

Policy Uncertainty and Macroeconomic Dynamics: A New Index for Morocco

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Challenges from Higher Uncertainty

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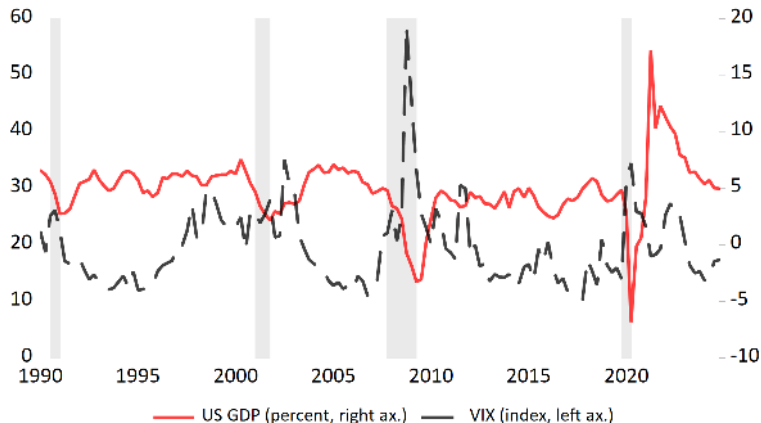
Outline

1. Introduction
2. Economic Policy Uncertainty in Morocco
3. Methodology and data
4. Results
5. Conclusions

A Historical Perspective: The Great Recession

Uncertainty at historical highs

The uncertainty–business cycle relationships



Uncertainty at the center of attention

The impact of uncertainty shocks on macroeconomic dynamics increasingly concerns researchers, financial media, and policymakers:

FOMC minutes, 2008: "Several [survey] participants reported that uncertainty about the economic outlook was leading firms to defer spending projects until prospects for economic activity became clearer."

O. Blanchard, 2009: "Uncertainty is largely behind the dramatic collapse in demand. Given the uncertainty why build a new plant or introduce a new product now? Better to pause until the smoke clears."

Uncertainty at the center of attention

Kristalina Georgieva, 2020: "If I had to identify a theme at the outset of the new decade it would be increasing uncertainty".

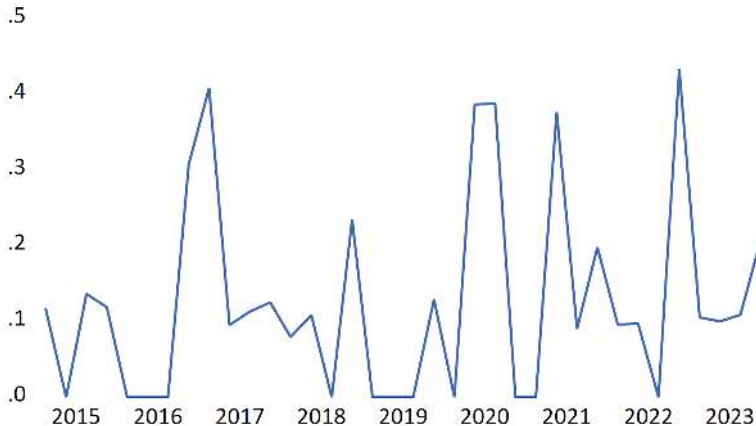
During the March 2025 Bank Al-Maghrib Governor's press briefing, uncertainties related to conflicts, geopolitical tensions, economic policies (particularly trade policies), and domestic climatic conditions were mentioned **three times**, compared to **seven times** at the December 2024 briefing.

Uncertainty measures

Several measures of uncertainty have been developed and widely used in the literature over the past decade:

- Financial uncertainty: Implied Volatility (VIX, VSTOXX, etc.);
- Macroeconomic Uncertainty (MU): Jurado et al. (2015), Ludvigson et al. (2021);
- Economic Policy Uncertainty (EPU): Baker, Bloom and Davis (2016);
- World Uncertainty (WUI): Ahir et al. (2022).

World Uncertainty Index: Conceptual shortcomings



Transmission mechanisms

The literature identifies three main channels through which uncertainty is transmitted to both the financial and real sectors of the economy:

- The risk premium channel: Gilchrist et al. (2014) et Arellano et al. (2019);
- The real options channel: Bernanke (1983), Dixit and Pindyck (1994) et Baker and Bloom (2013);
- The precautionary savings channel: Leduc and Liu (2012), Basu and Bundick (2017) and Yıldırım-Karaman (2018).

Outstanding questions: What about Morocco

1. How to measure Economic Uncertainty in Morocco while accounting for domestic specificities?
2. How can the transmission of uncertainty to the moroccan economy be rigorously quantified over the course of the past decade?
3. Do the main macroeconomic aggregates respond uniformly, both in direction and magnitude, to the various measures of uncertainty?

Contributions at the intersection of multiple strands of the uncertainty literature

1. We construct the first Economic Policy Uncertainty (EPU) index for Morocco, the first in the MENA region and only the second in Africa;
2. We quantify various transmission mechanisms using variables rarely explored in the associated literature (e.g., currency in circulation M0, household confidence index);
3. Finally, we estimate a purely domestic proxy for uncertainty and undertake a comparative analysis of the impact of the EPU, RV, and WUI indices on the various transmission channels.

Measuring Economic Policy Uncertainty in Morocco

We follow Baker, Bloom, and Davis (2016) and construct an Economic Policy Uncertainty index using *automated text analysis methods*, based on *the frequency of articles from seven major Moroccan newspapers in both French and Arabic*, archived on FACTIVA.

Our objective is to measure uncertainties related to different *types of economic policies (monetary, fiscal, etc.)*, formulated by various *decision-making bodies (government, parliament, central bank, etc.)*, as well as *the effects of their implementation or lack thereof (in terms of taxes, deficit, policy rate, etc.)*.

Table 1: Arabic, French, and English keywords corresponding to "Economic", "Policy", and "Uncertainty" categories

Keywords in Arabic	Keywords in French	Translated keywords
Uncertainty-related keywords		
انعدام ou شك ou رية ou غموض ou غامض انعدام ou الاستقرار ou عدم اليقين ou اليقين ou تقلب ou اضطراب ou عدم الاستقرار ou خلل ou اختلال	incertitude*, incertain*	uncertain*
Policy-related keywords		
سياس or نقد or ضريبة or ضريب or قنئين or قوانين or قانون or برلمان or نقد or بام or بنك المغرب or بنك مركزي or تشريع or معدل الفائدة or اسعار الفائدة or سعر الفائدة or اسعار رئيسي or سعر رئيسي or نسب الفائدة or رسم or جباي or ضرائب or حكوم or مالي or وزراء or وزير or وزار or رسوم or ميزاني or عجز or تعديل or إصلاح or تنظيم or إنفاق خزين or إنفاق حكوم or إنفاق عام or إيراد حكوم or إيراد عام or عبء خزين or دين or دين حكوم or دين عام or إيراد خزين دين سيادي or خزين	fiscal* or "politique fiscale" or mon- etaire* or "politique monetaire" or parlement* or loi* or legisla* or "banque centrale" or "bank al- maghrib" or bam or "taux d'interet" or "taux directeur" or gouvern* or tax* or impot* or minist* or financ* or regul* or reglementa* or reform* or deficit* or budget* or "politique budgetaire" or "depense publique" or "depense du tresor" or "charge du tresor" or "recette publique" or "re- cette du tresor" or "dette publique" or "dette du tresor" or "dette sou- veraine"	fiscal* or "fiscal policy" or mone- tary* or "monetary policy" or par- liament* or law* or legisla* or "cen- tral bank" or "Bank Al-Maghrib" or bam or "interest rate" or "pol- icy rate" or govern* or tax* or min- istr* or financ* or regulat* or re- form* or deficit* or budget* or "pub- lic spending" or "treasury charges" or "public revenue" or "treasury re- venue" or "treasury resources" or "public debt" or "treasury debt" or "sovereign debt"
Economy-related keywords		
اقتصاد	economi*	econom*

Table 2: Summary of newspapers utilized for index construction

	Newspaper	Total articles	EPU-related articles	Data span
Francophone newspapers	Le Matin	90,192	841	October 2016 - March 2025
	La Nouvelle Tribune	65,649	856	April 2011 - March 2025
	L'Économiste	50,258	596	October 2016 - March 2025
	Le Desk	15,580	100	June 2020 - March 2025
	Libération	10,281	148	April 2022 - March 2025
Arabic-language newspapers	Al Ahdath Al Maghribia	87,023	2,473	October 2012 - March 2025
	Bayane Al Yaoume	36,265	3,737	October 2012 - March 2025
Total		355,248	8,751	April 2011 - March 2025

We consider the ratio of articles related to EPU to the total number of publications in each newspaper $i = 1, 2, \dots, 7$ for each month t :

$$X_{it} = \frac{epu_articles_{it}}{total_articles_{it}} \quad (1)$$

We standardize:

$$Y_{it} = \frac{X_{it}}{\sigma_i} \quad (2)$$

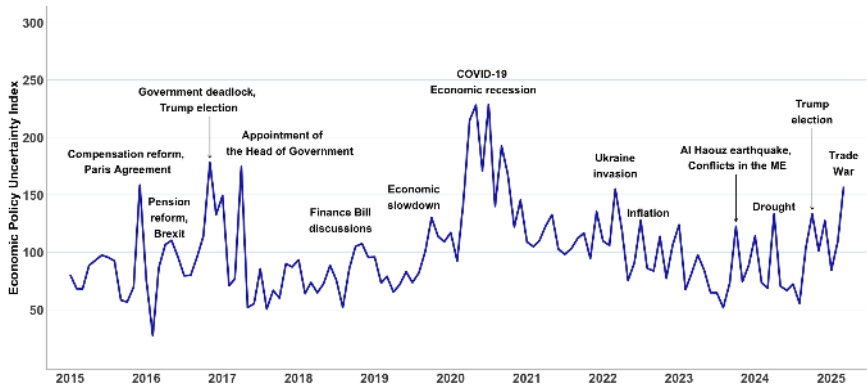
We take the average of the standardized series:

$$Z_t = \frac{\sum_{i=1}^n Y_{it}}{n} \quad (3)$$

We normalize over the period 2015–2025:

$$EPU_t = \frac{Z_t}{\mu} * 100 \quad (4)$$

Monthly Economic Policy Uncertainty Index for Morocco



Moroccan and Global Economic Policy Uncertainty Indices

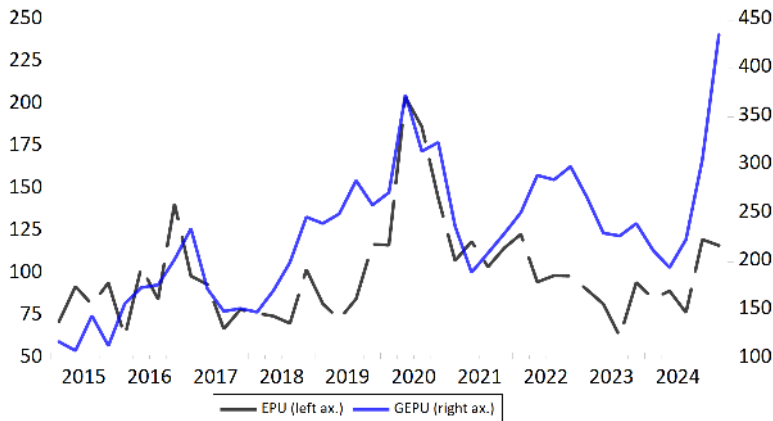


Table 3: Correlation of the Moroccan EPU Index with other Uncertainty Measures

Variable	EPU	EPU_G	EPU_US	EPU_SP	EPU_FR
EPU	1.0000 -				
EPU_G	0.5838*** (4.4910)	1.0000 -			
EPU_US	0.4202*** (2.8922)	0.9361*** (16.6248)	1.0000 -		
EPU_SP	0.4440*** (3.0945)	0.4878*** (3.4900)	0.3802** (2.5673)	1.0000 -	
EPU_FR	0.3238** (2.1377)	0.5704*** (4.3372)	0.4712*** (3.3362)	0.3730** (2.5106)	1.0000 -

Notes: The Global EPU Index is sourced from Davis (2016), while the EPU indices for the U.S., Spain, and France are obtained from Baker, Bloom and Davis (2016). ** and *** denotes statistical significance at the 5% and 1% levels, respectively. t-statistics are reported in parentheses.

Quarterly EPU Index and GDP Growth

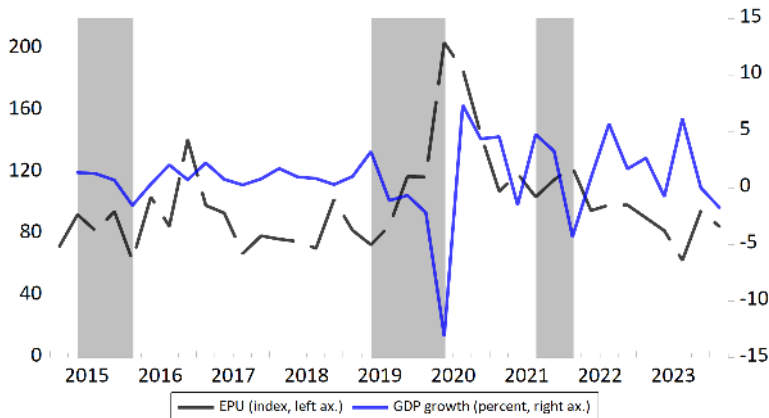


Table 4: Correlation Matrix of Uncertainty/Risk Measures in Morocco

Variable	EPU	WUI	RV
EPU	1.0000 -		
WUI	0.5172*** (3.5759)	1.0000 -	
RV	0.2676* (1.6532)	0.0648 (0.3846)	1.0000 -

Notes: * and *** indicate statistical significance at 10% and 1%, respectively. t-statistics are reported in parentheses.

Quarterly data over the period 2015–2024

Data:

- Uncertainty/Risk measures: **Economic Policy Uncertainty (EPU)**, World Uncertainty Index (WUI), Realized Volatility (RV);
- Transmission channels:
 - Business cycle indicators: GDP, Unemployment rate;
 - Real options channel: Investment, Unemployment rate;
 - Precautionary saving channel: Consumption, Savings, **Households confidence index**, **Currency in circulation (M0)**.

Methodology: Recursive SVAR-3

Figure 2: Impulse responses to one-standard deviation EPU shocks

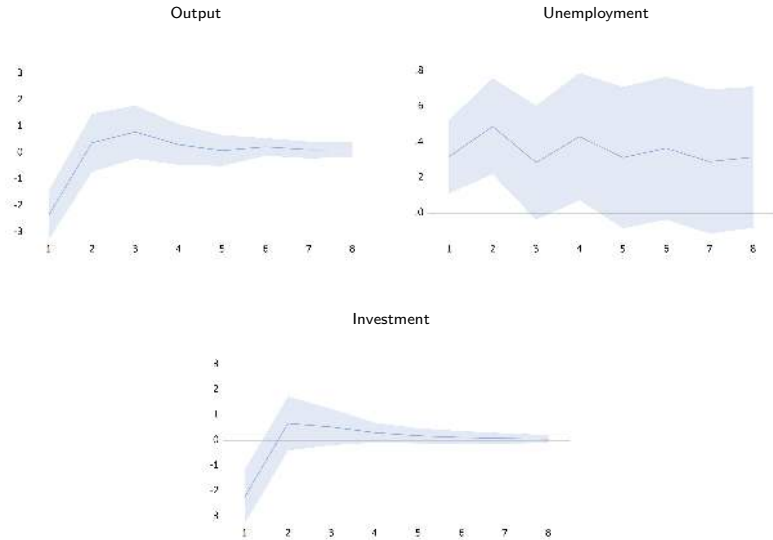
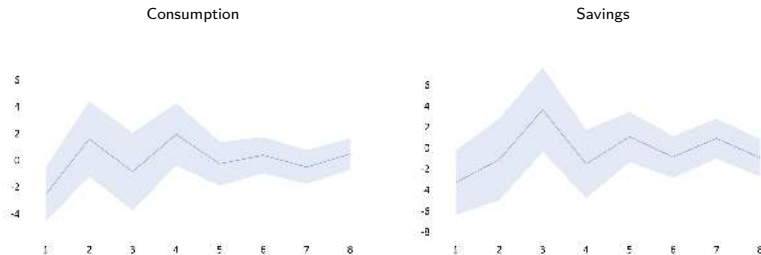
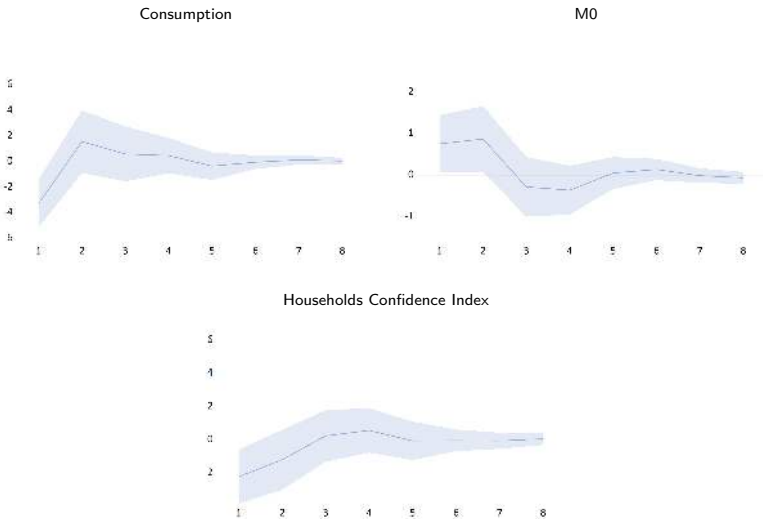


Figure 3: Impulse responses to one-standard deviation EPU shocks



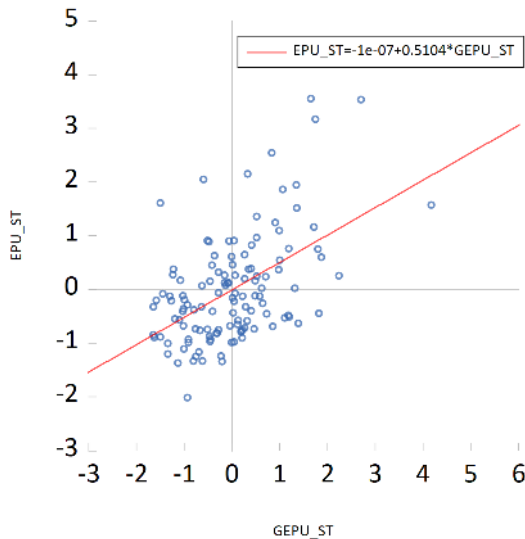
Notes : Impulse response functions to structural EPU shocks are expressed in percentages (except for the unemployment rate response, which is in percentage points). The responses of GDP and the unemployment rate are derived from the estimation of the SVAR-BC(2) model with the following causal ordering: uncertainty measure, GDP and unemployment rate. The investment response is derived from the estimation of the SVAR-RO(1) model with the causal ordering: uncertainty measure, investment and unemployment rate. The responses of consumption and savings are derived from the estimation of the SVAR-PS(2) model with the causal ordering: uncertainty measure, consumption and savings. Shaded areas indicate 95% standard error bands.

Figure 4: Impulse responses to one-standard deviation EPU shocks



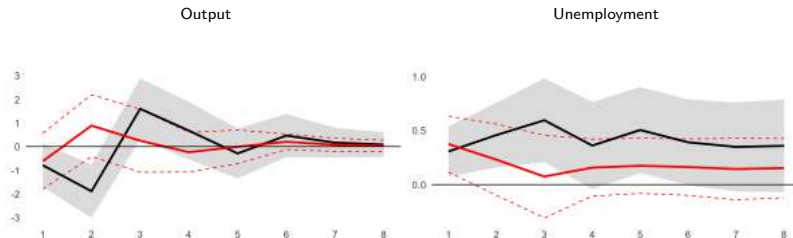
Controlling for global uncertainty

Figure 5: Standardized Global and Moroccan Economic Policy Uncertainties



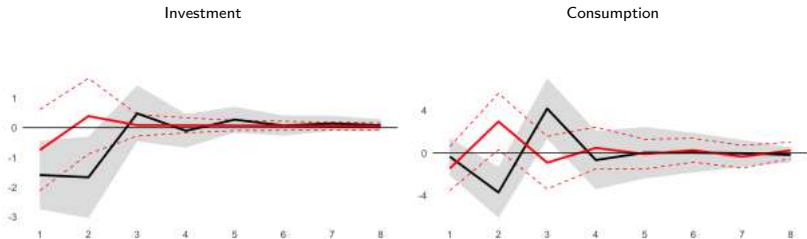
Comparative analysis

Figure 6: Comparative IRFs for shocks in RV and WUI



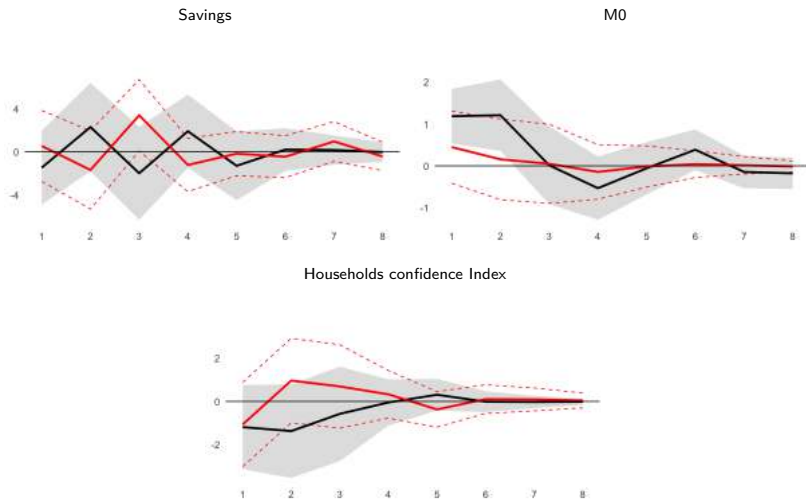
Notes: Impulse response functions are expressed in percentages, except for the unemployment rate, which is measured in percentage points. Solid black lines represent responses to a structural Realised Volatility shock (RV), while solid red lines correspond to responses to a structural World Uncertainty shock (WUI). The results are obtained from the estimation of the SVAR-BC(2), SVAR-RO(1), and SVAR-PS(2) models. Gray-shaded areas and red dashed lines denote 95% confidence bands based on standard errors.

Figure 7: Comparative IRFs for shocks in RV and WUI



Notes: Impulse response functions are expressed in percentages, except for the unemployment rate, which is measured in percentage points. Solid black lines represent responses to a structural Realised Volatility shock (RV), while solid red lines correspond to responses to a structural World Uncertainty shock (WUI). The results are obtained from the estimation of the SVAR-BC(2), SVAR-RO(1), and SVAR-PS(2) models. Gray-shaded areas and red dashed lines denote 95% confidence bands based on standard errors.

Figure 8: Comparative IRFs for shocks in RV and WUI



Conclusions

Results:

- The EPU index exhibits countercyclical behavior and is closely tied to both domestic and international conditions.
- EPU shocks exert a significant negative impact on the Moroccan economy, whereas World Uncertainty shocks display no such effect.
- These effects are transmitted to the business cycle through various mechanisms affecting both supply and demand, namely the real options and precautionary savings channels.
- Domestic and international uncertainties surrounding economic policies significantly influence household confidence, currency in circulation, and hoarding behavior in Morocco.

Conclusions

Contributions:

- Construction of an EPU index for Morocco using automated text analysis methods based on the frequency of articles from seven major national newspapers, a first for both the Moroccan context and the MENA region.
- Comparative analysis of the effects of global and economic policy uncertainty shocks on Morocco's real and financial sectors, identifying transmission mechanisms specific to each type of shock.
- The Moroccan EPU index has been validated by the Policyuncertainty.com research team and is forthcoming on their website, underscoring the significance of this work, particularly from the perspective of an emerging economy.

Conclusions

Extensions :

- Incorporation of additional macroeconomic and financial aggregates to quantify the price, risk premium, and tax transmission channels, among others;
- Investigation of uncertainty spillovers (Diebold and Yilmaz 2012, 2014);
- Measurement of distinct uncertainty dimensions: fiscal, monetary, climate-related, etc;
- Consideration of additional media sources: Hespress, Media24, etc.