative congestion externality caused by the pool of unemployed on each other.

In fact by taking a closer look at the data on the job finding and filling rate (Figure 2, Figure 3) it can be observed that the fall in labour market tightness after 2018, is associated with a decline in the job finding rate and an increase in the job filling rate. The job finding rate closely follows the movements of the labour market tightness (further supported by the correlation⁷ between the job finding rate f_t and labour market tightness θ_t 0.95, an indication that the matching function provides a good approach to Albanian data) and although it has almost doubled since the aftermath of the last recession it has yet to reach the highs of recent years.

⁷ A similar point is made by Shimer (2005) for US data.

4. Results

Table 1 presents the results of the empirical matching function, estimated through a set of four equations: Eq.1 and Eq.3 are estimated through the OLS method whereas Eq.2 and Eq.4 by utilizing the GMM method to overcome potential endogeneity problems. In Eq.1 and Eq.2 seasonally unadjusted data are employed, whereas in equation Eq.3 and Eq.4 the data are seasonally adjusted beforehand in order to remove the effect of seasonal fluctuations. In each case the estimations of $(1 - \alpha)$ result positive and statistically significant (Table 1). Depending on the data approach (seasonally adjusted, seasonally unadjusted) and the estimation method employed (OLS, GMM) I estimate values of $(1-\alpha)$ in the range of [0.61-0.79].

Table 1: The estimation of the empirical matching function

Dependent Variable	f_t	f_t	f_t	f_t
Sample (quarterly)	2010-2020 Seasonally unadjusted	2010-2020 Seasonally unadjusted	2010-2020 Seasonally adjusted	2010-2020 Seasonally adjusted
Regression Estimation	(1) OLS	(2) GMM	(3) OLS	(4) GMM
$1-\alpha$	0.77 (7.8)	0.79 (5.8)	0.61 (5.4)	0.70 (6.4)
R^2 , 2010-2020	0.87	0.80	0.83	0.80

Note: t-values are reported in parantheses. In Eq.1 and Eq.2 seasonally unadjusted data are used whereas in Eq.3 and Eq.4 seasonally adjusted data⁸. Eq.1 and Eq.3 are estimated through the OLS method whereas Eq.2 and Eq.4 by utilizing the GMM method. In Eq.2 i use 1 lag of the natural logarithm of U, V and f as instruments whereas in Eq.4 2 lags of U, V and 3 lags of f as instruments. I control for autocorrelation by using 4 lags of $\ln f$ in Eq.1; 2 lags of $\ln f$ in Eq.2; 1 lag of $\ln f$ in Eq.3 and 3 lags of $\ln f$ in Eq.4.

Source: Author

These estimations fall within the range referred in the empirical literature, in particular in the part of the literature that relies on new hires data to characterize new matches in the economy [0.09-0.87] (see Petrongolo and Pissarides, 2001).

These results further confirm the findings of the observational data regarding the presence of a negative congestion externality caused by the pool of the unemployed on each other. More specifically, the high estimated values of $(1-\alpha)$ (>0.5) suggest for a significant negative congestion effect of the pool of unemployed on the job finding probability of an individual job seeker in Albania and that the congestion effects caused by unemployed job seekers on each other are bigger than the ones caused by firms on each other.

In addition, according to these estimates, a one percent increase in registered unemployed jobseekers in Albania decreases the job finding probability by between 0.61 and 0.79 percent (Table 1).

⁸ Using the TRAMO/SEATS method as described in Gomez and Maravall (1996).

5. Conclusion

This paper provides the first attempt to study the dynamics of the Albanian labour market through the lens of the empirical matching function by simultaneously taking into consideration both sides of the matching process: the demand side represented by firms with job openings and the supply side represented by unemployed job seekers.

The observed data reveal a significant demand deficiency throughout the entire time span available: from the aftermath of the last recession (2008) until the recent recession caused by the global pandemic COVID-19. The registered vacancy-unemployment ratio, a measure of labour market tightness has increased since the last recession, but still remains low when compared to the labour market of the European Union as a whole and the labour market of particular destination countries for Albanian emigrants and asylum seekers. The job finding rate closely follows the movements of the labour market tightness and although it has almost doubled since the aftermath of the last recession, it has yet to reach the highs of recent years.

The estimated elasticities of the empirical matching function suggest the presence of a significant negative congestion externality caused by the pool of unemployed on the job finding probability of an individual job seeker in Albania. Furthermore, the congestion effects caused by unemployed job seekers on each other result bigger than the ones caused by firms on one another. The findings indicate that a one percent increase in registered unemployed jobseekers decreases the job finding probability of an individual job seeker in Albania by between 0.61 and 0.79 percent.

To conclude, the empirical matching function, in spite of the challenges posed by data availability (limited to administrative data for vacancies), provides a good characterization of the labour market dynamics in Albania. It introduces new lens for examining the capacity of the Albanian labour market to create sufficient job opportunities and the ability to match existing job openings to unemployed job seekers which is of particular importance for designing policy interventions that can address the prevailing employment and unemployment challenges in Albania.

Looking forward, in future research the empirical matching functions can be estimated at a sectorial or local level in order to generate further information that can prove useful for designing sectorial employment policies. Taking into consideration that the estimated matching function describes the two-sided search and matching process in the case when the process is mediated through the Employment Offices, an issue of major importance would be the generation of vacancy data that create the opportunity for a more inclusive analysis.

References

- Barnichon, R., & Figura, A. (2011). Labor market heterogeneities, matching efficiency and the cyclical behavior of the job finding rate. Unpublished manuscript, CREI.
- Barnichon, R., & Figura, A. (2015). Labor market heterogeneity and the aggregate matching function. *American Economic Journal: Macroeconomics*, 7(4), 222-49.
- Borowczyk-Martins, D., Jolivet, G., & Postel-Vinay, F. (2013). Accounting for endogeneity in matching function estimation. *Review of Economic Dynamics*, 16(3), 440-451.

- Consolo, A., & Da Silva, A. D. (2019). The euro area labour market through the lens of the Beveridge curve. *Economic Bulletin Articles*, 4.
- Domachowska, A. (2021). Albania: The Demographic Crisis and Its Consequences. *IES Commentaries*. No. 352 (49/2021). Available:
<https://ies.lublin.pl/wp-content/uploads/2021/03/ies-commentaries-352-49-2021.pdf>
- Davis, Steven J., R. Jason Faberman, John C. Haltiwanger, and Ian Rucker. (2010). "Adjusted Estimates of Worker Flows and Job Openings in JOLTS." In: *Labor in the New Economy* 187-216, National Bureau of Economic Research.
- Davis, Steven J., R. Jason Faberman and John C. Haltiwanger. (2013). "The establishment-level behavior of vacancies and hiring." *Quarterly Journal of Economics* 128(2): 581-622.
- Dua Punë. (2021). Employment Index. Available: <https://duapune.com/employment-index> [26.08.2021].
- Elsby, M. W., Michaels, R., & Ratner, D. (2015). The Beveridge curve: A survey. *Journal of Economic Literature*, 53(3), 571-630.
- European Policy Institute of Kosovo. (2021). Western Balkans asylum applications in the EU 2009-2019. Available :
<https://cdn.websiteeditor.net/8a3b242c12494d76b2b60ea75852e5f4/files/uploaded/Western%20Balkans%20asylum%20applications%20in%20the%20EU%202009-2019.pdf>
- Gomez, V., & Maravall, A. (1996). Programs TRAMO (Time series regression with arima noise, missing observations, and outliers) and SEATS (Signal extraction in arima time series). *Instructions for the User*. Documento de Trabajo, 9628, 56.
- INSTAT. (2019). Diaspora e Shqipërisë në Shifra. Available:
<http://www.instat.gov.al/media/6547/diaspora-2019.pdf>
- INSTAT. (2020). Anketa e Forcave të Punës. Available:
<http://www.instat.gov.al/media/7311/anketa-e-forcave-t%C3%AB-pun%C3%ABs.pdf>
- INSTAT. (2021). The Population of Albania. Available:
<http://www.instat.gov.al/en/statistical-literacy/the-population-of-albania/>
- ILO. (2021). Albania. Available: <https://www.ilo.org/budapest/countries-covered/albania/lang--en/index.htm>
- Kanik, B., Sunel, E., & Taşkin, T. (2013). Unemployment and Vacancies in Turkey: The Beveridge Curve and Matching Function (Vol. 1335). *Türkiye Cumhuriyet Merkez Bankası*.
- Petrongolo, B., & Pissarides, C. A. (2001). Looking into the black box: A survey of the matching function. *Journal of Economic literature*, 39(2), 390-431.
- Shimer, R. (2005). A theory of the matching function. In *2005 Meeting Papers* (No. 673). Society for Economic Dynamics.

World Conference on MANAGEMENT, BUSINESS and ECONOMICS



15-17 October 2021

Budapest, Hungary

- Shimer, R. (2005). The cyclical behavior of equilibrium unemployment and vacancies. *American economic review*, 95(1), 25-49.
- Thomas, J. (2021). The New Plan for Immigration: We need to talk about Albania. Available: <https://www.smf.co.uk/wp-content/uploads/2021/05/The-New-Plan-for-Immigration-May-21.pdf>
- United Nations Network on Migration. (2020). Voluntary Review Report of the status of implementation of the GCM in Albania during 2019-2020 period. Available: https://migrationnetwork.un.org/sites/default/files/docs/1-_final_-_consolidatedreport_gcm_vr_albania_27_tetor_2020.pdf
- World Bank. (2021). Western Balkans Regular Economic Report, No. 19, Spring 2021: Subdued Recovery.
- Yashiv, E. (2007). Labor search and matching in macroeconomics. *European Economic Review*, 51(8), 1859-1895.