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The spillover effects of economic policy uncertainty on Turkish Unemployment

Ekonomi Politikası Belirsizliğinin Türkiye'de İşsizlik Üzerindeki Yayılma Etkileri

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ABSTRACT

Türkiye is a small open economy with free capital mobility; therefore, it may be subject to international transmission of economic policy uncertainty shocks. This study seeks to determine whether foreign economic policy uncertainties drive unemployment fluctuations in Türkiye. We investigate the spillover effects of global and regional economic policy uncertainty indexes and local variables on the Turkish labour market. The study's main findings show that unemployment is the highest net information receiver under full and rolling sample analysis. The findings also indicate that United States policy uncertainty affects interest rates and inflation through the capital channel. In contrast, European Union and Germany-induced effects affect industrial production and unemployment through the trade channel. The effect of policy uncertainty in EU countries is stronger on unemployment. Local factors influence unemployment more than global factors. Taking steps to control local factors would be beneficial for employment continuity by policymakers.

Keywords: Economic policy uncertainty (EPU), Spillover effects, Unemployment, Labour market

Jel Codes: J101, E44, J64, E32

ÖZ

Türkiye serbest sermaye hareketliliğine sahip küçük bir açık ekonomi olması nedeniyle ekonomi politikası belirsizliği şoklarının uluslararası aktarımına maruz kalabilmektedir. Bu çalışma, dış kaynaklı ekonomi politika belirsizliklerinin Türkiye'deki işsizlik oranındaki dalgalanmaların itici gücü olup olmadığını cevaplamayı amaçlamaktadır. Küresel ve bölgesel ekonomi politikası belirsizlik endeksleri ile yerel göstergelerin Türkiye işgücü piyasası üzerindeki yayılma etkileri araştırılmaktadır. Çalışmanın temel bulguları, tam ve yuvarlanan (dalgalanan) örneklem analizleri altında işsizliğin en yüksek net bilgi alıcısı olduğunu göstermektedir. Bulgular ayrıca, ABD kaynaklı politika belirsizliklerinin faiz oranlarını ve enflasyonu sermaye kanalı üzerinden etkilediğine işaret etmektedir. Buna karşılık, AB ve Almanya kaynaklı etkiler sanayi üretimi ve işsizliği ticaret kanalı üzerinden etkilemektedir. AB bölgelerindeki politika belirsizliğinin işsizlik üzerindeki etkisi daha güçlüdür. İşsizlik, küresel faktörlerden ziyade yerel faktörlerden daha fazla etkilenmektedir. Politika yapıcıların yerel faktörleri kontrol etmeye yönelik adımlar atması istihdamın sürekliliği açısından faydalı olacaktır.

Anahtar Kelimeler: Ekonomi politika belirsizliği (EPU), Yayılma etkileri, İşsizlik, İşgücü piyasası

Jel Sınıflandırması: J101, E44, J64, E32

1. Introduction

Rising digitization, trade liberalization, capital mobility, and global investment expose governments to greater policy uncertainty from trading partners or the global economy (Dogah, 2021). Spillover effects research helps us understand how economic factors and events affect not only the main sectors or industries where they occur but also related sectors and the economy as a whole. Economic shocks and spillovers can occur across borders, making it important for policymakers to work together to manage and mitigate their impacts on the global economy. Since the global financial crisis of 2007–2008, the number of studies examining the spillover effects of various economic uncertainty indicators on real and monetary variables has increased significantly (Baker, Bloom & Davis, 2016; Huynh, Nasir & Nguyen, 2023). Due to the increased frequency of government interventions to stabilize economies and the rise in macroeconomic complexity, the number of studies on policy uncertainty has risen dramatically in the aftermath of the crisis (Chen et al., 2019). Fontaine, Razafindravaosolonirina, and Didier (2018), Baker et al. (2016), and Baker et al. (2022) identified several significant events in the global economy over the past decade. These events included Lehman Brothers' bankruptcy in September 2008, the global financial crisis of 2008–2009, the Eurozone debt crisis in 2011, the US fiscal cliff in 2012, the government shutdown in 2013, the Chinese stock market crash in 2015, the European immigration crisis in 2015, the Brexit in 2016, Trump's election in 2017, rising steel and aluminum tariffs in 2018 due to Trump's trade policy tensions, his impeachment in December 2019, the effects of the COVID-19 pandemic in 2020–2021, and the recent political crises in Brazil, France, and South Korea. These events are likely to have significant impacts not only on the countries in which they occur but also on the macroeconomic indicators of other related countries. Policy uncertainty can affect economic activity and growth through alterations in investment, trade, and consumption decisions. Uncertainty in a nation's economic policies can result in spillover effects on other countries through various transmission channels, such as trade, *financial system risk premiums*, and investors, firms, and households' *wait-and-see attitude*. The spillover effects of the foreign EPU can significantly impact the labour markets of countries with trade or investment ties with foreign countries. The alteration of trade regulations, namely tariffs and quotas, may occur in response to fluctuations in foreign uncertainty. These changes may affect trade volumes and pricing, and other nations may retaliate, limiting trade and raising consumer prices. Foreign import tariffs may reduce demand for domestic goods and local employment. This may affect trade-linked firms and countries.

Workers in international trade and foreign investment-dependent industries may be significantly exposed to trade policy and geopolitical uncertainties. Foreign investment and financing (capital flows-financial spillovers) might also fluctuate due to economic policy uncertainties. Investors may withdraw capital from a country if they become more risk-averse because of rising uncertainty. This could affect firms and employment in the country. Aggregate demand significantly affects firms' hiring and investment decisions. Instead of investing in new projects and hiring new personnel, firms may choose a "*wait and see*" strategy because policy uncertainty raises the upper threshold value of investment (Bloom, 2009). Risk-averse households, owing to a rise in a negative outlook towards prospects, could result in a decline in consumer spending and a surge in savings for preventive purposes. According to Trung (2019), the decrease in output and subsequent reduction in labour demand can be attributed to consumers' and investors' cautious attitude, who adopt a wait-and-see strategy. The occurrence of investment spillovers may reduce investment in specific industries or regions, which could have harmful effects on employment and economic expansion. According to Al-Thaqeb and Algharabali (2019), policy uncertainty significantly impacts businesses, governments, and consumers' purchasing and spending decisions. To mitigate adverse effects and foster economic stability and expansion, policymakers, households, and businesses must comprehend and manage the spillover ramifications of ambiguous economic policies. The existing literature provides different results. Caggianao, Castelnuovo and Figueres (2017) found that the impact of unemployment is more significant both statistically and economically in the United States during economic recessions. Caggiano et al. (2019) presented compelling findings regarding the asymmetric spillover effects of US economic policy uncertainty on Canadian unemployment. Fontaine (2017) indicates that the Chinese economic policy uncertainty (EPU) substantially influences the levels of uncertainty, unemployment, and industrial production in the United States, especially during economic downturns. According to Trung's (2019), the impact of US economic policy uncertainty on 32 countries, representing over 90% of global GDP, has been found to have notable implications for the business cycle fluctuations of global economies. The analysis that improving institutional quality, financial openness, and trade openness would enable these nations to withstand the impact of policy uncertainty emanating from the United States. The research done by Netšunajev and Glass (2017) confirms the adverse impacts of policy uncertainty shocks on unemployment rates in the European Union and the United States. The result was obtained through the application of a structural vector autoregression methodology. Exogenous shocks affected the Eurozone, whereas endogenous shocks appear to have had a greater impact on the United States. Despite a scarcity of literature related to the global labour market, particularly concerning Türkiye, this study attempts to fill this gap by examining the effects of economic policy uncertainty originating from four regions and countries on the unemployment rate in Türkiye. The Turkish economy has extensive integration into global markets, such that fluctuations in market volatility at a global level have immediate and profound impacts on domestic markets (Alkan & Çiçek, 2020). Türkiye is frequently and significantly impacted by external shocks (Civcir & Varoglu, 2019). The relationships among primary trading counterparts can largely explain the mechanisms through which uncertainty spillovers are transmitted. Türkiye's top three trading partners in 2022 were the United States, the EA-27, and Germany, collectively accounting for 6.6%, 40.5%, and 8.3% of the country's total exports. Given the economic downturn that member countries of the EU are currently experiencing, the mutual economic dependence between Türkiye and Europe has resulted in a market contraction for Turkish exporter firms (Sahinoz & Cosar, 2018). The Turkish economy has recently experienced considerable policy uncertainty, including an attempted coup in

July 2016, trade tensions in 2018, the COVID-19 pandemic, and fluctuations in capital movements influenced by various domestic and international factors. Uncertainties have significantly impacted the economy of the country, particularly its labour market. With a population of over 86 million and a relatively young labour force, Türkiye's unemployment rate is critical for the country's economic and social stability. Thus, the spillover effects of uncertainty on the labour market are considered a growing concern for policymakers and economists in Türkiye, which is struggling with high and persistent unemployment. Using the spillover index that Diebold and Yilmaz (2012) developed, this paper investigates four economic policy uncertainty indices in the Turkish labour market. This study contributes insights to policymakers seeking to manage and mitigate the harmful effects of uncertainty on the country's labour market. To the best of our knowledge, this study makes a novel contribution in terms of its methodology and research questions. The research consists of four main questions. Are uncertainties in foreign economic policy driving fluctuations in macroeconomic variables in Türkiye? Which economic policy uncertainty has more impact on the labour market? Is unemployment a net transmitter or receiver? Are relationships changing over time? Most research articles focus on the impacts of the United States or global uncertainty. However, this research also examines the EU and Germany using full and rolling sample analysis following Diebold and Yilmaz (2012). This research makes a novel contribution to policymakers and academic literature by determining the transmission channels through which regions or countries may impact labour markets. The remainder of this paper is organized as follows: Section 2 defines the Diebold and Yilmaz (2012) spillover index. Section 3 examines data and descriptive statistics. Section 4 discusses the findings discussed under related events. Finally, section 5 presents the policy implications.

2. Empirical Methodology

We employ the spillover index, a quantitative measure of market interdependence (Yin & Han, 2014), and the VAR-based connectedness model by Diebold and Yilmaz (2012). The primary advantage of this strategy is its independence from the order of variables. According to Huynh et al. (2023), this method enables the computation of spillover effects' strength and direction over time and between different variables.

We assume covariance stationary p^{th}-order K-variable VAR (p) model with the following matrix notation:

$$Y_t = \phi_0 + \sum_{i=1}^{p} \phi_i Y_{t-i} + u_t$$

where Y_t is K × 1 vector of endogenous variables, ϕ is a K ×K autoregressive coefficient matrix, u_t is a K × 1 dimensional vector of zero-mean error terms and the covariance matrix $\sum$. Using the Generalized Forecast Error Variance Decomposition (GFEVD) of the moving average based on VAR proposed by Koop, Pesaran, and Potter (1996) and Pesaran and Shin (1998) can be given by:

$$Y_t = \phi_0 + \sum_{i=0}^{\infty} \psi_i u_{t-i}$$

where the coefficients are in the (K ×K) matrix of ψ_i. H-step-ahead generalized forecast error variance decomposition:

$$\theta_{ij}^{\delta}(H) = \frac{r_{jj}^{-1}\Sigma_{h=0}^{H-1}(e_i'\psi_h\Sigma\, e_j)^2}{\Sigma_{h=0}^{H-1}(e_i'\psi_h\Sigma\psi_h'e_i)}$$

where r_{jj} is the standard deviation of u_t of the jth equation, Σ is the variance matrix of the vector u_t, e_i is the selection of the ith element vector. Because the sum of the rows of the variance decomposition matrix is not equal to one, the variance decomposition matrix can be normalized ($\Sigma_{j=1}^{K}\theta_{ij}^{\delta}(H)\neq1$) as

$$\ddot{\theta}_{ij}^{\delta}(H) = \frac{\theta_{ij}^{\delta}(H)}{\Sigma_{j=1}^{K}\theta_{ij}^{\delta}(H)}$$

Total spillover indexes (TSI, %) is computed as follows:

$$TSI(H) = \frac{\Sigma_{i,j=1,i\neq j}^{K}\ddot{\theta}_{ij}^{\delta}(H)}{K}\times100$$

To measure *directional spillovers* (DSI, %) from *i* to all systems (*k*) (*transmitter-directional spillover index, i→k*) and from *k* to *i* (*receiver-directional spillover index, i←k*), we can define as:

$$DSI_{K,i\leftrightarrow k}^{H} = \frac{\Sigma_{j=1,i\neq j}^{K}\ddot{\theta}_{ij}^{\delta}(H)}{K}\times100$$

In the next step, we can compute *net spillover index* (NSI, %) *from* the difference between the transmission and reception spillover indexes. NSI can be defined as follows:

$$NSI_i^{H} = (DSI_{transmitter,(i\rightarrow k)}^{H}) - (DSI_{receiver,(i\leftarrow k)}^{H})$$

The calculation of the net spillover effect between two assets (*i* and *j*) facilitates policymakers' formulation and mitigating the negative effects of the spillover effect. *Net pairwise spillover index* (NPSI, %) can be defined as follows:

$$NPSI(S_{ij}^{H}) = (S_{j\leftarrow i}^{H}) - (S_{i\leftarrow j}^{H})$$

3. Data and Descriptive Statistics

The empirical estimation was performed using monthly data from January 2006 to November 2022. Table 1 presents definitions and sources obtained from domestic and international data sources. The variable of uncertainty in this study is represented by the Economic Policy Uncertainty Index developed by Baker et al. (2016), through an analysis of the frequency of terms related to economics, policy, and uncertainty in popular newspapers. The following points of view determined the motivation behind the choice of the four policy uncertainty indices: a) The geographical proximity of Türkiye to the European Union and the trade channel. b) The strong financial integration of Türkiye with the United States, and the efficiency of the capital flow channel. c) The European Union and

the United States are the two largest economic regions that impact Türkiye. d) Germany is Türkiye's largest trading partner. e) The potential impacts of global uncertainty on the small and open Turkish economy are a matter of concern. The local variables employed in this study include the industrial production index, interest rate, and inflation, which are theoretically linked to unemployment. The appendix contains graphical representations of data demonstrating an increase in uncertainty at both global and U.S. levels during the period following 2015. The two uncertainty indices experienced their highest levels during the COVID-19 pandemic. Conversely, the Eurozone has experienced a notable increase in uncertainty because of significant events such as the 2011 European debt crisis, the 2016 Brexit and the ongoing pandemic. Germany exhibited a relatively higher level of stability in terms of uncertainty until a significant surge was observed after 2021. The maximum level of unemployment was observed during the 2008–2009 global crisis, reaching 13.6%, and during the 2019–2020 pandemic, peaking at 14.2%.

Table 1. Data definitions and sources

Variables		Explanation	Source
Foreign	GEPU	Global Economic Policy Uncertainty Index	Economic Policy Uncertainty indexes constructed by Baker et al. (2016) https://www.policyuncertainty.com/index.html
	USEPU	Economic Policy Uncertainty Index for the United States	
	EUEPU	Economic Policy Uncertainty Index for European Union Countries	
	GEREPU	Economic Policy Uncertainty Index for Germany	
Domestics	UNEMP	Unemployment rate (%) (15+) (Seasonally adjusted)	Turkish Statistical Institute
	IND	The industrial production index is a perfect proxy for real gross domestic product, annual percentage change (%) (2015=100)	
	CPI	CPI inflation rate (%), annual percentage change, (2003=100)	
	INTRATE	Short-term interest rate (%)	OECD

Table 2 summarizes the data, including descriptive statistics and stationarity. The Jarque-Bera test results indicate that all series are not normally distributed. Diebold and Yilmaz's (2012) model is based on VAR; thus, the series should be stationary to avoid biased forecasts. The KPSS (Kwiatkowski, Phillips, Schmidt, & Shin (1992)) stationary test results show that all series are stationary at the same level.

Table 2. Descriptive statistics and Unit Roots

	Mean	Variance	JB	KPSS
GEPU	161.384	5777.531	28.647***	0.132**
USEPU	149.07	4861.144	329.170***	0.096*
EUEPU	188.827	6091.882	21.530***	0.070*
GEREPU	200.258	21611.295	495.237***	0.173***
IND	2.246	14.521	368.300***	0.045*
CPI	5.289	22.474	1465.939***	0.155***
INTRATE	13.068	23.368	17.626***	0.136**
UNEMP	10.584	2.849	14.173***	0.141**

Notes: *, **, and *** indicate acceptance of the null hypothesis (KPSS: The series is stationary) at the 10%, 5%, and 1% significance levels, respectively; the KPSS test equation includes a constant term and trend; critical values at the 1%, 5%, and 10% significance levels are 0.216, 0.146, and 0.119, respectively.

4. Empirical Results

4.1. *Full sample spillover analysis*

The total connectedness of the system is 65.94%. The model's autoregressive structure explains 26.4% of the system's fluctuations, whereas the variables' spillover effects account for 65.94% (Dogah, 2021). Hence, idiosyncratic country-specific shocks account for around one-fourth of this variance (Klößner & Sekkel, 2014). Five significant economic implications can be derived from the full sample analysis. First, GEPU (33.27%), USEPU (32.3%), EUEPU (30.17%), and GEREPU (24.52%) are the policy uncertainty variables with the highest spillover effect on local variables (ind+cpi+intrate+unp), excluding itself. Global, US, and European uncertainty affect local variables almost equally, while a change in Germany has a relatively minor impact. It is common for global uncertainty to have more potent spillover effects than in Germany. The difference in the spillover effect is mainly due to the more stable fluctuations in Germany. At the same time, turmoil in major economies, such as the United States, China, and Russia, is included in the GEPU. These findings are consistent with a small and open Turkish economy. *Second*, EUEPU has relatively more substantial spillover effects towards unemployment (8.82%) and the industrial production index (8.7%), whereas USEPU has relatively more potent spillover effects towards interest rates (10.34%) and inflation (7.58%). Since Türkiye and the EU countries have a dominant trade partnership relationship, uncertainties in the EU region affect industrial production and unemployment through the trade spillover channel. Fluctuations in the EU region affect the production structure and labour demand of local importing and exporting firms. Practises such as tariffs, quotas, cancellations, and suspensions of orders that uncertainty in the EU region may cause may affect the Turkish labour market. Hence, firms are willing to reduce their investments and not hire new workers. The more substantial impact of uncertainty from Germany on unemployment (8.15%) and the industrial production index (7.97%) supports the existence of a trade channel. *Third*, uncertainty in the US has a more significant spillover effect on inflation (7.58%) and interest rates (10.34%). Türkiye and the United States have stronger financial connections and integration than trade relations (Soofi, 2008). As a result, the effects of the FED's monetary policy became more pronounced in the Turkish economy. Uncertainty in US economic policy has a spillover effect on interest rates and inflation through the capital flow financial channel. Uncertainties in money and capital markets in the United States seriously impact interest rates in local markets. Interest rate changes impact households' spending and decisions about firm investment (labour demand) through the credit channel. Consumer and investment credit utilization costs increase with rising interest rates triggered by US policy uncertainty. This spillover effect leads to a decline in domestic aggregate demand and loss of employment. An increase in interest rates is likely to lead to cost-push inflation. Under the wait-and-see effect, uncertainty in the US increases risk aversion in households and firms. Firms delay new investments and hiring, increasing the precautionary price of goods and services. Households increase their precautionary savings by reducing consumption. This behavior of firms can lead to inflation and unemployment. USEPU ultimately has a ripple effect on inflation, directly related to interest rates. *Fourth*, the spillover effect of local variables (excluding inflation) on the labour market appears to be more dominant than that of foreign variables. The findings indicate that unemployment changes are primarily due to industrial production fluctuations. Regarding the production-employment relationship, this result aligns with theoretical expectations (Okun law). These results highlight the importance of supporting the manufacturing sector to promote employment growth and stability. Additionally,

changes in short-term interest rates have a significant spillover effect on unemployment. This finding highlights the importance of monetary policy in managing employment. Policymakers should pay close attention to changes in interest rates when making decisions about monetary policy. These two findings indicate that unemployment will change when there is a fluctuation in industrial production and short-term interest rates in Türkiye. Policymakers must monitor these two variables to fight unemployment. In addition, policy uncertainty in the US impacts employment through short-term interest rates. Foreign EPU can impact the domestic economy; however, it may have less of a negative impact on the labour market, especially if local institutions and policies are robust and able to cope with external shocks. This does not that uncertainty in foreign economic policy has any bearing on labour market results. Instead, they may have less significant effects than local problems. The analysis of the full sample shows that policymakers should concentrate on enhancing local economic factors to support employment growth and stability. They should also take precautions to minimize and lessen the damaging effects of uncertainty in foreign economic policy on the domestic labour market while remaining alert to any potential spillover effects. Lastly, all policy uncertainty variables are net information transmitters to the system, and local variables (except interest) are net information receivers. GEPU is the largest net transmitter, and unemployment is the largest net receiver. These findings that global policy uncertainty variables have a more decisive influence on other economic variables than those that influence them. Fluctuations in global economic policy uncertainty can exert far-reaching effects on the Turkish economy by affecting a range of other economic variables. The extreme sensitivity of the unemployment rate to changes in other economic variables requires policymakers to exercise greater caution in maintaining a stable labour market.

Table 3. The static return spillover effects (%) – connectedness matrix

	GEPU	USEPU	EUEPU	GEREPU	IND	CPI	INTRATE	UNEMP	FROM
GEPU	26.3	19.99	18.6	15.96	6.55	3,12	4.02	5.46	73.7
USEPU	24.86	32.89	12.83	12.57	5.39	3.52	4.14	3.8	67.11
EUEPU	21.13	12.96	29.57	19.76	5.7	3.28	2.48	5.12	70.43
GEREPU	19.09	14.25	20.13	30.57	5.04	4.17	2.18	4.55	69.43
IND	9.14	7.27	8.77	7.97	37.6	5.75	15.54	7.97	62.4
CPI	6.15	7.58	5.8	3.85	10.26	40.52	21.53	4.32	59.48
INTRATE	9.38	10.34	6.78	4.55	12.97	7.74	40.97	7.26	59.03
UNEMP	8.6	7.11	8.82	8.15	14.43	6.22	12.64	34.03	65.97
TO	98.35	79.49	81.73	72.8	60.34	33.8	62.53	38.49	527.54
Inc. Own	124.65	112.38	111.31	103.38	97.94	74.32	103.5	72.52	cTCI/TCI
NET	24.65	12.38	11.31	3.38	-2.06	-25.68	3.5	-27.48	75.36/65.94

Note: The column variables indicate the source variable of the spillover, and the row variables indicate the variable to which the spillover is directed. *TO:* Total spillover effects (contribution) to others (except itself); *FROM:* receives from the system; Inc. Own = directional spillover effect including its own; *NET:* net spillover effect (to-from); *TCI:* Total Connectedness Index indicates the total information spillovers among all variables. The optimal lag length of the VAR model is 1, according to the AIC information criterion. The forecast horizon was set to 12 (a year).

4.2. *Time-varying spillover analysis*

We compare and outline the effects of four policy uncertainties and three macro indicators on the unemployment rate to maintain consistency with the research objective. The rolling window size was 50 for the time-varying analysis. This corresponds to four years. This was chosen to be analyzed for as long as possible.

4.2.1. *Total Spillover Results*

Figure 1 illustrates how the total spillover index among all variables in the model has changed over time. The spillover index, around 90% in early 2010 declined until the last months of 2012. In the aftermath of the global crisis, central banks' implementation of macroprudential policies that pursued financial stability and price stability targets contributed to the decline in the index. After the last quarter of 2013, the index began to rise, peaking at 89.38% in July 2016, 89.38% in August 2018, and 94.57% in April 2020, and remained flat during the 2021–2022 period. The end of monetary easing initiatives like quantitative easing, which economic administrations implemented in the wake of the global financial crisis, by mid-2013 contributed to the spillover effect. On the other hand, the coup attempt in Türkiye in July 2016, Brexit in 2016, Türkiye-US political disagreements peaked in August 2018 (mutual trade tariffs), steel and aluminum tariffs in 2018, and COVID-19's effects in 2020 triggered the spillover of uncertainty.
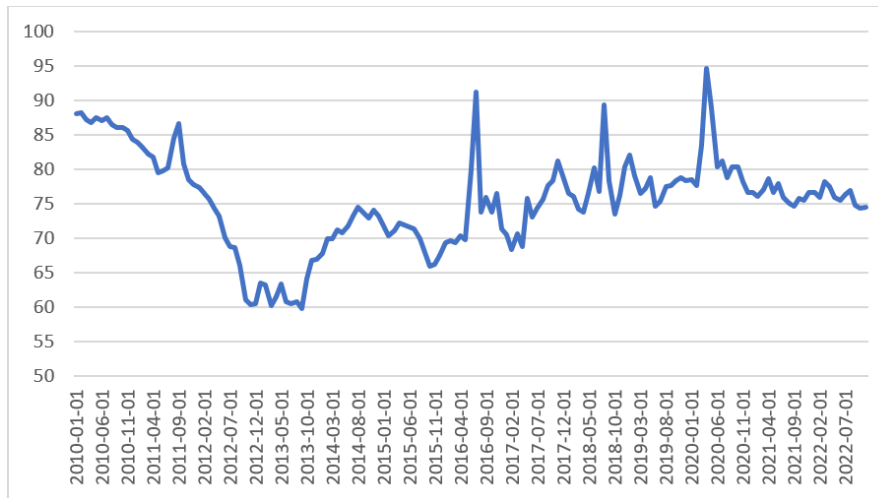
Figure 1. Rolling total spillover index- TCI (%)

4.2.2. *Directional Spillover Results*

Figure 2 displays the outcomes of the directional spillover index from the whole system toward unemployment. The directional spillover effect was not stable and fluctuated throughout the period. Two significant results are observed here. First, the system significantly affects the Turkish labour market, which is sensitive to domestic and foreign factors. Second, one of the most important events that affected unemployment during the period studied was the political dispute with the United States in August 2018.

Figure 2. Time-varying directional spillover indices from System to Unemployment (%)

4.2.3. *Net spillover results*

A full sample analysis shows that the unemployment is the most significant net information receiver. Has unemployment remained able to hold this position over time? Figure 3 displays the time-varying net spillover index of unemployment. The findings indicate that unemployment was a net transmitter between November 2014, March 2016, and September 2022. Except for these dates, the entity is a net information-risk receiver. Additionally, the index reached a maximum in July 2016 (-70.43%). The coup attempt significantly impacted the labour market through industrial production and short-term interest rates. These findings support the results of the full sample analysis.
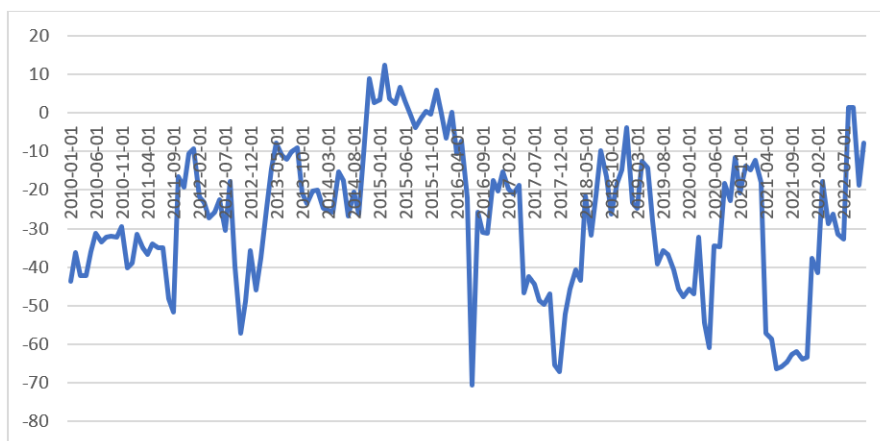
Figure 3. Time-varying net spillover index (%)

The net spillover effects of economic policy uncertainties and local macro indicators on unemployment are shown in Figures 4 and 5. The spillover effect of policy uncertainties declined until 2013 and then increased unsteadily. In July 2016, the spillover effect of uncertainty in European regions was dominant, while in July 2020-November 2021, the spillover effect of uncertainty originating in Germany diverged positively from the others. The findings indicate that uncertainty originating in Germany significantly impacted unemployment through the trade channel during the

COVID-19 pandemic. Order cancellations by Germany and the Eurozone countries affected the labour market.
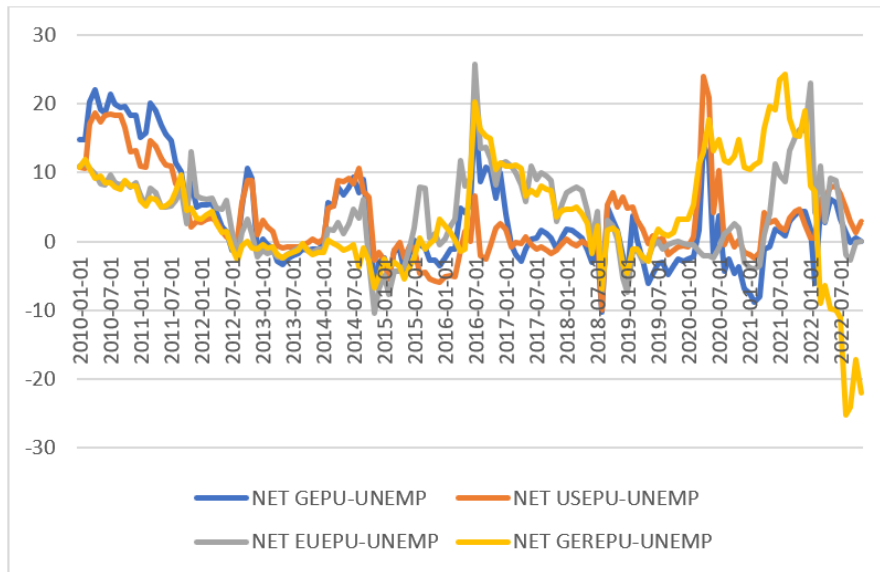

Figure 4. Net spillover index of policy uncertainties towards unemployment (%)

However, fluctuations in short-term interest rates and industrial production significantly impact the labour market. The effect of fluctuations in inflation is relatively less and more stable. The 2011 European debt crisis and the 2018 Turkish-US tensions have affected unemployment through capital flow fluctuations in local interest rates. In general, the spillover effect of fluctuations in macroeconomic indicators on unemployment has been increasing since early 2017.
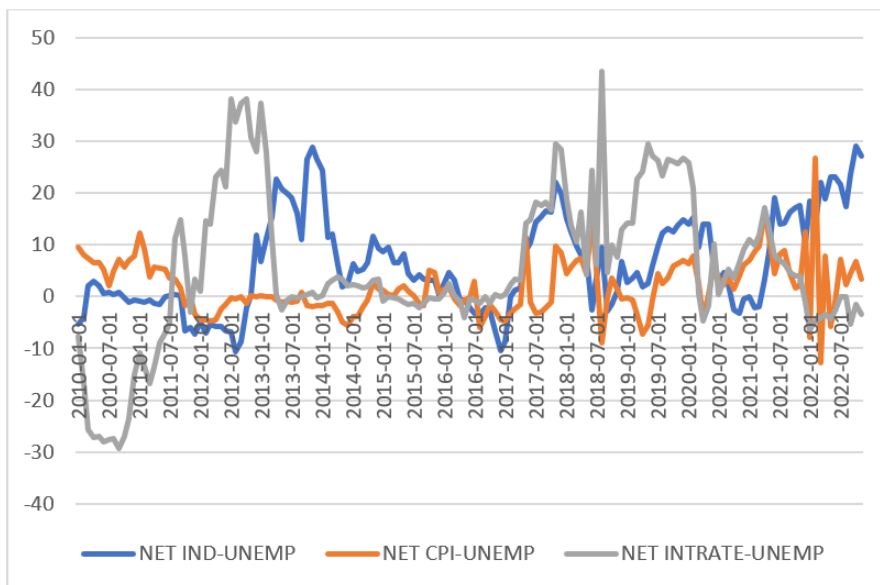
Figure 5. Net spillover index of local macro variables towards unemployment (%)

4.2.4. Net pairwise spillover results

The time-varying net spillover index results between the two variables are presented in Figures 6 and 7. All policy uncertainty indices are net informative of unemployment over the period. The spillover effect on unemployment is dominated by global uncertainty and is relatively less by US uncertainty. The impact of uncertainty in Germany and Europe was more visible after 2016 (Brexit). Here, it is possible to claim that the trade channel has a greater impact on the Turkish labour market than the capital channel.
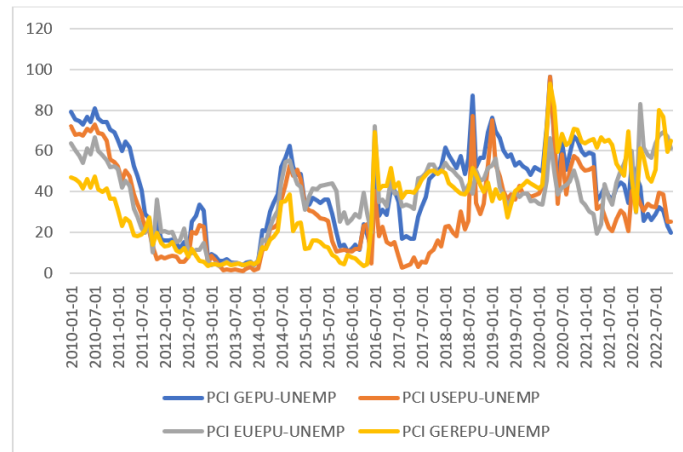
Figure 6. Net pairwise spillover index of policy uncertainties towards unemployment (%)

Macro variables are informative regarding the spillover effects between local variables and unemployment. The dominant spillover effect of the increased role of monetary policy in the aftermath of the global crisis on unemployment had lost strength since 2013 when quantitative easing was terminated. The impact of industrial production fluctuations on unemployment is observed in every period. There are two significant findings. First, after July 2016, the spillover effect of all local variables increased and became more volatile. Second, after the last quarter of 2021, the spillover effect was strengthened as rising inflation disrupted firms' pricing behavior and the production process.
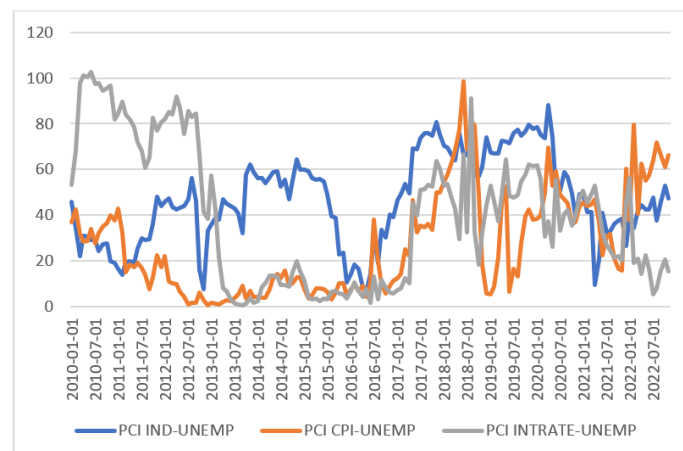

Figure 7. Net pairwise spillover index of local macro variables for unemployment (%)

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5. Conclusion and policy implications

Economic policy uncertainty indicates the need for clarity regarding the future direction of fiscal and monetary policies implemented by governments. Uncertainty can hinder businesses and individuals from making investment and spending decisions, potentially negatively affecting economic growth and employment. Measuring the spillover effect of economic policy uncertainty on unemployment is of significant economic and social importance. Such measurements can help us better understand unemployment and contribute to developing more effective policies to combat it. In addition, monitoring the effects of uncertainty on unemployment can help policymakers identify areas that require attention.

The Turkish economy adopts a free-market approach and is an emerging market with a high degree of openness to international trade. Emerging markets are probably influenced by global economic developments, particularly the economies of their trading partners. This study focuses on two fundamental questions. First, is the Turkish economy affected by uncertainties in global economies, such as those in the United States, the European Union (EU), and Germany? Second, which policy uncertainty has the most significant impact on unemployment? Predictions using Diebold and Yılmaz (2012) model revealed four significant findings. First, the trade channel has a more pronounced effect on industrial production and unemployment. In this context, it is appropriate to preserve employment in response to policy uncertainties that occur in essential trading partners such as the EU and Germany. The findings of this study support those of Alkan and Çiçek (2020) and Civcir and Varoglu (2019). Secondly, the capital channel has a more decisive influence on inflation and interest rates. Implement measures to minimize the effects of fluctuations in the United States on monetary indicators through the capital channel are advisable. Third, significant developments in Türkiye and its trading partners have triggered uncertainty. Finally, unemployment is more influenced by local factors than global factors. Taking steps to control local factors can help improve employment continuity.

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Appendix.1 Data