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Promoting Exports in the MENA Region:

Do Uncertainty Risks Matter?

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Promoting exports in the MENA region: Do uncertainty risks matter?[1]

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Abstract

This paper re-evaluates the export-led growth hypothesis in the MENA region, examining the specific influences of various uncertainty risks. Four main results are found in this investigation. *First*, while overall economic growth is positively correlated with an increase in total exports, it demonstrates no significant response to a rise in manufactured exports. This underscores the reliance of many MENA countries on revenue from primary commodity exports as a key driver of economic growth. *Second*, neither labor nor exchange rates have a significant impact on overall economic growth, as total exports appear relatively insensitive to these factors. However, a surplus of labor can be a crucial catalyst for long-term growth in the manufacturing sector, while depreciation in the domestic currency can incentivize manufacturing exports and foster economic growth in MENA economies. *Third*, Geopolitical risks can drive an increase in total exports, as demand for raw commodities, particularly energy and agricultural products, surges during periods of war, conflict, and geopolitical instability. *Finally*, manufactured exports are less susceptible to geopolitical risks and economic policy uncertainty but remain highly vulnerable to escalating trade restrictions.

Key words: Export-Led Growth (ELG); Uncertainty risks; Panel data model; MENA

JEL classification : O11 ; O14 ; F41 ; F43

[1] The views expressed in this paper are those of the author and do not in any way purport to represent those of any institution.

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I. Introduction

Ensuring sustainable economic growth away from the agriculture and oil sectors has always been a key challenge for Middle East and North Africa (MENA) countries, especially in the context of recent regional conflicts and oil price volatility. In this regard, most of those countries adopted economic and social development strategies to boost and sustain their economic growth by promoting manufacturing exports. In fact, the industrial sector has been a driver of development for more than three centuries, and especially in some Asian countries that have seen significant rapid growth in the last fifty years. However, the industry locomotive has been losing steam, and manufacturing has been declining as a share of GDP not only in advanced countries, but in emerging countries as well. Also, the ongoing global economic slowdown, exacerbated by ongoing conflicts in the region and geopolitical tensions, further complicates the picture. These successive shocks increase uncertainties in MENA economies and raise concerns about the consistency and efficiency of promoting exports in this region to sustain economic growth in the long-term.

There has been a large volume of studies on the role of exports in middle-and low-income countries. But, according to our literature review, few studies have been focused on the impact of escalating uncertainty risks on the efficiency of Export-Led-Growth (ELG) in the MENA countries, given its particularity. Many countries, especially those around the Mediterranean Sea (except Algeria), are highly dependent on agriculture, as their agricultural productivity heavily relies on weather and rainfall[3], pushing their GDP to experience significant year-on-year fluctuations. In contrast, about half of the countries are net oil[4] exporters, with the modest contribution of non-oil sectors to their economic growth.

This paper fills an important gap in the ELG literature, by examining the impact of increasing uncertainty on this nexus in the MENA region. To this end, the study focuses on trade in goods, excluding trade in services, as most policies governing goods trade, such as tariffs, quotas, and trade agreements, directly impact a country's ability to compete internationally, thereby impacting overall economic growth. This focus enables a critical evaluation of how uncertainty risks influence MENA economies. For estimation purposes, this paper uses annual panel data from 12 MENA countries[5] covering the period 2000-2024, since the selected variables are not all available on a quarterly basis for the selected countries. All data is taken from the national authorities, the IMF and the World Bank databases. Regarding the adopted methodology, this paper utilizes the ARDL model for our empirical

[3] This climate vulnerability means agricultural GDP can swing sharply, impacting the overall economy, although non-agricultural sectors remain resilient. For example, a severe drought in 2022 caused a double-digit contraction in agricultural output in Morocco and Tunisia, leading to a significant decline in their overall GDP growth. In contrast, the first half of 2025 witnessed a strong overall GDP growth in both countries, with agriculture being a key contributor amid favorable climate conditions, despite a slowdown in non-agricultural sectors.

[4] Throughout this paper, the term "Oil" is used as a substitute for the term "hydrocarbon" or "petroleum", because gas is also an important resource in several countries.

[5] Due to data constraints, the MENA (Middle East and North Africa) group, in this paper, includes only 12 countries, namely Algeria, Bahrain, Egypt, Iraq, Jordan, Kuwait, Morocco, Oman, Qatar, Saudi Arabia, Tunisia, and the United Arab Emirates.

analysis, as well as some diagnostic tests to make sure that the underlying assumptions for a good model are fulfilled.

The remainder of this paper is as follows. Section II provides the literature review on Export-Led Growth (ELG) and several uncertainty risks, while section III describes the used data and explains our adopted macroeconomic framework. Section IV presents empirical results and discusses some interpretations. Finally, Section V concludes with some policy implications.

II. Literature review

Even if both concepts of "Export-Led Growth (ELG)" and "Uncertainty risks" are widely used and generally considered very important for the country's economic stability in the long run, there is no universal approach to how they should be best assessed and how they can affect each other. Various approaches to assess the validity of the ELG hypothesis have been used, but most of the empirical studies have been focused on developed economies and some selected Asian countries, without taking into consideration the impact of uncertainty risks.

II.1. Export-Led Growth (ELG)

The relationship between export and economic growth has been discussed extensively in the literature, mainly when the export-oriented industrialization strategy started to gain dominance around the 1970s in some Asian countries (Balassa, 1978; Krueger, 1985; Dunn and Mutti, 2004). This strategy is also known as the Export-Led Growth hypothesis (ELG), as export plays a major role in stimulating economic growth by contributing to aggregate output, through the multiplier effect of foreign trade and an efficient use of resources and capital formation (Dar et al., 2013; Iyoha and Okim, 2017).

However, the evidence of this nexus remains controversial in the literature for the MENA countries. The empirical papers on the link between exports and economic growth in this region have documented mixed findings that vary based on the selected countries, periods, data type, and econometric model considered in each study. In fact, using a bivariate Standard Granger Causality (SGC), Jung and Marshall (1985) found support for ELG in Egypt during the period 1965-1979, while no causality was found in the cases of Morocco, Tunisia, and Turkey. Hutchinson and Singh (1992) found no evidence of causality in Egypt, Morocco, and Tunisia for the period 1950-1985. Pompino (1996) used cointegration and error-correction model (ECM) and found support for unidirectional causality from output growth to exports (and not from export to growth) i.e. Growth-Led-Export (GLE) in Algeria and Tunisia, but found no causality for Morocco, Sudan, and Turkey. However, when Pompino introduced investment as a third variable in his adopted ECM, bidirectional causality was found for Turkey and Tunisia, but no change was found in the results for Algeria, Morocco, and Sudan. Xu (1996) used cointegration and ECM approaches and found no evidence of long-run

relationship between exports and economic growth in Morocco, and Turkey, but found support for GLE in Tunisia.

As indicated above, no clear consensus has been reached in most of the existing literature for MENA countries. Several studies attributed this ambiguity to the fact that the positive productivity effects estimated by export-led growth do not necessarily occur in developing countries, mainly in rich natural resource countries. This is because most of those countries are heavily dependent on primary commodity exports which is likely pushing them to shift away from the competitive manufacturing sectors, which have many externality factors required for sustainable growth. Therefore, some studies argued that countries concentrating on manufacturing exports could grow faster than those primary product exporters (Hausmann et al., 2007; Jarreau Poncet, 2012; Crespo-Cuaresma & Worz, 2005; Berg et al., 2012).

A few studies examined the relationship between manufactured exports and economic growth in the MENA countries. Abu-Qarn and Abu-Bader (2005) used the error correction model (ECM) and vector autoregressive (VAR) to examine the causality among manufactured exports and output growth in nine MENA countries. Empirical results show that there is no existence of causality in countries with relatively low shares of manufactured exports in total merchandise exports, while there is a bidirectional causality for countries with relatively high shares. Athanasia and Emmanuel (2017) tested the validity of ELG hypothesis for the United Arab Emirates (UAE), concentrating on the causality among manufactured exports, primary exports and economic growth, the analysis revealed that the long-run contribution of manufactured exports to economic growth is more than primary exports. Also, results point out that over the long-run the GLE hypothesis is valid in the UAE, and there is a short-run bidirectional causal relation between manufactured exports and economic growth.

II.2. Impact of increasing uncertainty risks

This paper examines various uncertainty risks that could arise from elections, polarization, protectionism, terrorism, wars, and internal or interstate conflicts. These factors could have significant and cascading effects on the economy, both globally and for individual countries. Recently, there has been increasing interest in studying the adverse effects of uncertainty risks on economic growth and other macroeconomic variables.

The global economy is influenced by uncertainty risks in both direct and indirect ways, primarily through financial, trade, and commodity price mechanisms. In financial markets, these impacts occur directly through capital controls and financial sanctions, as well as indirectly through increased risk premiums and significant surges in asset prices (Catalán et al., 2023). On the trade side, increased restrictions due to tensions between countries can disrupt trade flows and cause supply chain problems, even in neutral countries. Such restrictions may also drive-up commodity prices and result

in shortages of essential resources like oil and gas, ultimately affecting industrial production on a global scale. When combined, these factors can reinforce each other, leading to heightened inflation, slower economic growth, and considerable welfare losses during periods of geopolitical instability (Góes and Bekkers, 2022).

Despite a large volume of studies discussing the impact of uncertainty risks on the global economy, there is no clear definition and universal metrics to understand clearly how to measure it and how it works. Existing empirical studies show that higher uncertainty risks values are associated with higher oil prices (Mignon and Saadaoui, 2024), lower firm- and country-level investment (Wang et al, 2023), higher inflation, lower economic activity, and lower trade (Caldara et al, 2022). Alesina et al. (1996) reveal that political instability lowers economic growth for 113 countries. Gaibulloe & Sandler (2008) showed that terrorism affects negatively economic growth in a panel of 18 European countries. Soybilgen et al. (2019) analyzed the relationship between geopolitical risks and growth for a panel of 18 emerging countries for a period covering 1986-2016. Their results showed that the effect of geopolitical risks on growth rates is negative and significant. A 10-point increase in this risk causes a 0.2–0.4% decline in the GDP growth rate.

Regarding the MENA region, Karam and Zaki (2016) employed an augmented gravity model to analyze the effects of various types of conflicts on trade within the region. Their findings indicate that wars exert a significantly negative influence on exports, imports, and overall trade. Civil conflicts notably impede both exports and imports, adversely affecting trade. The disaggregated gravity model revealed that non-state conflicts specifically harm bilateral trade flows in the manufacturing sector, while no conflicts were found to affect trade in services. Additionally, their results suggest that, on average, the impact of a conflict is comparable to imposing a 5% tariff on trade value. Also, Soltani et al. (2021) employed the Panel Vector Auto-regression (PVAR) model to examine a panel of MENA countries. Their estimates indicated that the economic performance of these nations is significantly influenced by geopolitical risk. An increase in the Geopolitical Risk index (GPR) corresponds to greater economic vulnerability in the MENA region. Consequently, the militaristic policies of certain countries and the impacts of regional conflicts obstruct the development of specific economies, making it difficult to attract foreign investment and stimulate economic growth. As per trade restrictions, Rina and Hirut (2010) show that trade barriers are important in explaining the MENA region's underperformance in trade, particularly on exports. Their results suggest that reducing the transport constraint, and increasing the efficiency of customs clearance procedures, will have a stronger impact on imports than on exports.

II.3. Contribution to empirical literature

In our paper, we extend the above-mentioned literature, which differs from the existing papers as follows. *First*, most of the existing studies primarily concentrate on how economic growth responds

to rising exports, often overlooking the impact of increasing uncertainty. For that reason, we revised the conventional ELG equation, to take into consideration other important factors for MENA countries that could be affected by uncertain conditions, such as Exchange rate and labor productivity. *Second*, given the importance of the uncertainty risks in this study, we assessed the ELG hypothesis in the context of three different risks, namely economic policy uncertainty, trade restrictions and geopolitical risks. *Third*, we focused not only on total exports, but also on manufacturing exports and their role in boosting the MENA economies. We tried to examine if the manufactured exports are less affected (or not) by uncertainty risks compared to total exports.

III. Adopted Methodology

As mentioned earlier, this paper aims to verify whether or not exports (total and manufactured) significantly contribute to the economic growth in the MENA region and how the increasing uncertainty risks can (or cannot) affect ELG in this region. To this end, we describe the selected variables and the data sources, taking into consideration the data limitation and the intended objectives. Then, we specify the appropriate econometric model, which tackles all statistical problems and reflects the interconnectedness of the different MENA countries and their specific characteristics.

III.1. Data description

Since this paper attempted to empirically assess the impact of exports on economic growth during periods of uncertainty, the main dependent variable used in our models is real GDP, which measures the total output of each selected country. However, given that most of the MENA countries are heavily dependent on oil and agricultural sectors, we also used the manufacturing real GDP as another dependent variable in the second set of our models to reflect the role of the exports in promoting the manufacturing sector and to avoid the impact of the price volatility of oil and agricultural products on MENA economies.

Concerning the explanatory variables, *first*, we choose total exports as a significant determinant of economic growth in MENA countries, according to the ELG hypothesis. For estimation purposes, exports are converted into real form using the US GDP deflator. This variable is then replaced in our models by manufacturing exports (% of merchandise exports), to verify whether economic growth is more influenced by the total export or manufacturing exports. *Second*, we selected the real effective exchange rate (REER) as it plays an important role in the country's competitiveness. REER depreciation (even for currency pegged countries) could improve the trade balance by increasing the export volumes (and vice versa). However, increased uncertainty can lead to heightened volatility in financial markets and diminish investor confidence, potentially leading to capital flight to safer countries. This can decrease demand for the local currency, leading to sharp depreciation and creating economic instability. *Third*, this paper also considers labor productivity as a significant indicator of

economic growth. The quantity and quality of the labor class augment the scale of production and income growth of an economy. However, during times of uncertainty, companies may implement hiring freezes or resort to layoffs or downsizing to reduce costs, which can lead to lower economic growth. For availability reasons and data limitations, we chose the total labor force as one of our explanatory variables.

Finally, given the diverse definitions of uncertainty risks, depending on various perspectives and methodologies, we selected three specific measures in this study. Our choices were primarily influenced by data availability and limitations. *First*, the geopolitical risk index (GPR) is constructed using the frequency of articles in leading newspapers that discuss adverse geopolitical events such as wars, terrorism, and tensions among political organizations (Caldara and Iacoviello, 2022). Higher GPR values indicate a higher intensity of adverse events and an increased probability of negative events in the future. *Second*, the Economic Policy Uncertainty index (EPU) is constructed based on newspaper articles regarding policy uncertainty from leading newspapers (Baker, Bloom, and Davis, 2015). It counts the number of newspaper articles containing the terms uncertain or uncertainty, economic or economy, and one or more policy-relevant terms. According to several studies, higher economic policy uncertainty causes greater declines in investment and dent economic growth. *Third*, restrictions on trade have greatly increased in recent years, raising concerns about reversing economic integration and undermining the cooperation needed to address global challenges. Thus, the number of trade restrictions (NTR), sourced from Global Trade Alert[6], is considered in this paper as one of the sources of uncertainty risks, reflecting the rise of protectionism. The choice of these three variables as significant factors affecting the export-economic growth nexus is evident. Increased geopolitical risks, economic policy uncertainty, or trade restrictions can have a significant impact on economic growth, even with government initiatives aimed at promoting exports and diversifying production and trade patterns.

All the above-described variables are available on an annual basis, covering the period 2000-2024. Besides the uncertainty risks variables, the rest were sourced mainly from the IMF World Economic Outlook database (WEO) and the World Bank Indicators database (WDI), as well as from the national authorities of some selected countries. All these data are transformed into natural logarithm form, which is a suitable way of transmuting a much-skewed variable into more standardized data properties. In the econometric analysis, the natural-log scale's coefficients can be interpreted as approximate proportional changes in the variables.

[6] The Global Trade Alert (GTA) is the world's premier repository of policy changes affecting global trade and investment. https://globaltradealert.org/

III.2. Model specification

To achieve the objectives of this paper, we specified in our first set of our models nine equations for estimations in line with the export-led growth hypothesis under the three uncertainty risks, as presented below:

RGDP =f(Export, Exchange rate, Labor productivity, GPR) (1)

RGDP =f(Export, Exchange rate, Labor productivity, EPU) (2)

RGDP =f(Export, Exchange rate, Labor productivity, NTR) (3)

To assess the direct impact of the uncertainty on exports in the MENA region, we add in our models separately the interaction term of export and three variables of uncertainty risks.

RGDP =f(Export * GPR, Exchange rate, Labor productivity) (4)

RGDP =f(Export * EPU, Exchange rate, Labor productivity) (5)

RGDP =f(Export * NTR, Exchange rate, Labor productivity) (6)

These first six equations are then adjusted to take into consideration the importance of the manufacturing sector. The variable "Export" is replaced in our previous models by manufacturing exports as a percentage of total merchandise exports (Manuf_Export), to verify whether the economic growth is more influenced by the total export or manufacturing exports.

RGDP =f(Manuf_Export, Exchange rate, Labor productivity, GPR) (7)

RGDP =f(Manuf_Export, Exchange rate, Labor productivity, EPU) (8)

RGDP =f(Manuf_Export, Exchange rate, Labor productivity, NTR) (9)

RGDP =f(Manuf_Export * GPR, Exchange rate, Labor productivity) (10)

RGDP =f(Manuf_Export * EPU, Exchange rate, Labor productivity) (11)

RGDP =f(Manuf_Export * NTR, Exchange rate, Labor productivity) (12)

In our second set of our models, we re-estimate all the twelve previous equations after using the manufacturing real GDP (Manuf_RGDP) as a dependent variable, to reflect the role of the exports in promoting the manufacturing sector and to avoid the impact of the price volatility of oil and agricultural products on MENA economies.

To empirically investigate the effect of geopolitical risks on export-led growth in the MENA region, we utilize the panel ARDL model for our empirical analysis. This model was adopted, as it was found

that in some equations after having conducted pre-estimation tests on the series, variables' stationarity is in mixed order of integration (more details in Appendix A1).

In fact, there is a broad consensus in the literature that the study of long-run relationships through cointegration' analysis suggests the non-stationarity of series, and they should present the same order of integration. In this context, the Autoregressive Distributed Lag (ARDL) modeling proposed by Pesaran et al. (1996) is considered relevant as it can be specified as an error correction model when the underlying variables are integrated of order one (I(1)), or fractionally integrated (I(0) and I(1)), except that the dependent variable is constrained to be I(1). However, this technique cannot be applied in the case where variables are integrated for order 2. In addition, ARDL modeling provides consistent and efficient estimators because it eliminates endogeneity problems by including lag length in both endogenous and exogenous variables. According to Pesaran, Shin and Smith (1996), the equation (1) can be expressed as follows:

$$\Delta RGDP_{it} = \mu_i + \gamma_{1i} RGDP_{it-1} + \gamma_{2i} Export_{it-1} + \gamma_{3i} Exchange\_rate_{it-1} + \gamma_{4i} Labor_{it-1} + \gamma_{5i} openess_{it-1} + \gamma_{6i} GPR_{it-1} +$$

$$\sum_{j=1}^{p-1} \delta_{1ij}\ \Delta RGDP_{it-j} + \sum_{j=1}^{p-1} \delta_{1ij}\ \Delta Export_{it-j} + \sum_{j=0}^{q-1} \delta_{2ij}\ \Delta Exchange\_rate_{it-j} + \sum_{j=0}^{q-1} \delta_{3ij}\, \Delta Labor_{it-j} + \sum_{j=0}^{q-1} \delta_{4ij}\, \Delta openess_{it-j} + \sum_{j=0}^{q-1} \delta_{5ij}\, \Delta GPR_{it-j} + \varepsilon_{it}$$

where terms in level reflect long-run dynamics, while terms in first difference reflect short-run effects. ε_{it} denotes the error term and Δ the first difference operator. The choice of lags value (p, q) is determined using the Akaike Information Criterion (AIC) or Schwarz Bayesian criterion (S.B.C).

An error correction model (ECM) could be specified and will be used accordingly to identify the short-run association between the interest variables. The error correction model (ECM) is defined as follows:

$$\Delta RGDP_{it} = \alpha_i + \sum_{j=1}^{p-1} \omega_{1ij}\ \Delta RGDP_{it-j} + \sum_{j=0}^{q-1} \omega_{2ij}\ \Delta Export_{it-j} + \sum_{j=0}^{q-1} \omega_{3ij}\ \Delta Exchange\_rate_{it-j} + \sum_{j=0}^{q-1} \omega_{4ij}\ \Delta Labor_{it-j} + \sum_{j=0}^{q-1} \omega_{5ij}\ \Delta openess_{it-j} + \sum_{j=0}^{q-1} \omega_{6ij}\ \Delta GPR_{it-j} + \omega\ ECT_{t-1} + \Omega_{it}$$

ω_{ij} are the short-run coefficients. The residual term is independently and identically distributed with zero mean and constant variance. ECT is the error correction term derived from the long-run relationship. ω indicates the speed of adjustment of the model to equilibrium. This coefficient should be negative and between 0 and 1 in absolute value.

Regarding the estimation of the panel ARDL model, Pesaran, Shin and Smith (1995 and 1999) introduced two techniques respectively the Mean Group (MG) (1995) and the Pooled Mean Group (PMG) (1999) estimation. However, these procedures, based on the maximum likelihood method, are considered the most consistent since they take into account the specificities of the different regions

and make a better interpretation of long-run equilibrium. Unlike the Mean Group estimation (MG), which requires the heterogeneity of the different coefficients of the ARDL model in both short and long-run, the PMG approach suggests the heterogeneity of the short-run coefficients, while long-run coefficients are restricted to be identical and homogeneous for all countries of the panel. In this paper, the choice of the PMG procedure is appreciated since the response of the economic growth in short term may differ from one country to another, whereas a long-run homogeneous effect may be occurred for all countries considering the similarity of the economic structure and policies of most of the MENA countries.

IV. Empirical Results

After presenting our theoretical approach, we started this section by estimating the adopted 18 models over 2000-2024, under data availability constraints. The same model is applied to the 5 defined groups, using the same explanatory variables described above. This is to verify whether or not exports (total and manufactured) significantly contribute to the economic growth in the MENA region and to understand how the increasing uncertainty risks can affect the ELG in this region.

IV.1. Impact on overall growth

The estimation results of both short- and long-term relationships using the PMG-ARDL method are presented in Table 1 over the period 2000 - 2024. As previously mentioned, the estimation of ARDL model is accomplished, respecting the restrictions regarding the homogeneity of the long-run coefficients for all countries. The results obtained are generally satisfactory and in line with the hypothesis of the study, validating our initial assumptions and providing strong support for our findings.

Table 1: Panel PMG-ARDL results – Impact of total export on RGDP

Dependent variable: Real GDP						
Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
Short term						
ECT (error correction term)	**-0.423*** **	**-0.456*** **	**-0.467*** **	**-0.437*** **	**-0.424*** **	**-0.433*** **
Export	0.281**	0.231**	0.201**			
Exchange rate	-0.005	0.017	-0.009	-0.013	-0.012	0.017
Labor	0.013	0.034	0.021	0.023	-0.004	0.025
GPR	-0.121*					
EPU		-0.111*				
NTR			-0.063*			

Export * GPR				0.208***		
Export * EPU					-0.221*	
Export *NTR						-0.193**
Long term						
Export	0.277**	0.251**	0.213**			
Exchange rate	-0.011	-0.012	-0.003	-0.003	-0.017	-0.011
Labor	0.013*	0.004**	0.011*	0.026*	0.002*	0.009**
GPR	-0.111*					
EPU		-0.134*				
NTR			-0.023*			
Export * GPR				-0.105***		
Export * EPU					-0.211*	
Export *NTR						-0.203**

Note: *;**;*** design significance At 10%, 5% and 1% respectively.

Table 1 investigates the short and long-run association between total exports and economic growth in MENA countries amid uncertainty risks, according to the ARDL model results. *First*, we find a statistically significant positive coefficient for the total exports in the short and long term for the first three models, indicating that the economic growth reacts systematically to the rise of exports. This result supports the Export-Led Growth (ELG) hypothesis. However, it could also be attributed to the reliance of many MENA countries on primary commodity exports to fund increased government spending, which in turn aims to stimulate economic growth. *Second*, our findings indicate that the real exchange rate has a negligible impact on RGDP of the MENA region, as all associated coefficients are statistically insignificant. This conclusion aligns with the results reported by Rapetti, Skott and Razmi (2012). *Third*, there is no influence of labor in the short run, but the labor's contribution to GDP in the long run is significant and positive. In fact, an abundance of labor can enormously promote exports and economic growth for any economy in the long term. *Fourth*, the coefficients of the three uncertainty variables (GPR, EPU and NTR) are significant and negative in the short and long-run. This confirms the previous results described in the literature review section. *Finally*, models 4, 5, and 6 test for the effect of the interaction of export and the three adopted uncertainty risks on RGDP in the MENA region. The results reveal that "Export * EPU" and "Export * NTR" exert a negative and significant influence on real gross domestic product (RGDP) in the short and long run. These negative effects could result from heightened economic policy uncertainty and protectionism that persuade trading partners to seek alternative import sources with a lower uncertainty environment, consequently diminishing the significant contribution of RGDP. Regarding the term "Export * GPR", it exerts a positive influence on the economy in the short run but has a negative and insignificant long-run relationship with RGDP. This could be attributed to the surge in demand for

raw commodities, particularly energy and agricultural products, during periods of war, conflict, and geopolitical instability.

Table 2: Panel PMG-ARDL results – Impact of manufacturing export on RGDP

Dependent variable: Real GDP						
Variables	**Model 7**	**Model 8**	**Model 9**	**Model 10**	**Model 11**	**Model 12**
Short term						
ECT	**-0.501*** **	**-0.345*** **	**-0.462*** **	**-0.431*** **	**-0.421*** **	**-0.403*** **
Manuf_Export	-0.103	0.177	-0.091			
Exchange rate	-0.013*	-0.027*	-0.018**	-0.019*	-0.016*	-0.013*
Labor	-0.010	-0.031	0.023	0.021	-0.011	-0.021
GPR	-0.114*					
EPU		-0.131*				
NTR			-0.073*			
Manuf_Export * GPR				0.088		
Manuf_Export * EPU					0.221	
Manuf_Export *NTR						0.193
Long term						
Manuf_Export	-0.126	0.191	-0.132			
Exchange rate	-0.012*	-0.016**	-0.021*	-0.018*	-0.021*	-0.031*
Labor	0.013*	0.004**	0.011*	0.026*	0.002*	0.009**
GPR	-0.109*					
EPU		-0.104*				
NTR			-0.063*			
Manuf_Export * GPR				0.085		
Manuf_Export * EPU					0.031	
Manuf_Export *NTR						0.073

Note: *;**;*** design significance At 10%, 5% and 1% respectively.

Table 2 explores the short and long-run relationship between manufactured exports and economic growth in MENA countries amid uncertainty risks, according to the ARDL model results. *First*, our findings show insignificant coefficients for the manufactured export in both runs for the first three models with several signs, indicating no clear evidence about the ELG hypothesis. This could be attributed to the dominance of primary commodities as a share of total exports in many MENA countries. *Second*, unlike the results of the first six models, real exchange rates are negatively significant in both runs, which is supportive of manufacturing export promotion and thus economic growth for MENA economies. *Third*, the labor's contribution to GDP in the long run is significant and positive,

given that labor abundance is a crucial factor in manufacturing sector growth in the long term. *Fourth*, the coefficients of the three uncertainty variables (GPR, EPU, and NTR), are statistically significant and negative in both the short and long run, corroborating the findings presented in Table 1. *Finally*, models 10, 11, and 12 examine the effect of the interaction of manufactured export and the three adopted uncertainty risks on RGDP in the MENA region. The results indicate that coefficients of the three terms are positive but statistically insignificant. This could partially be attributed to the resilience of the manufactured exports amidst rising global uncertainties.

IV.2. Impact on manufacturing growth

Given that most of the MENA countries are heavily dependent on oil and agricultural exports, we run our second set of models (7 to 12), using the manufacturing real GDP as dependent variable to reflect the role of promoting the manufactured exports in boosting economic growth amidst rising global uncertainties.

Table 3: Panel PMG-ARDL results – Impact of manufacturing export on manufacturing RGDP

Dependent variable: Real manufacturing GDP						
Variables	**Model 7**	**Model 8**	**Model 9**	**Model 10**	**Model 11**	**Model 12**
Short term						
ECT	**-0.401*****	**-0.462*****	**-0.467*****	**-0.423*****	**-0.440*****	**-0.479*****
Manuf_Export	0.394***	0.407**	0.389***			
Exchange rate	-0.013**	-0.015**	-0.021*	-0.018**	-0.031*	-0.031*
Labor	0.015	0.012*	0.017*	0.029*	0.014	0.017
GPR	0.001					
EPU		0.004				
NTR			-0.003			
Manuf_Export * GPR				-0.008		
Manuf_Export * EPU					0.022	
Manuf_Export *NTR						-0.171**
Long term						
Manuf_Export	0.408**	0.487**	0.379*			
Exchange rate	-0.012**	-0.027*	-0.016**	-0.019*	-0.016*	-0.017*
Labor	0.021*	0.025*	0.027*	0.021*	0.034*	0.023*
GPR	0.026					
EPU		-0.017				
NTR			-0.012			
Manuf_Export * GPR				-0.010		

Manuf_Export * EPU					0.041	
Manuf_Export *NTR						-0.257****

Note: *;**;*** design significance at 10%, 5% and 1% respectively.

Table 3 examines the short and long-run relationship between manufactured exports and manufacturing sector growth in MENA countries amid uncertainty risks, according to the ARDL model results. *First*, our analysis reveals a statistically significant positive coefficient for manufactured exports in both the short and long run across the first three models, consistent with the findings in Table 1 but with a notably higher magnitude. Indeed, manufactured exports exhibit the highest coefficients compared to total exports, suggesting a more stable contribution to economic growth and less susceptibility to external shocks. This finding is supported by the conclusions of several studies (Hausmann et al., 2007; Jarreau Poncet, 2012) suggesting that countries specializing in manufacturing exports may experience faster economic growth compared to those primarily focused on exporting raw materials. *Second*, real exchange rates exhibit a statistically significant negative coefficient in both short and long-run analyses, supporting that depreciation in domestic currency can incentivize manufacturing exports and foster economic growth in MENA economies. Any currency depreciation can enhance the competitiveness of manufactured goods, thereby stimulating the manufacturing sector (Dey, Tareque, 2021). *Third*, the labor's contribution to GDP in the long run is significant and positive, given that cheap labor cost and labor abundance in the manufacturing sector are an important key to promote growth in MENA countries in the long term. *Fourth*, the coefficients of the three uncertainty variables (GPR, EPU, and NTR) are statistically insignificant in both the short and long run, reflecting the resilience of the manufactured exports compared to total exports amidst rising global uncertainties. *Finally*, the coefficients of the interaction terms "Export * EPU" and "Export * GPR" are statistically insignificant, suggesting that there is no influence of geopolitical risks and economic policy uncertainty on the role of increasing manufactured exports on RGDP. However, the term "Export * NTR" is statistically significant and negative, indicating that the rising trade restrictions lead to higher input costs and hence reduces the sector productivity, which means lower contribution to the economic growth.

V. Conclusion

Given the results of our analysis, this paper presents compelling macroeconomic policy insights for the MENA region. *First*, given the abundance of oil in some MENA countries, many have long neglected alternative resources. Therefore, these countries should regularly map and assess their underutilized assets, including agricultural, mineral, and human resources, capitalizing on their geographical diversity to promote exports and unlock new economic potential. *Second*, countries should focus on diversifying their export base, by investing in developing local manufacturing capabilities across various industries to reduce the impact of international uncertainty risks. Thus, governments should initiate several industrial zones and provide targeted support and incentives for SMEs to enhance export opportunities and increase output in diverse sectors. *Third*, countries may consider policies that promote a competitive exchange rate, to incentivize manufacturing exports. This could involve carefully managing monetary policy and exchange rate interventions. *Fourth*, given the importance of labor for manufacturing sector growth, governments should invest in education, training, and skill development programs to ensure a skilled workforce. *Fifth*, countries should strive to build strong diplomatic relationships, diversify trade partners, and invest in infrastructure that can enhance resilience to disruptions, to mitigate the negative impacts of geopolitical risks on the economy. *Finally*, governments should actively negotiate to reduce trade barriers and promote free trade agreements, to support manufactured exports and boost economic growth. This can help increase market access for MENA countries' products.

References

Al-yousif, Y. K. (2006). "On the Role Exports in the Economic Growth of Malaysia: A Multivariate Analysis", (August 2014), 37–41.

Giles,A.J., Williams, C.L. (2000). "Export-led growth: a survey of the empirical literature and some non-causality results". Journal of International Trade and Economic Development, 9(3), 261-337.

Naudé, Wim & Szirmai, Adam. (2012). "The importance of manufacturing in economic development: Past, present and future perspectives" MERIT Working Papers 041.

Karam and Zaki (2016), "How Did Wars Dampen Trade in the MENA region?", Applied Economics, 2016, 48:60, 5909-5930.

Soltani et al. (2021), "Does geopolitical risk and financial development matter for economic growth in MENA countries?", Journal of International Studies. Vol. 14, No 1, 2021.

Rina and Hirut (2010), "Constraints on Trade in the MENA Region", IMF working paper, WP/10/31.

Hye, Q. M. A., Wizarat, S., & Lau, W. Y. (2013). "Trade-led growth hypothesis: An empirical analysis of South Asian countries". Economic Modelling, 35, 654–660.

Rasiah, Rajah. (1996). "Manufacturing as an Engine of Growth and Industrialization in Malaysia." Managerial Finance. Vol 22. Issue 5/6. pp87-117.

WEF. (2012). "The Future of Manufacturing Opportunities to Drive Economic Growth." World Economic Forum Report.

Rapetti, M., Skott, P. & Razmi, A. (2012). "The real exchange rate and economic growth: are developing countries different?", International Review of Applied Economics, 26(6), 735–753.

Abual-Foul, B. (2004). "Testing the export-led growth hypothesis: evidence from Jordan". Applied Economics Letters, 11(6), 393–396.

Bloom, N. (2009). "The impact of uncertainty shocks". Econometrica, 77(3), 623–685.

Hye, Q. M. A., Wizarat, S., & Lau, W. Y. (2013). Trade-led growth hypothesis: An empirical analysis of South Asian countries. Economic Modelling, 35, 654–660.

Ibrahim, M. H. (2002). "An Empirical Note on the Export-Led Growth Hypothesis: The Case of Malaysia". Economic Analysis and Policy, 32(2), 221–232. https://doi.org/10.1016/S0313-5926(02)50030-8

Al Mamun, K. A. & Nath, H. K. (2005). "Export-led growth in Bangladesh: a time series analysis". Applied Economics Letters, 12(6), 361–364.

Rahman, M., Rahman, D. H. & Shadat, W. Bin. (2007). "BCIM economic cooperation: Prospects and challenges". Centre for Policy Dialogue Dhaka.

Ram, R. (1985). "Exports and economic growth: Some additional evidence". Economic Development and Cultural Change, 33(2), 415–425.

Rana, P. B. (1986). "Exports and economic growth: further evidence from Asian LDCs". Pakistan Journal of Applied Economics, 5(2), 163–178.

Razzaque, M. A., Bidisha, S. H. & Khondker, B. H. (2017). Exchange rate and economic growth: An empirical assessment for Bangladesh. Journal of South Asian Development, 12(1), 42–64.

APPENDICES

Appendix Table A1: Unit root test results

Test			RGDP	Export	Exch	lab	GPR	EPU	NTR
PP	intercept	level	23.06** (0.02)	8.24 (0.76)	9.74 (0.63)	9.02 (0.7)	19.15* (0.08)	0.37 (1.00)	0.007 (1.00)
	intercept & trend	level	15.37 (0.22)	5.85 (0.92)	7.39 (0.83)	4.58 (097)	8.19 (0.77)	2.44 (0.99)	0.006 (1.00)
	intercept	first difference	95.66*** (0.000)	34.2*** (0.000)	64.5*** (0.000)	55.05*** (0.000)	65.46*** (0.000)	9.52*** (0.000)	81.41*** (0.000)
	intercept & trend	first difference	74.52*** (0.000)	22.45** (0.03)	55.12*** (0.000)	37.24*** (0.000)	51.1*** (0.000)	46.82*** (0.000)	93.47*** (0.00)
ADF	intercept	level	17.81 (0.12)	21.91** (0.03)	15.37 (0.22)	19.8* (0.07)	23.65** (0.02)	0.8 (1.000)	0.003 (1.00)
	intercept & trend	level	13.42 (0.33)	17.06 (0. 14)	14.48 (0.27)	9.84 (0.62)	12.48 (0.4)	3.4 (0.99)	0.64 (1.00))
	intercept	first difference	49.62*** (0.000)	26.06** (0.0105)	53.3*** (0.000)	47.68*** (0.000)	35.41*** (0.000)	38.15** (0.03)	58.11** (0.04)
	intercept & trend	first difference	32.5*** (0.000)	19.33* (0.08)	46.9*** (0.000)	35.4*** (0.000)	23.53** (0.02)	29.52** (0.015)	42.17*** (0.000)

Note: ***, **, * imply significance at 1%, 5% and 10 % respectively. Values in brackets are P-values.