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Towards the Reversal of Poverty and Income Inequality Setbacks Due to COVID-19: The Role of Globalisation and Resource Allocation

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Abstract

Policy recommendations for building resilient and all-inclusive societies post COVID-19 pandemic continue to dominate the media and research landscapes. However, rigorous empirical content backing such claims, particularly, on both poverty and income inequality, is hard to find. Motivated by the bleak outlook of the Middle East and North Africa (MENA) region, as driven primarily by the floundering hydrocarbon sector, vulnerable employment, and low foreign direct investment, we analyse the poverty and income inequality effects of globalisation and resource allocation in the region. Using data from the World Bank's Poverty and Equity Database for the period 1990–2019, we provide estimates robust to several econometric techniques— the pooled least square, fixed effect, random effect, and the system generalized method of moments estimators to show that: (1) while economic globalisation reduces both poverty and income inequality, social globalisation matters only for income inequality in MENA; (2) economic globalisation is remarkable in reducing income inequality through resource allocation. Policy recommendations are provided in the light of the geopolitical fragility and rise in social globalisation of the region.

Keywords: Economic Integration, Financial Deepening, GMM, MENA, Globalisation, Inequality, Poverty

***JEL Codes**: F14; F15; F6; I3; O53; 055*

1.0 Introduction

The coronavirus disease (COVID-19) struck at the time the world was on a weak growth pedestal. Indeed, since the 2009 global financial meltdown, the recovery of the world economy towards a resilient growth trajectory is yet to be realized (Kilic Celik *et al.* 2020; Kose and Ohnsorge 2019). For instance, in 2019, the global economy realised a growth rate of 1.9 per cent before slumping into a record 4.4 per cent contraction in 2020 (IMF 2020a). Within a year, the marginal gains made towards recovery had been completely eradicated. One region hardest hit by the dismal effects of the coronavirus

pandemic is the Middle East and North Africa[1] (MENA), which contracted by at least 4.2 per cent in 2020 from a mild 0.8 per cent growth in 2019 (World Bank 2020a; IMF 2020a). More crippling is the disruptive effects of the pandemic on welfare gains. In fact, the issue of poverty and income inequality has taken centre stage as the pandemic erodes hard fought gains accumulated in the past one-and-a-half decades on Sustainable Development Goals[2] 1, 8 and 10 (World Bank 2020b). The concern lies in the implications of poverty and income inequality for the quality of life, health, education, social cohesion, and mortality (World Bank 2020b; Pickett and Wilkinson 2015; Burns 2015). Such ramifications are even more pertinent in a region where Ravallion and Chen (2019) identify as poor and unequal alongside the sub-Saharan Africa (SSA) and the Latin America and Caribbean (LAC) blocks. The MENA region is, therefore, begging for attention.

In the wake of the COVID-19 pandemic, the IMF and World Bank (2020) and IMF (2020b) identified resource allocation[3] as one of the chief channels for reducing poverty and inequality. In addition to resource allocation is the unprecedented rise in globalisation in the 21st century, which presents policymakers with opportunities for shared growth, as well as challenges that can amplify the vulnerability of economies to poverty and inequality (Bourguignon 2016; Bergh and Nilsson 2014 2010; Stiglitz 2002). The optimism with globalisation is that it has the power to generate durable and equitable wealth through technological transfer, innovation diffusion, job creation, macroeconomic stability and industrialization (Obeng *et al.* 2021; Bhagwati and Srinivasan 2002). Globalisation can also contribute to shared prosperity through the augmentation of recipient countries' productive capacity, forward and backward linkages, diversification, global value chain participation and foreign exchange (see, Obeng *et al*. 2021). If the world ever doubted the power of globalisation, the current crisis hobbled it all. Per current growth prospects of MENA, if policymakers do not map out strategies to harness opportunities globalisation offers, such economies risk being primary supplier in the global value chain— providing descent employment opportunities in other countries; and pursuing growth at the expense of shared prosperity. Thus, in rebuilding and propelling the MENA towards a resilient growth path post COVID-19, there is a clarion call for policymakers to map out policies with globalisation[4] as a key consideration (see, UNCTAD 2020a; World Bank 2020c).

Indeed, economic integration has long been identified as an inclusive growth enhancer in the MENA— evidenced by the coming into force of several bilateral and multilateral trade agreements, markedly, the Greater Arab Free Trade Area (GAFTA)and the Gulf Cooperation Council (GCC). However, in a region where poverty[5] and income inequality are rising and made even severe due to the coronavirus pandemic (ILO 2020a; World Bank 2020b), globalisation per se may not be an end in itself in achieving shared prosperity. Further, despite evidence of its growth-inducing effects, economic

[1] The region has been struggling as growth slumped sharply from 5 per cent in 2016 to 1.3 per cent in 2019 primarily due to poor performance of the hydrocarbon sub-sector amid US sanctions on Iran (World Bank 2019)

[2] In respective terms, SDGs 1, 8 and 10 seek to end poverty, ensure decent work and economic growth, and reduce income inequality.

[3] The World Bank recognise that mobilizing adequate resources remains the backbone of SDGs, which generally seek to end poverty, lessen inequality and injustice as well as combat climate change by 2030

[4] In seeking to rebuild post COVID-19 crisis, the World Bank (2020c) notes that regional integration may help MENA.

[5] Corral *et al.* (2020) reports that the MENA has seen extreme poverty rate rise, from 2.3 percent in 2013 to 3.8 percent in 2015; it then almost doubled to 7.2 percent in 2018.

integration has also been found to fuel inequality in the developing world (see, Dorn *et al.* 2018; Bergh and Nilsson 2010), signifying the need for a new policy paradigm if the globalisation channel is to be harnessed. However, opinions shared on how governments/policymakers can (re)build prosperous and all-inclusive MENA post COVID-19 are deficient of rigorous empirical content. Also, though multilateral trade agreements have generally not yielded the expected welfare objectives in the MENA, the opportunities offered by the Africa Continental Free Trade Area (AfCFTA) and European Union Customs Union (EUCU) are clear glimmers of hope.

Conspicuously, the few studies we sighted, which are in line with our view are plagued with some shortfalls from policy perspectives. First, these empirical works focus solely on trade flow indicators, ignoring the fact that economic integration does not mean a total elimination of tariff (see e.g., Le Golf and Singh 2014; Meinhard and Potrafke 2012). Second, the plausible pathway effects of globalisation and resource allocation on both poverty and inequality in the MENA have not been explored. Third, despite the momentous rise in social globalisation [6] in contemporary global interrelations via information and communication technology (e.g., radio, television, telephone, social media), its effect on poverty and income inequality in MENA have not been explored. Our contribution to knowledge is thus twofold— first, we investigate the effects of economic and social globalisation on income inequality and poverty in MENA, and second, we explore whether resource allocation has greater poverty- and inequality-reducing effects through globalisation in MENA.

The rest of the paper is organised as follows: the next section focuses on the theoretical connections between globalisation, resource allocation, and poverty and income inequality. Section 3 also presents the methods and data underpinning analyses. The last two sections, in respective terms, present the results, and the conclusion and policy recommendations.

2.0 Theoretical link between globalisation, resource allocation, and poverty and income inequality

A number of theories posit poverty and income inequality effects of both resource allocation and globalisation. First, despite its much-emphasized simplistic assumption of resource and technological homogeneity across countries, the Heckscher-Ohlin model indicates that countries gain from globalisation by specializing in production activities which they have relatively abundant factor (see, Ohlin 1933). The argument has been enhanced by the International Monetary Fund (2000) who reckon that globalisation can spur growth and poverty alleviation through global value chain participation, macroeconomic stability, employment, and innovation. This is an argument that feeds into the static trade theories of Samuelson (1939) and Bhagwati and Srinivasan (2002), which indicate that surplus labour realises an increase in real incomes when countries open up to trade. In addition is the dynamic theory of globalization, which sees economic integration as a necessary vehicle/lubricant for attracting foreign innovation, spurring private-sector competition, scale economies, and global value chain participation while limiting rent-seeking activities favoured by trade restrictions (see,

[6] Social globalisation comprises information, culture and interpersonal relations.

Grossman and Helpman 1991; Lucas 1988). The dark side of globalisation, however, is that it can be harmful to the fight against poverty as it amplifies the susceptibility of economies to economic and financial meltdown (Cornia, 2004; Taylor, 2004). Considering the growing diversification and development of socioeconomic systems of the region, our first hypothesis is to test whether economic globalisation has a suppressing effect on poverty in the MENA.

On within- and between-country income distribution, the Stolper-Samuelson and the factor price equalization theorems posit that globalisation can be a favourable medium for spurring equitable income distribution through increased demand for labour and global value chain participation (Samuelson 1948). However, the current wave of globalisation, which encompasses greater liberalisation of capital accounts, and financial and labour markets can counterbalance the potential favourable income distributional effects. As Krusell *et al.* (2000) and Acemoglu (2003) reckon, the diffusion and spilling over of skilled-biased innovation in the developing countries characteristic of globalisation is favouring rising demand for skilled labour and increased wage dispersion. In particular, within-country income inequality can deepen due to- (1) demonstration effect (see Piva 2003); (2) the vertical spillovers (see Saggi 1999); (3) labour turnover and spin-offs (see Kinoshita, 2000); and (4) the competition effect (see Bayoumi *et al.* 1999). Despite these possible drawbacks, Stiglitz (2002) and Acemoglu and Robbinson (2012) argue that stronger and fairer regulatory regimes (labour unions) are crucial for bridging the wage differential gap. Such is the developing story of MENA and as such, our second hypothesis is to test whether economic integration has a negative effect on income inequality.

A key concern with contemporary globalisation goes beyond the economic perspective to encompass the spread of western culture, identity and inclusion. This is the social dimension of globalisation, driven by advances in information and communication technology (ICT), which continues to influence international transactions, exchange of information, innovation and migration. Particularly, Atkinson (1997) argue that such developments may alter the taste and consumption patterns in the developing world. The result of this is the erosion of the wage bargaining power of unions and labour settling for a low wage. Our third hypothesis, therefore, is to test whether social globalisation has a negative effect on poverty and income inequality in MENA.

Further, the relevance of financial deepening and government expenditure in fostering shared prosperity in the developing world cannot be discounted. Indeed, the MENA is one of the regions in the developing world with low interest rates, growing infrastructure development and social equity frameworks that can realistically share globalisation dividends. This is consistent with the argument of Demirgüç-Kunt and Levine (2009; 2008) and Stiglitz (2002) that resource allocation and social equity policies are worthwhile to level the playing field for equitable income growth and distribution. This ushers us into our final hypothesis, which is to test whether there is higher poverty- and income inequality-reducing effects of resource allocation in the presence of enhanced globalisation.

2.1 Poverty and income inequality trends in MENA

Both poverty and income inequality have been found to be socially divisive and corrosive as they result in the wastage of human capital and potentials, inefficient resource allocation, high dependency burden, and institutional fragility (Pickett and

Wilkinson 2015; Bourguignon 2004). Some key challenges encountered in the fight against poverty and inequality in MENA include the slow growth fuelled primarily by a high dependency on the commodity sub-sector (of which 60% is from oil), growing precarious unemployment, capital and the surging effects of climate change and (World bank 2020b; 2016). Particularly, the sluggish growth of the region due to the flailing hydrocarbon subsector even before COVID-19 pandemic, and the sharp fall in foreign direct investment (FDI) since the 2009 global financial crisis, presents policymakers with the greatest headache in tackling inequality and poverty (OECD 2020a; UNCTAD 2020b). It comes as no surprise that following the recent less inclusive growth trajectories of the MENA, and the emergence of the coronavirus disease, the debate on the effect of economic integration in tackling poverty and income inequality has been rekindled (ILO 2020b; UNCTAD 2020a; World Bank 2020c). It is expected that trade and technological diffusion can be a catalyst for inclusive growth by improving MENA's global value chain participation, forward and backward linkages, and job creation. Despite these potentials, past experience on economic integration in steering the growth and inclusivity agenda of the region leaves much to be desired. The interpretations are varied but the significant pointers are the FDI-deterring geopolitical fragility of the region, weak intra-regional trade, and climate change (World Bank 2020b, 2020d, 2017).

Indeed, information gleaned from World Bank (2020b) shows that, among all the regions, the MENA leads in terms of rising poverty (measured by the poverty gap[7] of US$1.90 and US$3.20 a day) and income inequality (i.e., Gini index) levels. More troubling is the projection that the pandemic would have greater dismal effects in more unequal economies due to struggling small and medium scale enterprises, food price shocks, job losses and low social protection (Brown *et al.* 2020; ILO 2020b). Particularly, on poverty, the World Bank (2020b) projects that between 2020 and 2030, the total number of people likely to be pushed into the extreme poverty net is between a staggering 68 million and 132 million. The picture on income inequality[8]is not encouraging either as per ILO (2020a) projections on precarious employment and under-employment. The report indicates that between 2020 and 2021 alone, 1.7 million people could to lose their jobs, 700,000 of them women. To put the trend of income inequality into perspective, we present Figure 1 to show how the MENA compares to other regions over the past three decades.

[7] To reflect recent changes in purchasing power parity (PPP), and data availability on population, inflation, and national income accounts, Ferreira *et al.* (2015) revised the 2005-PPP poverty line of US$1.25 to US$1.90 to ensure maximum international comparison. The new calculation also takes the average value of national poverty lines from 15 of the poorest economies in the world: Chad, Ethiopia, The Gambia, Ghana, Guinea-Bissau, Malawi, Mali, Mozambique, Nepal, Niger, Rwanda, Sierra Leone, Tajikistan, Tanzania, and Uganda, from a sample of 74 countries.

[8] With Alvaredo *et al.* (2018) showing that between the period 1990-2016, the MENA tops as world's most unequal region with the top 1 per cent holding 64 per cent of all incomes, inequality raises serious threats for both poverty and social cohesion.

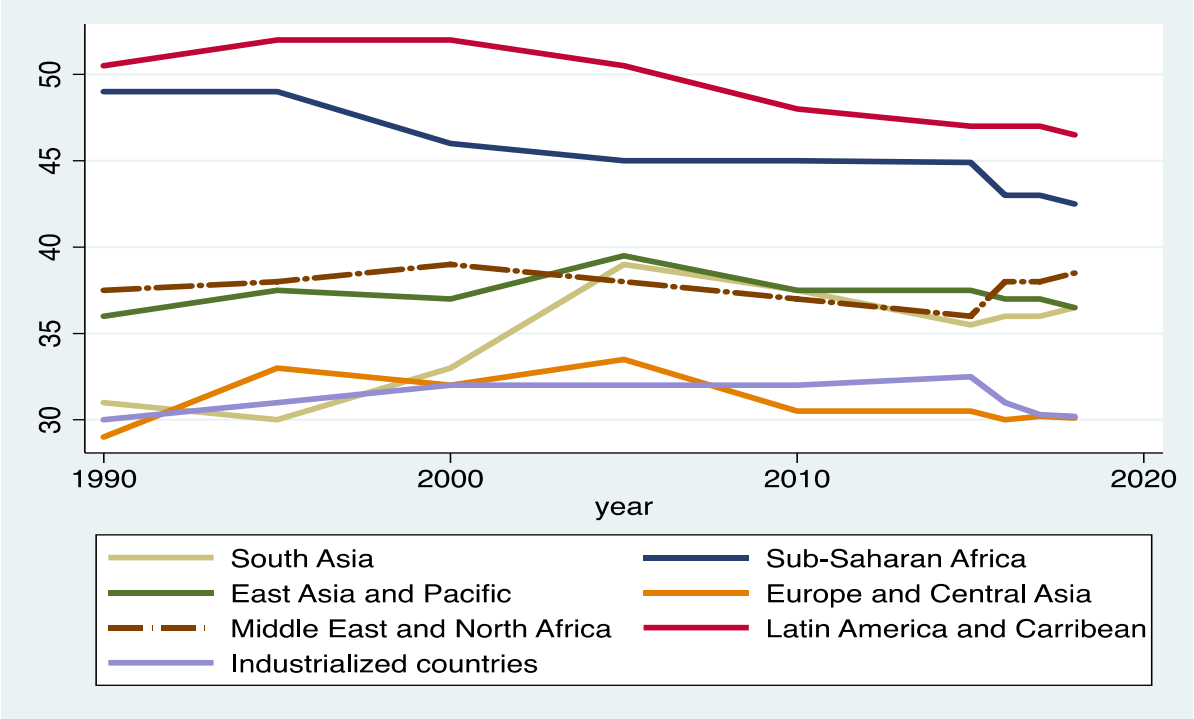

Figure 1: Trend of Average Income Inequality Across Regions, 1990 – 2019
Source: Authors' construct with data from Poverty and Equity Database, 2021

Figure 1 clearly shows that, on average, the MENA boasts of a lower income inequality score only when compared to regions like Latin America and Caribbean, and Sub-Saharan Africa. However, while in the past decade, the SSA records an average 5-percentage point drop in income inequality, the MENA recorded a 3-percentage point upsurge. Two key issues explain this upward trajectory. First, the MENA has not fully recovered from the brunt of the 2009 global financial crisis, and second, aside the low social protection expenditure[9], the lingering armed conflict and terrorism[10] in the Arab world has meant that foreign investors have substituted the region for the SSA (see, UNCTAD 2019; World Bank 2020d, 2017). Despite this trend, there is a bit of country-specific variation experience, which we show in the Figure A1. Figure A1 shows that income inequality is high in countries such as Djibouti, Turkey, Morocco and Yemen with a Gini score of at least 0.35. It is worth noting that while Egypt, Tunisia, Djibouti, and Algeria are recording gains in their fight against income inequality, the other countries in our study show the contrary case. Though we recognize that the kind of policies aimed at reducing inequality may depend on the underlying drivers and country-specific policy and institutional settings (Dabla-Norris *et al.* 2015), the growing global dynamism means that the trend in Figure 1 is less likely to persist. Also, the trend of poverty as we show in Figures 2 and A2 follow a similar course.

[9] Lustig, Lopez-Calva and Ortiz-Juarez (2012) show that social protection in the forms of direct transfers partly accounts for the income inequality reduction gains in the LAC over the last two decades.
[10] The Islam State and Al Qaeda terrorist groups have contributed immensely to making the region unsafe for foreign investors.

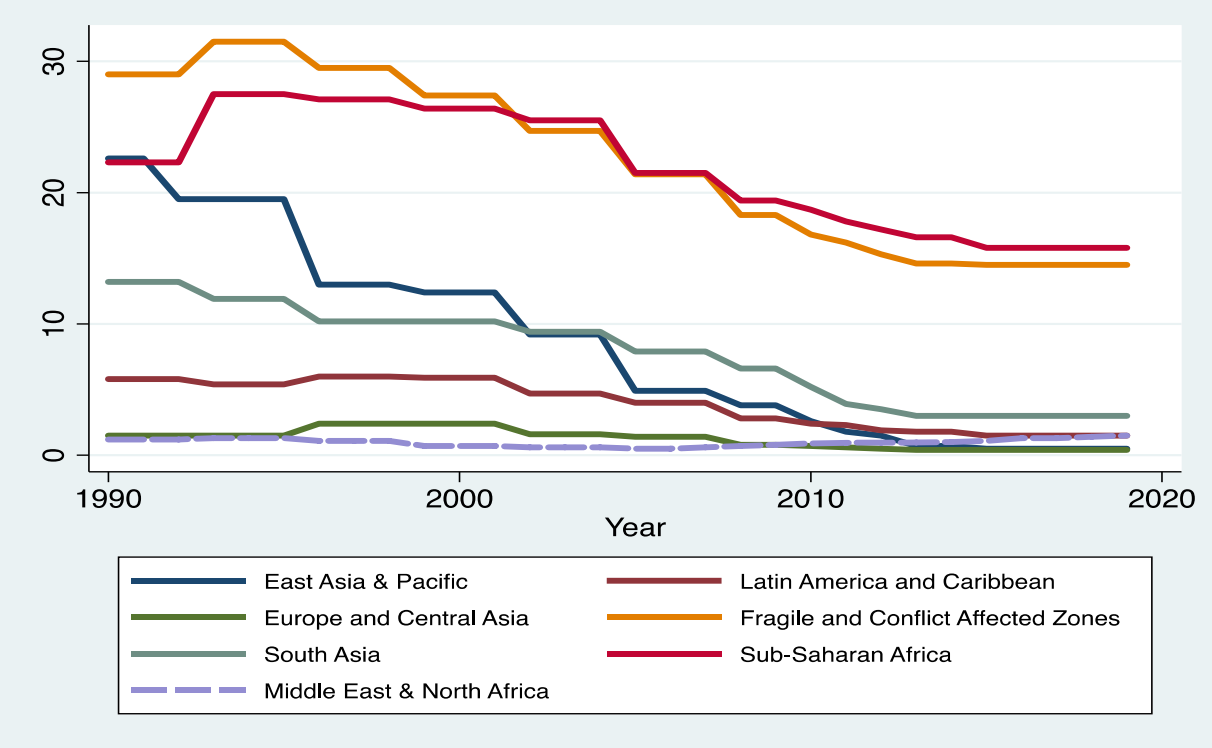

Figure 2: Trend of Poverty gap (US$1.90) Across Regions, 1990 – 2019
Source: Authors' construct with data from Poverty and Equity Database, 2021

It is evident from Figure 2 that across all the regions, only MENA reports rising poverty levels (i.e., Poverty gap US$1.90) since 2010[11]. Interestingly, this trend is in tandem with that of fragile and conflict zones, clearly signifying the poor economic opportunities arising due to conflict, weak social inclusion and protection. For the within-country variations indicated in Figure A2, we observe that Yemen, Iraq, Tunisia and Algeria are the countries in the region facing an uphill task in their poverty fight.

The trends of poverty and income inequality we present in Figures 1 – A2 show that as the region seek to rebuild post COVID-19, a new policy direction is paramount towards reversing the current welfare downturn. Though we recognize the IMF (2020a) admonishing of policymakers to spend to support vulnerable groups, save lives, and contain the COVID-19 pandemic, the crucial aspect is the medium term to long-term strategy. With the pandemic lurking, growth decelerating, oil sector floundering, precarious employment[12] rising, and FDI also declining in the MENA, swift, significant, and substantial policy action is needed. This is where our study fits perfectly as we provide ways policymakers in MENA can harness the power of globalisation and resource allocation in alleviating poverty while reducing income inequality.

3.0 Data and methodology

3.1 Data

[11] It is also clear that South Asia observed such developments from 1993 – 2008.
[12] The ILO (2020b) projects rising levels of vulnerable employment worldwide with the SSA, LAC and MENA leading the way.

We use macrodata spanning 1990 to 2019 for the analysis. Data on our outcome variables— poverty and income inequality are aggregated microdata sourced from the World Bank's Poverty and Equity Database. Our main outcome variable for the income inequality model is the World Bank's Gini index[13] (Milanovic´ 2014), while that of poverty is the poverty gap of US$1.90 (Ferreira *et al.* 2015). The poverty gap of US$1.90 a day is used as it reflects the depth and incidence of poverty across countries[14]. Additionally, we use the Palma ratio, drawn from the Global Consumption and Inequality Project (Lahoti *et al.* 2016), for checking the robustness of our inequality estimates. Similar checks are conducted for the poverty gap of US$1.90 estimates using the poverty gap of US$3.20 considering the income classification of the countries under consideration. Our variable of interest, globalisation, is captured (1) by economic integration (composed of tariff, trade openness, and economic globalisation), (2) social globalisation, and (3) overall globalisation. While data on social, economic and overall globalisation are sourced from the Konjunkturforschungsstelle (KOF) index of globalisation[15] (Gygli *et al.* 2019; Dreher 2006), data on tariff and trade openness are drawn from the World Development Indicators (World Bank 2020e). For controls, we consider variables such as financial deepening, government expenditure, vulnerable employment, GDP per capita, and education. These control variables are also taken from the World Development Indicators (World Bank 2020e). It is imperative to point out that, of the 21 MENA countries, we provide analysis based on 11 on grounds of data unavailability and empirical prudence. Particularly, data is limited on poverty, income inequality, economic and social globalisation for the United Arab Emirates, Saudi Arabia, Oman, Qatar, Kuwait, Lebanon, Libya, Bahrain, Israel, and Jordan. The description of the variables is provided in Table A1.

3.2 Estimation Strategy

The theoretical foundation of our study is the argument that efficient resource allocation and economic integration can create shared prosperity (see, Obeng *et al.* 2021; Demirgüç-Kunt and Levine 2009, 2008; Bhagwati 1973). The empirical rigor of our paper begins with the specification of baseline models for both income inequality and poverty. That is, we regress both income inequality and poverty on our controls. Next, though we recognize the argument of Dreher and Gaston (2008) in introducing globalisation and its components in the same model, we follow Bergh and Nilsson (2010) by introducing them in separate models to avoid multicollinearity problems (see the correlation between the variables in Figure A3). We thus introduce globalisation in its various forms— economic globalisation, social globalisation and overall globalisation stepwisely into the models. Finally, per our hypothesized higher poverty- and inequality-reducing effects of resource allocation in line with globalisation, we

[13] A Gini coefficient of zero expresses perfect equality in given country while 1 denotes the case of extreme inequality.

[14] Poverty gap at $1.90 a day (2011 PPP) is the mean shortfall in income or consumption from the poverty line of $1.90 a day (counting the nonpoor as having zero shortfall), expressed as a percentage of the poverty line.

[15] The KOF Index of Globalisation is an index measuring the degree of globalisation of 122 countries. The overall index of globalisation provides statistics on three main dimensions of globalisation— economic, social, and political.

introduce interaction terms[16] for economic globalisation and resource allocation. For the estimations, we run our models using the pooled least square estimator, and the fixed effect and random effect estimators. We specify our pooled least square model for income inequality as follows:

$$ln(gini_{it}) = \alpha_0 + X_{i,t-1}\beta + \delta_i ln(glob_{it}) + \gamma_1 ln(ecoglob_{it} \times gov_{it}) + \gamma_2 ln(ecoglob_{it} \times fin_{it}) + \mu_i + \mu_t + \epsilon_{it} \quad (1)$$

Similarly, we present our panel fixed effect and random effect models as seen in (2)

$$ln(gini_{it}) = \varphi_0 + X_{i,t-1}\beta + \alpha_i ln(glob_{it}) + \delta_1 ln(ecoglob_{it} \times gov_{it}) + \delta_2 ln(ecoglob_{it} \times fin_{it}) + \sharp_i + \mu_t + \epsilon_{it} \quad (2)$$

Finally, we present similar pooled least square, and fixed effect and random effect models, where poverty is regressed on globalisation and the control variables as seen in equations (3) and (4), respectively.

$$ln(poverty_{it}) = \lambda_0 + X_{i,t-1}\beta + \phi_i ln(glob_{it}) + \omega_1 ln(ecoglob_{it} \times gov_{it}) + \omega_2 ln(ecoglob_{it} \times fin_{it}) + \epsilon_{it} \quad (3)$$

$$ln(poverty_{it}) = \varphi_0 + X_{i,t-1}\beta + \delta_i ln(glob_{it}) + \lessdot_1 ln(ecoglob_{it} \times gov_{it}) + \lambda_2 ln(ecoglob_{it} \times fin_{it}) + \mu_i + \mu_t + \epsilon_{it} \quad (4)$$

Where ***gini*** is the Gini index; ***poverty*** is poverty gap of US$1.90 a day; ***glob*** is globalisation captured as economic integration (i.e., tariff, trade openness, economic globalisation), social globalisation and overall globalisation. Also, X_i is a vector of controls—economic growth, education, government expenditure, vulnerable employment, financial deepening and inequality[17]. Moreover, ***ecoglob*fin*** is interaction term for financial deepening and economic globalisation; ***ecoglob*gov*** is another interaction term for government expenditure and economic globalisation; ***i*** is country; ***t*** is time; ***ln*** is the natural logarithm; $\boldsymbol{\mu_i}$ is the country-specific effects; and $\boldsymbol{\epsilon_i}$ is the white noise. Taking cues from Cornia and Martorano (2012), however, we identify three possible sources of endogeneity from the aforementioned estimation techniques— (1) the potential correlation between country-specific errors and the regressors if the fixed effect technique is appropriate, (2) the simultaneity between income inequality and poverty, and (3) the reverse causality between economic growth and income inequality. To the extent that these endogeneity concerns can bias our estimates, we follow Obeng *et al.* (2021) and Ofori and Asongu (2021) by running our inequality and poverty models using the system GMM estimator proposed by Arellano and Bond (1995). To

[16] These are: (1) economic globalisation and government expenditure, and (2) economic globalisation and financial deepening.

[17] Inequality enters the poverty equation only as a control following the argument of Ravallion (2004) and Bergstrom (2020)

take this into account empirically, we modify equations (2) and (4) in consonance with the system GMM specification[18] as presented in equations (5) and (6), respectively.

$$ln(gini_{it}) = \delta_0 + \alpha_1 ln(gini_{it-1}) + X_{i,t-1}\beta + \lambda_i ln(glob_{it}) + \delta_1 ln(ecoglob_{it} \times gov) + \delta_2 ln(ecoglob_{it} \times fin) + \mu_i + \mu_t + \epsilon_{it} \quad (5)$$

$$ln(poverty_{it}) = \lambda_0 + \alpha_1 ln(poverty_{it-1}) + X_{i,t-1}\beta + \delta_i ln(glob_{it}) + \lambda_1 ln(ecoglob_{it} \times gov_{it}) + \lambda_2 ln(ecoglob_{it} \times fin_{it}) + \mu_i + \mu_t + \epsilon_{it} \quad (6)$$

4.0 Results and discussion

4.1 Summary statistics

Table 1 shows the summary statistics, which gives a general overview of our data over the study period. The data shows an average depth and intensity of poverty, and income per capita of 1.135 and US$ 3,147 respectively. Also, the average Gini score is 0.36 (36%), denoting a moderately high income inequality in the MENA.

Table 1: Summary Statistics (1990 – 2019)

Variables	Obs.	Mean	Sd	Min	Max	Kurtosis	Skewness
Vulnerable Employment	330	35.75	10.28	19.73	60.04	2.085	0.316
GDP Per Capita	330	3,147	1,492	631.5	6,949	2.436	0.462
Government Expenditure	330	16.04	4.910	2.332	28.97	3.086	0.201
Trade Openness	330	72.22	43.13	0.021	348.0	19.76	3.451
Poverty Gap (US$1.90)	300	1.135	1.840	0.00	7.800	8.100	2.432
Poverty Gap (US$3.20)	300	5.151	4.925	0.300	17.90	3.471	1.143
Gini (net)	300	36.78	4.816	27.60	45.10	1.963	-0.052
Education	330	6.593	0.714	6.00	8.00	2.318	0.776
Financial Deepening	330	30.31	23.70	1.267	95.51	2.982	0.922
Tariff	330	15.87	21.96	3.020	217.8	71.67	7.804
Kof. Globalisation (overall)	330	50.52	11.65	25.45	72.11	2.169	-0.119
Kof. Globalisation (economic)	330	47.48	9.839	3.704	67.59	3.704	-0.882
Kof. Globalisation (social)	330	44.59	15.84	17.61	78.14	2.075	0.221

Note: Obs is Observation; Std. Dev is Standard Deviation; Min denotes Minimum; and Max denotes Maximum

Further, our data show a mean vulnerable employment of 35.75, which per ILO standards, signifies a considerably high informal sector of the region.

[18] (i) the lags of the outcome variables are introduced in the models, and (ii) In all GMM estimations, the instruments used are the lags of the regressors.

4.2 Preliminary results on effect of globalisation, resource allocation and income inequality in MENA

We start off with the presentation of the results from the pooled least square estimator, which is presented in Table SM1 as supplementary results. The results show that, with the exception of tariff, all the indicators of globalisation report significant income inequality-reducing effects. It is, however, imperative to point out that economic globalisation ranks highest in reducing income inequality in the MENA region. Our controls— vulnerable employment, government expenditure and education also prove crucial for income inequality in the MENA.

We proceed by presenting our fixed effect and random effect results in Table 2.

Table 2: Fixed Effect and Random Effect Results on the Effect of Globalisation, and Resource Allocation on Income Inequality in MENA (Dependent variable is the Gini index)

Variables	*FE(1)*	*RE(1)*	*FE(2)*	*RE(2)*	*FE(3)*	*RE(3)*	*FE(4)*	*RE(4)*	*FE(5)*	*RE(5)*	*FE(6)*	*RE(6)*	*FE(7)*	*RE(7)*	*FE(8)*	*RE(8)*
Vulnerable Employment	-0.0007	-0.0007	0.0001	0.0047**	-0.0008	0.0038***	-0.0007	-0.0007	-0.0005	0.0043***	-0.0007	-0.0006	-0.0005	0.2062***	-0.0005	0.0056***
	(0.0008)	(0.0008)	(0.0010)	(0.0024)	(0.0008)	(0.0014)	(0.0008)	(0.0008)	(0.0008)	(0.0016)	(0.0008)	(0.0008)	(0.0008)	(0.0653)	(0.0008)	(0.0019)
Government Expenditure	-0.0001	-0.0001	-0.0008	-0.0078***	-0.0001	0.0050***	-0.0000	-0.0001	-0.0001	-0.0058***	-0.0001	-0.0003	-0.0000	-0.1944	-0.0001	0.0082***
	(0.0010)	(0.0010)	(0.0009)	(0.0019)	(0.0010)	(0.0017)	(0.0010)	(0.0010)	(0.0010)	(0.0021)	(0.0010)	(0.0010)	(0.0032)	(0.3191)	(0.0010)	(0.0024)
Financial Deepening	-0.0007	-0.0005	-0.0011	0.0552***	-0.0006	0.0003	-0.0005	-0.0004	0.0001	0.0069	-0.0008	-0.0003	0.0002	0.1345	0.0003	-0.0086
	(0.0037)	(0.0037)	(0.0052)	(0.0112)	(0.0037)	(0.0062)	(0.0037)	(0.0037)	(0.0037)	(0.0076)	(0.0037)	(0.0038)	(0.0037)	(0.3028)	(0.0052)	(0.0135)
GDP per capita	0.0011	0.0011	0.0007	-0.0097*	-0.0011	0.0019	-0.0010	-0.0010	-0.0014	0.0015	-0.0013	-0.0013	-0.0014	0.1087	-0.0014	0.0036
	(0.0022)	(0.0022)	(0.0021)	(0.0051)	(0.0022)	(0.0042)	(0.0022)	(0.0022)	(0.0022)	(0.0052)	(0.0022)	(0.0023)	(0.0022)	(0.2123)	(0.0022)	(0.0061)
Education	0.0186	0.0204	0.0055	0.0593**	0.0187	0.0337***	0.0185	0.0196	0.0191	0.0459***	0.0170	0.0221	0.0191	1.6510***	0.0191	0.0523***
	(0.0142)	(0.0138)	(0.0142)	(0.0261)	(0.0142)	(0.0119)	(0.0142)	(0.0139)	(0.0140)	(0.0120)	(0.0143)	(0.0138)	(0.0141)	(0.4301)	(0.0141)	(0.0123)
Tariff			0.0098	0.0072												
			(0.0102)	(0.0188)												
Trade Openness					-0.0002	0.0062***										
					(0.0008)	(0.0013)										
Kof. Overall Globalisation							-0.0007	-0.0007								
							(0.0032)	(0.0032)								
Kof. Economic Globalisation									-0.0107**	-0.0346***			-0.0107**	-1.6892***	-0.0107**	-0.0466***
									(0.0047)	(0.0108)			(0.0048)	(0.4399)	(0.0048)	(0.0126)
Kof. Social Globalisation											0.0034	0.0029				
											(0.0034)	(0.0036)				
Kof. Economic Glob. × Gov.													-0.0002	0.4671		
													(0.0032)	(0.3169)		
Kof. Economic Glob. × Fin.															-0.0002	-0.0142
															(0.0032)	(0.0091)
Constant	3.4643***	3.4451***	3.4536***	2.2039***	3.4681***	3.0481***	3.4756***	3.4613***	3.6409***	3.5520***	3.5380***	3.4788***	3.6431***	34.0029***	3.6431***	3.4016***
	(0.1369)	(0.1407)	(0.1473)	(0.2690)	(0.1383)	(0.1720)	(0.1470)	(0.1532)	(0.1565)	(0.2540)	(0.1564)	(0.1588)	(0.1636)	(10.6952)	(0.1636)	(0.3059)
Observations	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204	204
R-squared	0.215	–	0.437	–	0.217	–	0.217	–	0.470	–	0.263	–	0.470	–	0.470	–
Countries	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Hausman Statistic	5.11	–	28.88	–	5.27	–	4.77	–	5.05	–	4.63	–	4.11	–	4.88	–
P-value	0.410	–	0.000	–	0.551	–	0.518	–	0.565	–	0.512	–	0.558	–	0.761	–

*Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1;*

Kof. Economic Glob. × Fin. is interaction term for financial deepening and economic globalisation;

Kof. Economic Glob. × Gov. is interaction term for government expenditure and economic globalisation

FE(1), ……., FE(8) are fixed effect models while RE(1), ……, RE(8) are random effect models

For our variables of interest, we find that only tariff is statistically significant in affecting inequality though the trade flow indicators (trade openness and economic globalisation) report the expected signs. Based on the Hausman test, there is no evidence of clear randomness in explaining inequality in the MENA. The Hausman test results from model 2 (Column 2) shows evidence of country-specific effect in explaining income inequality. This also indicates the presence of correlation between the regressors and the unique errors, presenting us with evidence of the endogeneity concerns, which we address using the system GMM.

4.4 Effect of globalisation and resource allocation on income inequality in MENA

We present our estimates by first pointing out from our baseline results that previous year's level of income inequality, government expenditure and education are crucial drivers of income inequality in the MENA (see Column 1, Table 3).

Table 3: Dynamic System GMM Results on Effects of Globalisation and Resource Allocation on Income Inequality in MENA (Dependent Variable: Gini Index)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lag of Inequality (Gini)	0.0224***	0.0239***	0.0214***	0.0239***	0.0242***	0.0225***	0.0255***	0.0255***
	(0.0025)	(0.0022)	(0.0022)	(0.0024)	(0.0026)	(0.0025)	(0.0024)	(0.0024)
Vulnerable Employment	0.0002	0.0004	0.0011	0.0002	0.0002	0.0003	0.0006	0.0006
	(0.0008)	(0.0009)	(0.0007)	(0.0008)	(0.0008)	(0.0008)	(0.0008)	(0.0008)
Government Expenditure	-0.0029***	-0.0025**	-0.0031***	-0.0027**	-0.0021**	-0.0026**	-0.0066**	-0.0020*
	(0.0011)	(0.0011)	(0.0007)	(0.0011)	(0.0010)	(0.0011)	(0.0026)	(0.0010)
Financial Deepening	-0.0016	-0.0016	-0.0220***	-0.0006	-0.0042*	-0.0012	-0.0030	-0.0055
	(0.0023)	(0.0025)	(0.0045)	(0.0024)	(0.0024)	(0.0024)	(0.0025)	(0.0038)
GDP per capita	0.0012	0.0013	0.0033**	0.0005	0.0010	0.0012	0.0003	0.0003
	(0.0017)	(0.0018)	(0.0015)	(0.0017)	(0.0017)	(0.0018)	(0.0017)	(0.0017)
Education	0.0158***	0.0088**	0.0198**	0.0169***	0.0136***	0.0180***	0.0151***	0.0151***
	(0.0048)	(0.0039)	(0.0078)	(0.0049)	(0.0050)	(0.0053)	(0.0051)	(0.0051)
Trade Openness		0.0024**						
		(0.0010)						
Tariff			0.0028					
			(0.0051)					
Kof. Overall Globalisation				0.0082***				
				(0.0025)				
Kof. Economic Globalisation					-0.0092*		-0.0085*	-0.0085*
					(0.0052)		(0.0051)	(0.0051)
Kof. Social Globalisation						0.0080**		
						(0.0033)		
Kof. Economic Glob. × Gov.							-0.0086***	
							(0.0026)	
Kof. Economic Glob. × Fin.								-0.0086***
								(0.0026)
Constant	2.5628***	2.5182***	2.2780***	2.3970***	2.6527***	2.4165***	2.4750***	2.4750***
	(0.0778)	(0.0739)	(0.0694)	(0.0840)	(0.1287)	(0.0801)	(0.1228)	(0.1228)
Observations	267	267	267	267	267	267	267	267
Countries	11	11	11	11	11	11	11	11
Instruments	8	8	5	8	8	8	8	8
Wald Statistic	3.028e+06	2.706e+06	2.655e+06	3.012e+06	2.942e+06	2.891e+06	2.952e+06	2.952e+06
Wald P-Value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Net-effect	–	–	–	–	–	–	0.039	0.038
Joint Significance Test Statistic	–	–	–	–	–	–	10.9	10.9
P-Value	–	–	–	–	–	–	0.010	0.010
Sargan P-Value	0.522	0.112	0.652	0.702	0.218	0.780	0.336	0.336
AR(1)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.935	0.774	0.644	0.747	0.991	0.966	0.693	0.693

*Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1*

Kof. Economic Glob. × Fin. is interaction term for financial deepening and economic globalisation
Kof. Economic Glob. × Gov. is interaction term for government expenditure and economic globalisation

Albeit not statistically significant, tariff is positive, which is in line with renewed calls for MENA's integration into the global market. In respective terms also, we find empirical evidence at 5 per cent and 1 per cent levels of significance that both trade openness and overall globalisation induce income inequality in the study area (see Columns 2 and 4 respectively). Our result on trade openness deepens the argument that trade can lead to the eventual preference for labour-saving technologies in response to heightened competition and thus hindering inclusive growth (Wu and Hsu 2012). But in relation to our result on economic globalisation, the result perhaps is due to the shallow definition of trade openness. Our results in Column 5 show that economic globalisation reduces income inequality in the MENA by a modest 0.009 per cent. This finding partly underscores our argument on how economic globalisation can be handled from the policy front to foster equality in opportunities, income and wealth. The implication of this result goes beyond the traditional call for tariff reduction. Instead, it shows that there are three things at play with respect to income inequality reduction in the MENA through economic integration— that it should come with (a) the elimination of trade barriers to breed competition and spur innovation, (b) attracting FDI not only into the much dependent oil-sector to boost productivity and trigger higher demand for labour[19], and (c) ensuring integration into the global economy. With porous economic outlook, tariff still high, and trade within the region largely mechanized[20], the result on economic integration signifies the need for a paradigm shift in economic integration in MENA, which we suggest next. Though we recognize that governments need to spend to lessen the impact of the pandemic in the immediate term IMF (2020a), the concern is the medium to long-term welfare of the masses in the region.

The empirical evidence on the pathway effect as we provide in Column 7 signifies that, going forward, government expenditure can be a gamechanger for the region in reducing income inequality. There is a 5 per cent level of significance that increasing government expenditure in line with economic globalisation has a net income inequality reducing effect of 0.039 per cent. Similarly, we show that channelling resources in the form of credit to support the private sector in line with economic globalisation considerations has the potency of reducing income inequality by 0.038 per cent. Two critical implications emanate from our pathway findings. First, policymakers interested in the MENA agenda can participate effectively in their economies by way of building conducive environment in the form of reconstruction expenditure, research and development, and fairer institutions for the private sector to thrive. This can breed competition, trigger FDI inflow and above all improve private-sector efficiency. Second, through the elimination of financial repression, and reduction in the cost of borrowing,

[19] The SSA is one of the regions with huge potential for trade gains – in terms of raw materials, youthful manpower and market area.
[20] According to the World Bank (2020a), the MENA, and Europe and Central Asia are the two most commodity dependent regions of the world.

greater financial deepening can also help the region diversify from the 'crisis-susceptible' oil sector. We argue that such resource allocations can aid the region utilise the fertile grounds provided by the AfCFTA and EUCU to provide shared opportunities. Also, we find that social globalisation induces income inequality by a modest 0.008 per cent in the MENA. The result is an empirical evidence for the assertion that changing norms due to enhanced social and global interaction through ICT can fuel income inequality as trade unions become less effective (see, Atkinson 1997).

We shift focus to our ancillary findings, where we show evidence at 1 per cent level of significance that the lag of income inequality induces current inequality levels by 0.02 per cent irrespective of the model specification. Likewise, we find that irrespective of the model specification, education increases income inequality by at least 0.008 per cent (see Column 2). The results point to the power of differences in skillset in driving income inequality in MENA. This signifies the need for a flexible educational system where training and skillset development at the lower and middle tiers of work are also given attention. Our results further suggest that improvement in human capital widens income inequality in the MENA. The result indicates that without efficient fiscal redistribution, return on education, good health and nutrition for a subset of the population can fuel income inequality in the MENA. If this is not pursued, it can result in incomes of the skilled and educated workforce growing sharply relative to that of the uneducated and unskilled labour who can be forced to work below the average wage rate (World Economic Forum 2016).

4.5 Robustness check for income inequality results

We check the robustness of our estimates using the Palma ratio as an alternative income inequality measure (see results in Table 4). We find similar results for trade openness, economic globalisation, and overall globalisation.

Table 4: Dynamic System GMM results on Effects of Globalisation and Resource Allocation on Income Inequality in MENA (Dependent variable: Palma Ratio)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lag of Inequality (Palma ratio)	0.1245***	0.2121***	0.2321***	0.1100***	0.1265***	0.1226***	0.1207***	0.1617***
	(0.0158)	(0.0209)	(0.0174)	(0.0185)	(0.0189)	(0.0177)	(0.0203)	(0.0164)
Vulnerable Employment	0.0204***	0.0144*	0.0078	0.0218***	0.0182***	0.0226***	0.0179***	0.0094**
	(0.0039)	(0.0079)	(0.0072)	(0.0044)	(0.0045)	(0.0045)	(0.0046)	(0.0039)
Government Expenditure	-0.0170***	-0.0125**	-0.0028	-0.0157***	-0.0135***	-0.0151***	-0.0847***	-0.0078**
	(0.0034)	(0.0063)	(0.0049)	(0.0038)	(0.0038)	(0.0038)	(0.0187)	(0.0039)
Financial Deepening	-0.0557***	-0.0356*	-0.0153	-0.0493***	-0.0259**	-0.0637***	-0.0163	-0.0493**
	(0.0114)	(0.0213)	(0.0254)	(0.0122)	(0.0117)	(0.0129)	(0.0122)	(0.0211)
GDP per capita	0.0389***	0.0364***	-0.0004	0.0467***	0.0380***	0.0366***	0.0441***	0.0377***
	(0.0074)	(0.0139)	(0.0115)	(0.0088)	(0.0087)	(0.0083)	(0.0098)	(0.0094)
Education	0.3103***	0.0440*	-0.0782**	0.3015***	0.3103***	0.3278***	0.2927***	0.2437***
	(0.0264)	(0.0256)	(0.0373)	(0.0273)	(0.0319)	(0.0299)	(0.0307)	(0.0270)
Trade Openness		0.0782***						
		(0.0158)						
Tariff			0.1079**					
			(0.0519)					
Kof. Overall Globalisation				0.0834***				
				(0.0163)				
Kof. Economic Globalisation					-0.1447***		-0.1485***	-0.1752***
					(0.0263)		(0.0280)	(0.0392)
Kof. Social Globalisation						0.0777***		
						(0.0124)		
Kof. Economic Glob. × Gov.							-0.0731***	
							(0.0178)	
Kof. Economic Glob. × Fin.								-0.0456***
								(0.0156)
Constant	-2.1700***	-3.0968***	-0.9025	-0.7024	-0.0624	-3.4294***	1.2378	0.9248
	(0.2467)	(0.4259)	(0.5591)	(0.4453)	(0.5538)	(0.3334)	(0.7912)	(0.8887)
Observations	267	267	267	267	267	267	267	267
Countries	11	11	11	11	11	11	11	11
Instruments	10	10	7	10	10	10	10	10
Wald Statistic	59281	20983	30746	45643	42886	47677	36640	38777
Wald P-Value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Net-effect	–	–	–	–	–	–	-0.36	-0.21
Joint Significance Test Statistic	–	–	–	–	–	–	8.49	16.95
P-Value	–	–	–	–	–	–	0.003	0.000
Sargan P-Value	0.310	0.630	0.117	0.626	0.860	0.600	0.205	0.366
AR(1)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.127	0.170	0.525	0.107	0.476	0.365	0.652	0.756

*Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Kof Economic Glob. Is Economic Globalisation*
Kof. Economic Glob. × Fin. is interaction term for financial deepening and economic globalisation
Kof. Economic Glob. × Gov. is interaction term for government expenditure and economic globalisation

Tariff is now statistically significant and exerts higher direct effect on income inequality (Column 3). Also, we find evidence of our hypothesized negative pathway effects for resource allocation and globalisation. We report higher net effects of -0.36 per cent for economic globalisation and government expenditure (Column 7), and -0.21 per cent for economic globalisation and financial deepening (Column 8). Further, we find strong conventional evidence for education, financial deepening and government expenditure.

More revealing is our result for economic growth proxied by GDP per capita, which denotes a case of non-inclusive growth in the region. Also of prime concern is the result for vulnerable employment which shows an income inequality-inducing effect of at least 0.01 per cent (Column 7, Table 4). With the social protection expenditure challenged[21] and ILO (2020b) projecting a rise in vulnerable employment due to current health and economic crisis, this finding supports our call for a new approach. The seriousness of our finding on vulnerable employment is seen in how the geopolitically fragile region can slip up if productive allocation is not pursued rigorously.

4.6 Effects of globalisation and resource allocation on poverty in MENA

In this section, we focus on the system GMM results on the effect of globalisation and resource allocation on poverty (see Table 5). It is worth noting that the results from our pooled least square estimator as well as fixed effect and random effect estimators are reported in Tables SM2 and SM3 respectively as supplementary results.

Table 5: Dynamic System GMM Results on the Effect of Globalisation and Resource Allocation on Poverty in MENA (Dependent Variable: Poverty Gap US$1.90)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lag of Poverty Gap ($1.90)	1.9013***	2.1503***	1.9271***	1.8558***	1.9001***	2.4978***	1.8610***	1.8610***
	(0.1450)	(0.3127)	(0.1485)	(0.1416)	(0.1464)	(0.1729)	(0.1428)	(0.1428)
Inequality (Palma ratio)	0.0993***	0.2030***	0.1373***	0.1014***	0.0961***	0.0642***	0.0986***	0.0986***
	(0.0150)	(0.0750)	(0.0173)	(0.0149)	(0.0152)	(0.0169)	(0.0151)	(0.0151)
Vulnerable Employment	-0.0668***	-0.3187***	-0.0734***	-0.0518**	-0.0559***	-0.0689***	-0.0547***	-0.0547***
	(0.0234)	(0.0610)	(0.0217)	(0.0208)	(0.0210)	(0.0233)	(0.0211)	(0.0211)
Government expenditure	-0.0531*	-0.0161	-0.0678**	-0.0515	-0.0610*	-0.0996***	-0.0708	-0.0574*
	(0.0320)	(0.0472)	(0.0330)	(0.0319)	(0.0324)	(0.0356)	(0.0982)	(0.0324)
Financial Deepening	-0.3119***	-0.2631	-0.2774**	-0.3376***	-0.2868**	-0.1697	-0.3003**	-0.3138*
	(0.1187)	(0.2860)	(0.1224)	(0.1232)	(0.1210)	(0.1343)	(0.1257)	(0.1796)
GDP per capita	-0.0216	-0.0588	-0.0162	-0.0247	-0.0235	-0.0056	-0.0257	-0.0257
	(0.0207)	(0.0539)	(0.0213)	(0.0208)	(0.0209)	(0.0231)	(0.0210)	(0.0210)
Tariff		0.2265						
		(0.5461)						
Trade Openness			-0.1267***					
			(0.0231)					
Kof Overall Globalisation				0.0166				
				(0.0956)				
Kof Economic Globalisation					-0.2434*		-0.2438*	-0.2438*
					(0.1274)		(0.1268)	(0.1268)
Kof Social Globalisation						-0.1023		
						(0.1210)		
Kof Economic Glob. × Gov.							-0.0134	
							(0.0966)	
Kof Economic Glob. × Fin.								-0.0134
								(0.0966)
Constant	8.1642***	8.0941	9.5174***	8.0435***	12.0090***	8.6838***	11.9064***	11.9064***
	(1.9722)	(5.2361)	(2.0539)	(2.3066)	(2.8279)	(2.7280)	(3.0816)	(3.0816)
Observations	267	94	267	267	267	267	267	267
Countries	11	11	11	11	11	11	11	11
Instruments	10	7	10	10	10	10	10	10
Wald Statistic	4666	1352	4358	4750	4735	4230	4759	4759
Wald P-Value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Net-effect	–	–	–	–	–	–	–	–
Joint Significance Test Statistic	–	–	–	–	–	–	–	–
P-Value	–	–	–	–	–	–	–	–
Sargan P-Value	0.231	0.311	0.637	0.227	0.209	0.644	0.201	0.201

[21] The much dependent oil sector of the region for social protection is floundering,

AR(1)	0.000	0.018	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.825	0.324	0.862	0.823	0.732	0.865	0.738	0.738

*Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1*
Kof. Economic Glob. × Fin. is interaction term for financial deepening and economic globalisation
Kof. Economic Glob. × Gov. is interaction term for government expenditure and economic globalisation

Focussing first on the variables of interest, we find that, of all the globalisation indicators, only trade openness and economic globalisation are important for reducing poverty despite tariff, social globalisation, and overall globalisation carrying the expected signs. In terms of the marginal effects, the results show that for every 1 per cent increase in trade openness (Column 3) and economic globalisation (Column 5), poverty reduces by 0.1 per cent and 0.2 per cent respectively. Our results concur that of Le Goff and Singh (2014). The effect of economic globalisation is strong in all our models signifying the need for the MENA to integrate to the global economy to reduce poverty. Further, though we do not find empirical support for the pathway effects, the signs are as expected a priori.

Indeed, the results for financial deepening and government expenditure (without interaction terms) support our proposition. With economic growth ineffective in reducing poverty, the marginal effect of government expenditure (0.05%) and financial deepening (0.3%) suggest that poverty reduction in MENA is finance-led. First, the evidence on government expenditure amplifies the relevance of resource allocation in poverty alleviation through productive investment. Though aid and social protection in the form of insurance and in-kind transfers are welcome, the sheer numbers of the vulnerable groups to deal with post COVID-19, coupled with the revenue generation challenge makes this approach unsustainable (OECD 2020b). The results indicate that healthy public-private sector partnership can be helpful in reconstructing a diversified industrial sector to boost both production, global value chain participation and employment. Additionally, addressing the infrastructural deficit, for example, digital infrastructure can lower local transaction cost and enhance forward and backward linkages. Second, a recognized challenge in building an all-inclusive, innovative and entrepreneurial workforce is through greater financial deepening, which we provide evidence in Column 7 (0.3%). In the developing world like MENA, lack of credit kills innovative ingenuity— wasting entrepreneurial and shared growth potentials.

For our ancillary findings, we find strong empirical evidence for both vulnerable employment and income inequality (Palma ratio) irrespective of model specification. For instance, we infer from Column 8 that, while a 1 per cent increase in vulnerable employment reduces poverty by 0.05 per cent, income inequality fuels the depth and incidence of poverty by 0.09 per cent. Vulnerable employment is effective in reducing poverty perhaps due to the shallow nature of the poverty measure (US$1.90). But with social protection or safety nets already lacking, and vulnerable employment projected to rise in the region, more people could slip into the shackles of poverty due to rising susceptibility of the region to economic and financial shocks. The effect of inequality (Palma ratio) is also strong and positive, with a magnitude of 0.09 per cent (Column 8) providing evidence of the 'twin-dividend' argument in the case of MENA (see,

Bergstrom 2020; Lakner *et al.* 2020). Further, irrespective of the poverty model we specify, we find a strong empirical evidence that previous year's level of poverty induces current incidence and depth of poverty in MENA by a remarkable 1.8 per cent (Column 8).

4.7 Robustness check for poverty gap US$1.90 results

Per the income classification of the economies we analyse, we test the robustness of our results using the poverty gap of US$3.20 (see Table 6). We find similar results—highlights being the poverty-reducing effects of our interaction terms for globalisation and resource allocation, and the trade flow indicators.

Table 6: Dynamic System GMM Results on Effect of Globalisation and Resource Allocation on Poverty In MENA (Dependent Variable: Poverty Gap US$3.20)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lag of Poverty Gap ($3.20)	0.9842***	3.5214***	2.9234***	2.8841***	2.9794***	2.9512***	2.9260***	2.9260***
	(0.0603)	(0.5291)	(0.1535)	(0.1889)	(0.1639)	(0.1911)	(0.1680)	(0.1680)
Inequality (Palma ratio)	0.0129	0.1565***	0.0707***	0.6112**	0.3264***	0.8096**	0.3818***	0.3818***
	(0.0181)	(0.0547)	(0.0163)	(0.2696)	(0.0991)	(0.3290)	(0.1164)	(0.1164)
Vulnerable Employment	0.0066	0.2455***	0.0519**	0.1206*	0.0531	0.1874**	0.0574	0.0574
	(0.0228)	(0.0620)	(0.0217)	(0.0704)	(0.0329)	(0.0912)	(0.0350)	(0.0350)
Government Expenditure	-0.1053***	-0.0451	-0.0002	-0.0677	-0.0327	-0.1046*	-0.4028***	-0.0309
	(0.0344)	(0.0570)	(0.0332)	(0.0476)	(0.0358)	(0.0560)	(0.1518)	(0.0374)
Financial Deepening	-0.0011	-0.1360	-0.0662	-0.4336**	-0.2423**	-0.6975***	-0.1908*	-0.1812
	(0.0958)	(0.2642)	(0.0891)	(0.1825)	(0.1111)	(0.2629)	(0.1128)	(0.1775)
GDP per capita	-0.0271	-0.0338	-0.0351	-0.1462	-0.0400	-0.1379	-0.0814	-0.0814
	(0.0813)	(0.1530)	(0.0757)	(0.1164)	(0.0825)	(0.1135)	(0.0892)	(0.0892)
Tariff		0.4247						
		(0.4933)						
Trade Openness			-0.0615***					
			(0.0231)					
Kof Overall Globalisation				-0.5899**				
				(0.2685)				
Kof Economic Globalisation					-0.5645***		-0.6198***	-0.6198***
					(0.1792)		(0.1951)	(0.1951)
Kof Social Globalisation						-0.0846		
						(0.1438)		
Kof Economic Glob. × Gov.							-0.3719**	
							(0.1456)	
Kof Economic Glob. × Fin.								-0.3719**
								(0.1456)
Constant	-2.8611	-1.5240	3.6114*	22.0899***	17.7602***	19.1662***	24.3902***	24.3902***
	(2.1497)	(4.9169)	(2.0621)	(8.4374)	(4.5554)	(7.0222)	(6.2675)	(6.2675)
Observations	266	266	266	266	266	266	266	266
Countries	11	11	11	11	11	11	11	11
Instruments	10	7	10	10	10	10	10	10
Wald Statistic	2226	599.4	2646	1591	2086	1515	1912	1912
Wald P-Value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Net-effect	–	–	–	–	–	–	1.02	1.61
Joint Significance Test Statistic	–	–	–	–	–	–	6.53	6.53
P-Value	–	–	–	–	–	–	0.011	0.011
Sargan P-Value	0.910	0.998	0.227	0.375	0.832	0.508	0.155	0.155
AR(1)	0.000	0.051	0.000	0.000	0.000	0.000	0.000	0.000
AR(2)	0.929	0.665	0.887	0.744	0.748	0.955	0.576	0.576

*Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1*

Kof. Economic Glob. × Fin. is interaction term for financial deepening and economic globalisation
Kof. Economic Glob. × Gov. is interaction term for government expenditure and economic globalisation

Our result show that trade openness is probably a shallow measure of globalisation evidenced by its smaller effect (0.06%) as compared to overall globalisation (0.58%) and economic globalisation (0.56%). Finally, the net effects of the interaction terms for government expenditure and economic globalisation on the one hand, and financial deepening and economic globalisation on the other hand, have poverty-reducing magnitudes of 1.02 and 1.61, respectively. The appropriateness of our system GMM estimates is evident in the AR(2) statistics showing the absence of second-order serial correlation in the residuals, and the Sargan P-value providing evidence of the validity of our instrument.

5.0 Conclusion and policy recommendations

In this study, we go beyond the array of subjective recommendations on how policymakers can (re)build an all-inclusive and prosperous economies post COVID-19. Using 11 countries[22] on grounds of porous economic prospects, data availability, and empirical prudence, we test three hypotheses— first, whether economic globalisation reduces poverty and income inequality in the MENA; second, whether social globalisation fuels income inequality and poverty; and third, whether higher poverty- and income inequality-reducing effects of globalisation occurs in the presence of efficient resource allocation.

We provide evidence robust to several specifications from the pooled least square, fixed effect, random effect and system GMM estimation techniques to show that: (1) reducing tariff is consistent with renewed call for MENA's integration into the global economy; (2) economic globalisation reduces both inequality-and poverty; and (3) social globalisation induces income inequality. Also revealing is our remarkable result on the modulating role of globalisation on the effect of resource allocation for poverty alleviation and income equality. With growing economic uncertainties surrounding the hydrocarbon sector, revenue generation, and FDI amid the geopolitical frailty of the region, our results provide cautious optimism. Particularly, resource allocation in the form of government expenditure and financial deepening reduces income inequality and poverty even the more if channelled in line with economic globalisation. Though we do not find such a significant pathway effect for poverty gap (US$1.90), the signs are as expected a priori.

Our results suggest that, improved competition and integrated interventions are more likely to succeed than secluded, monolithic interventions. Per our findings on vulnerable employment and the economic outlook of the region, we project a rise in income inequality and poverty in the MENA post COVID-19. This is more so as labour supply is likely to rise as laid off workers seek to find jobs. However, its persistence and

[22] Algeria, Djibouti, Egypt, Morocco, Tunisia, Syria, Turkey, Yemen, West Bank, Iran and Iraq.

impact can be lessened by the swiftness with which policymakers allocate resources in the region. Additionally, income inequality is likely to rise in MENA post COVID-19 due to the rise in social globalisation of the region, which may cause labour unions to lose bargaining power.

The pandemic has indeed amplified the power of social globalisation and as such calls for measures that incentivize the private sector to take advantage of this youth-friendly wave into real business opportunities. Going forward, losing sight on social globalisation is likely to cost policymakers in the fight against poverty and income inequality as interest in technical and vocational training/education is likely to be affected. Further, the remarkable effects of income inequality on poverty means that gains through globalisation can be hampered by the depth of poverty. In this situation, though resource allocation in the form of enhanced financial deepening is imperative for private-business revitalization, and the possible rippling effects in employment, policymakers should also not lose sight on social protection.

We provide recommendations in line with the region's weak economic prospects, geopolitical fragility, and globalisation. First, in fostering shared prosperity, policymakers are to invest strategically in building a sound investor climate while boosting the manufacturing capacities of their economies to improve global value chain participation. With FDI on the decline in the region, state support for private sector is not only imperative for boosting growth but also presents policymakers with a greater opportunity of addressing labour force polarization. This is worthwhile for building a diversified MENA, which does not only run on the performance of the oil sector.

Second, crucial to addressing both poverty and inequality is the relevance of greater financial deepening, which can address the possibility of labour settling for precarious employment post COVID-19. Indeed, rising social tensions, fuelled partly by unemployment resulted in the region's hard times in 2010 and 2011 (*the Arab spring*), which, in itself, underscores the relevance of our pathway effect of globalisation and resource allocation. Last, policymakers can at least reduce precarious employment and poverty in the MENA by mapping out strategies integrating ICT (a major social globalisation facilitator) and innovation skills into technical programmes. This is needed to respond to the growing demand for ICT products and services, and at the same time ensure smooth and faster adaptation to innovation to take advantage of economic globalisation. We do not explore the poverty and income inequality effects of financial globalisation in this work. We reckon that financial integration is likely to intensify in line with enhanced globalisation and this may be worth exploring in the future.

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Appendices

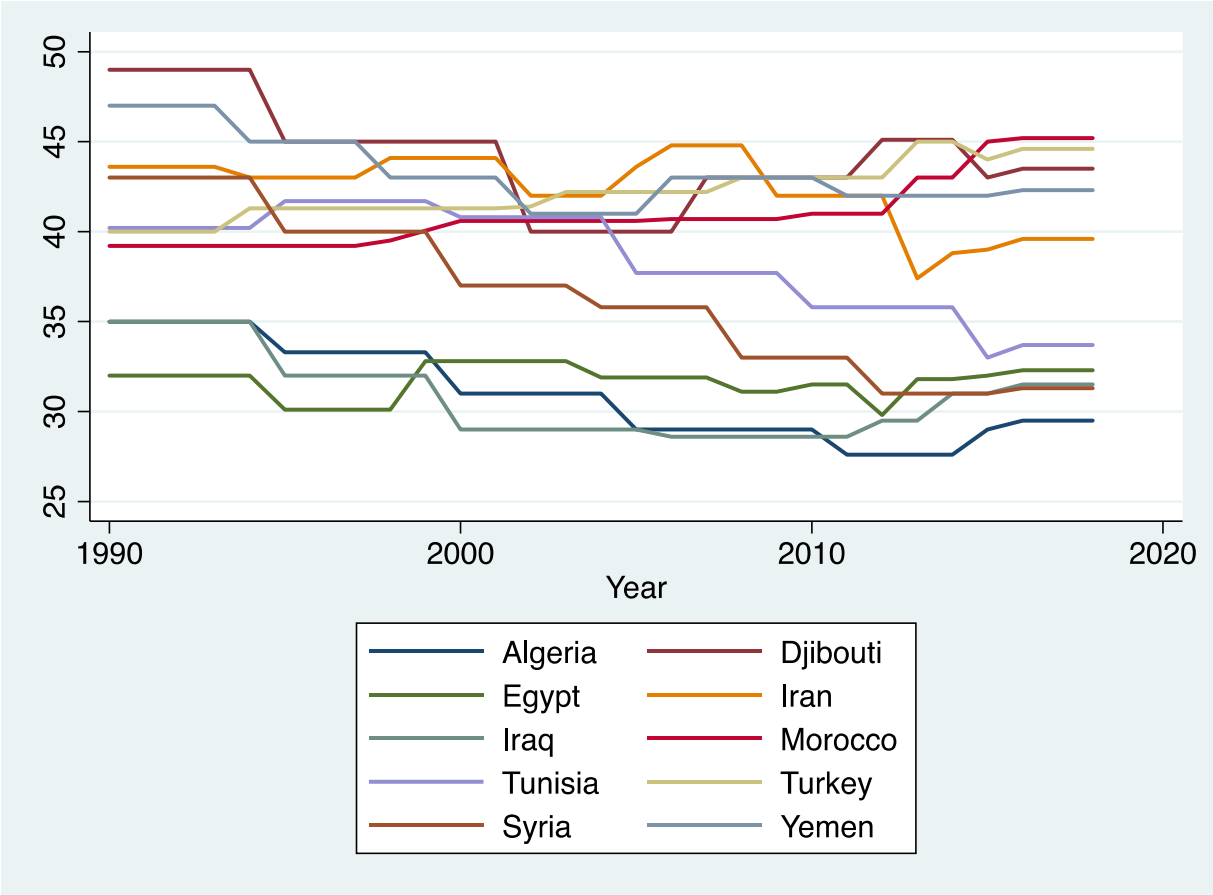

Figure A1: Within-Country Income Inequality In MENA (Average Net Gini, 1990 – 2019)
Source: Authors' construct with data from Poverty and Equity Database, 2021

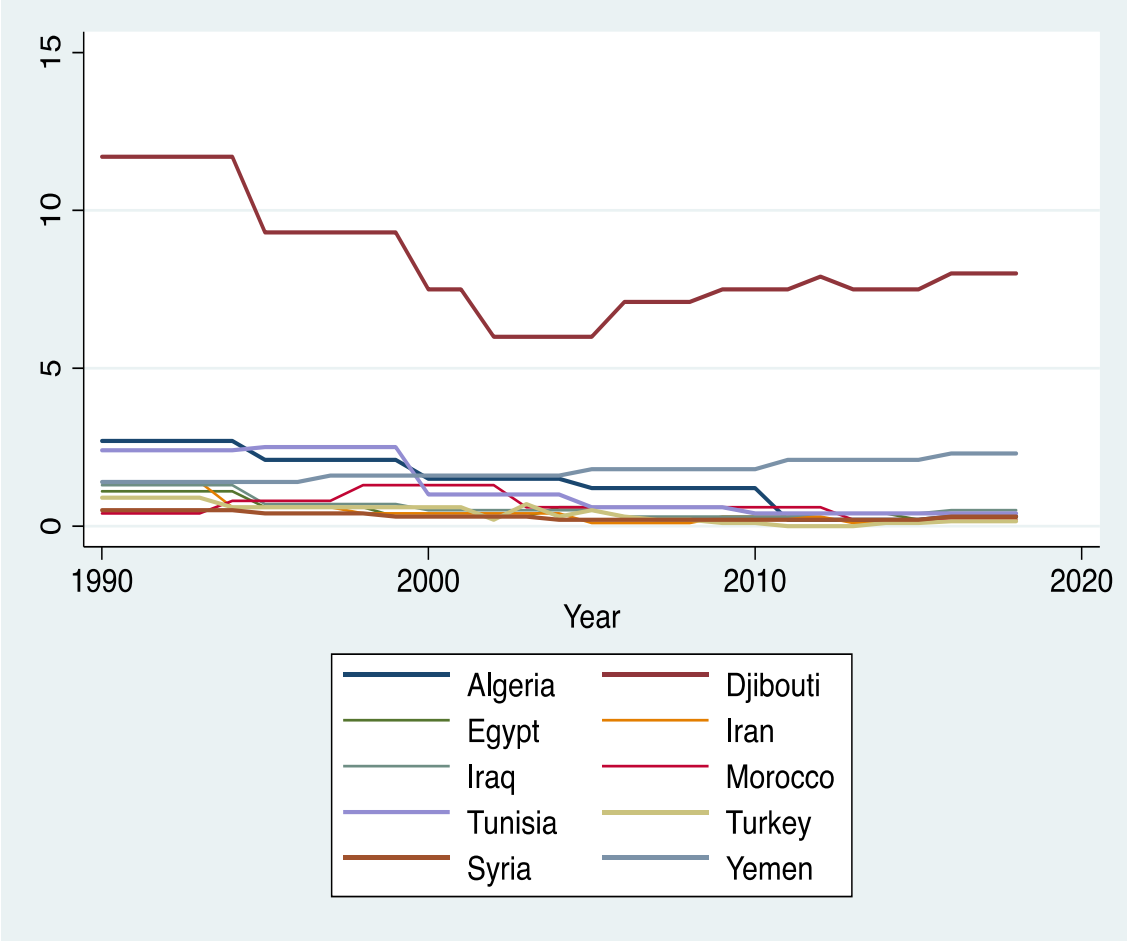

Figure A2: Within-Country Poverty gap ($1.90) In MENA (Average Net Gini, 1990 – 2019)
Source: Authors' construct with data from Poverty and Equity Database, 2021

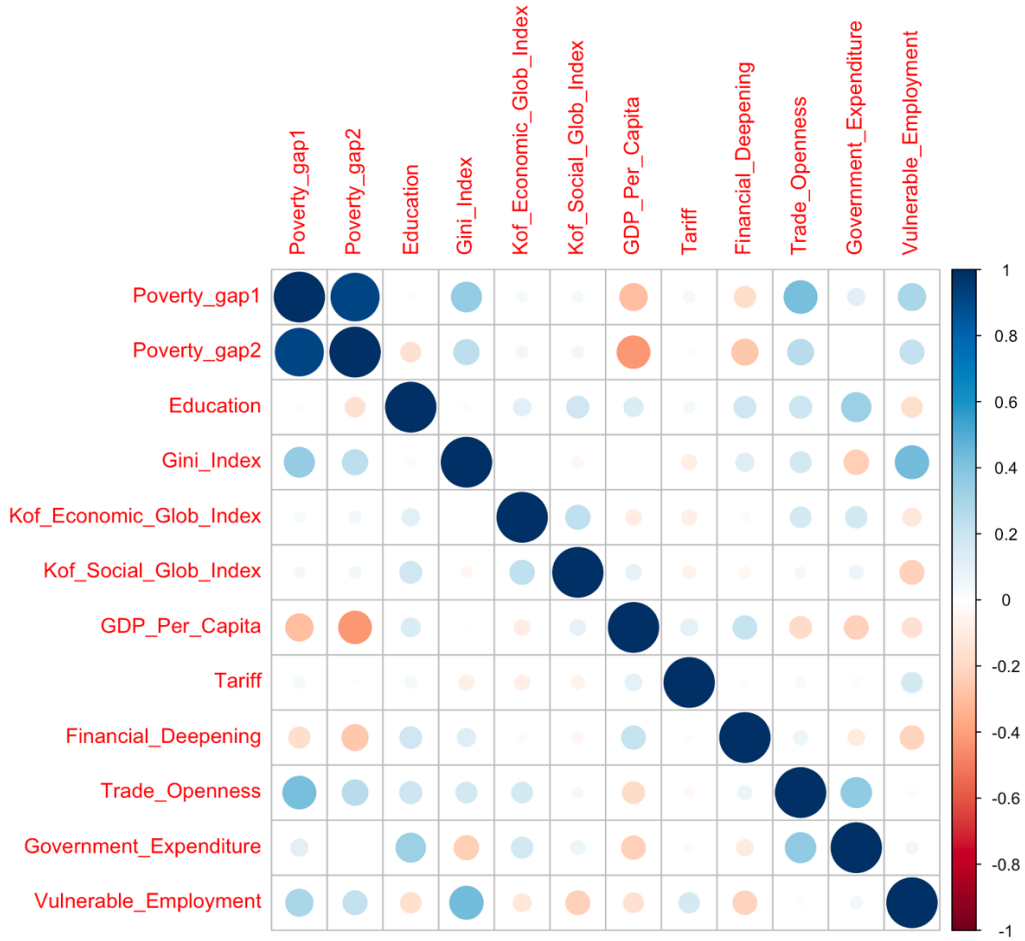

Figure A3: Pairwise Correlation Matrix

Note: Poverty_Gap1 is Poverty Gap ($1.90); Poverty_Gap2 is Poverty Gap ($3.20); and Kof_Economic_Glob_Index is Kof. Economic Globalisation Index.

Table A1: Variable definition and data sources

Variables	Description	Data Source
Gini	Gini (net) index	PED
Palma ratio	The ratio of the share of the top 10% to that of the bottom 40 % in the population	GCIP
Poverty Gap $1.90	Poverty gap at $1.90 a day (2011 PPP)	PED
Poverty Gap $3.20	Poverty gap at $3.20 a day (2011 PPP)	PED
Tariff	Average weighted tariff rate of all products	WDI
Trade Openness	Sum of export and import as a percentage of GDP	WDI
Overall Globalisation	Captures social, economic and political dimensions of globalisation.	KOF
Economic Globalisation	Captures trade in goods and services; customs duties, taxes and trade restrictions; capital account openness and international investment agreements.	KOF
Social Globalisation	Captures interpersonal, information and cultural dimensions of globalisation as measured by Kof. index	KOF
GDP Per Capita	Calculated as GDP divided by midyear population	WDI
Vulnerable Employment	Total contributing family and own-account workers as a share of total employment	WDI
Financial Deepening	Domestic credit to the private sector as percentage of GDP	WDI
Government Expenditure	Government consumption expenditure as a percentage of GDP	WDI
Education	Secondary duration denotes the number of years in secondary school.	WDI

Note: PED is Poverty and Equity database; WDI is World Development Indicators; KOF is Kof. Globalisation Index, and GCIP is Global Consumption and Poverty Index.
Source: Authors' construct, 2021

Table SM1: Pooled OLS Results on the Effects of Globalisation and Resource Allocation on Income Inequality in MENA (Dependent variable: Gini index)

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Vulnerable Employment	0.0060***	0.0084***	0.0047*	0.0060***	0.0057***	0.0062***	0.0056***	0.0056***
	(0.0019)	(0.0017)	(0.0024)	(0.0019)	(0.0019)	(0.0019)	(0.0019)	(0.0019)
Government Expenditure	-0.0088***	-0.0097***	-0.0078***	-0.0091***	-0.0078***	-0.0083***	-0.0060	-0.0082***
	(0.0024)	(0.0021)	(0.0019)	(0.0024)	(0.0024)	(0.0024)	(0.0091)	(0.0024)
Financial Deepening	-0.0022	-0.0041	-0.0552***	-0.0043	-0.0078	-0.0032	-0.0056	-0.0086
	(0.0083)	(0.0072)	(0.0112)	(0.0085)	(0.0086)	(0.0082)	(0.0087)	(0.0135)
GDP per capita	-0.0047	-0.0061	-0.0097*	-0.0039	-0.0046	-0.0052	-0.0036	-0.0036
	(0.0062)	(0.0054)	(0.0051)	(0.0063)	(0.0061)	(0.0062)	(0.0061)	(0.0061)
Education	0.0441***	0.0223**	0.0593**	0.0484***	0.0468***	0.0513***	0.0523***	0.0523***
	(0.0122)	(0.0109)	(0.0261)	(0.0126)	(0.0118)	(0.0124)	(0.0123)	(0.0123)
Trade Openness		0.0121***						
		(0.0015)						
Tariff			-0.0072					
			(0.0188)					
Kof. Overall Globalisation				0.0114				
				(0.0093)				
Kof. Economic Globalisation					-0.0450***		-0.0466***	-0.0466***
					(0.0126)		(0.0126)	(0.0126)
Kof. Social Globalisation						0.0236**		
						(0.0096)		
Kof. Economic Glob. × Gov.							0.0142	
							(0.0091)	
Kof. Economic Glob. × Fin.								0.0142
								(0.0091)
Constant	2.9839***	2.8885***	2.2039***	2.8000***	3.6074***	2.5410***	3.4016***	3.4016***
	(0.2218)	(0.1928)	(0.2690)	(0.2675)	(0.2772)	(0.2834)	(0.3059)	(0.3059)
Observations	204	204	61	204	204	204	204	204
R-squared	0.198	0.399	0.603	0.204	0.247	0.222	0.256	0.256
Adjusted R-Squared	0.178	0.381	0.560	0.180	0.224	0.199	0.230	0.230

*Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1*
Kof. Economic Glob. × Fin. is interaction term for financial deepening and economic globalisation
Kof. Economic Glob. × Gov. is interaction term for government expenditure and economic globalisation

Table SM2: Pooled OLS Results on Effect of Globalisation and Resource Allocation on Poverty in MENA (Dependent Variable: Poverty Gap US$1.90)

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Inequality (Palma ratio)	0.2058***	0.3565***	0.2437***	0.2036***	0.2033***	0.2058***	0.2012***	0.2012***
	(0.0380)	(0.0887)	(0.0423)	(0.0384)	(0.0383)	(0.0381)	(0.0386)	(0.0386)
Vulnerable Employment	-0.0291	-0.2448**	-0.0553	-0.0326	-0.0315	-0.0308	-0.0349	-0.0349
	(0.0650)	(0.1041)	(0.0659)	(0.0655)	(0.0652)	(0.0659)	(0.0657)	(0.0657)
Government Expenditure	-0.0597	-0.0230	-0.0463	-0.0557	-0.0544	-0.0614	-0.1869	-0.0504
	(0.0935)	(0.0901)	(0.0932)	(0.0940)	(0.0940)	(0.0941)	(0.3020)	(0.0945)
Financial Deepening	-0.0150	-0.2358	-0.0356	-0.0426	-0.0627	-0.0227	-0.0899	-0.2263
	(0.2735)	(0.4519)	(0.2721)	(0.2802)	(0.2849)	(0.2775)	(0.2913)	(0.4548)
GDP per capita	-0.0603	-0.1108	-0.0429	-0.0708	-0.0594	-0.0620	-0.0699	-0.0699
	(0.2299)	(0.2596)	(0.2288)	(0.2314)	(0.2302)	(0.2306)	(0.2317)	(0.2317)
Tariff		1.5106*						
		(0.7623)						
Trade Openness			-0.1422**					
			(0.0706)					
Kof. Overall Globalisation				-0.1376				
				(0.2951)				
Kof. Economic Globalisation					-0.2514		-0.2502	-0.2502
					(0.4147)		(0.4153)	(0.4153)
Kof. Social Globalisation						-0.0602		
						(0.3489)		
Kof. Economic Glob. × Gov.							-0.1365	
							(0.2955)	
Kof. Economic Glob. × Fin.								-0.1365
								(0.2955)
Constant	-0.5965	4.9131	1.7819	1.2835	3.1777	0.2839	5.0228	5.0228
	(6.0899)	(8.4096)	(6.1696)	(7.3107)	(8.7135)	(7.9516)	(9.5974)	(9.5974)
Observations	275	275	275	275	275	275	275	275
R-squared	0.102	0.261	0.115	0.102	0.103	0.102	0.104	0.104
Adjusted R-Squared	0.085	0.213	0.095	0.082	0.083	0.082	0.080	0.080

*Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1; Kof Economic Glob. Is Economic Globalisation*
Kof. Economic Glob. × Fin. is interaction term for financial deepening and economic globalisation
Kof. Economic Glob. × Gov. is interaction term for government expenditure and economic globalisation

Table SM3: Fixed Effect and Random Effect Results on Effect of Globalisation, and Resource Allocation on Poverty In MENA (Dependent Variable: Poverty Gap US$1.90)

Variables	*FE(1)*	*RE(1)*	*FE(2)*	*RE(2)*	*FE(3)*	*RE(3)*	*FE(4)*	*RE(4)*	*FE(5)*	*RE(5)*	*FE(6)*	*RE(6)*	*FE(7)*	*RE(7)*	*FE(8)*	*RE(8)*
Inequality (Palma ratio)	1.0152***	0.4156**	0.2738	0.3565***	1.0239***	0.4667***	1.0175***	0.4568***	1.0112***	0.4525***	1.0191***	0.4561***	1.0135***	0.4800***	1.0135***	0.4800***
	(0.3082)	(0.1616)	(0.5995)	(0.0887)	(0.3095)	(0.1770)	(0.3087)	(0.1751)	(0.3094)	(0.1754)	(0.3096)	(0.1755)	(0.3100)	(0.1838)	(0.3100)	(0.1838)
GDP per capita	0.2360	0.2651	-0.1582	-0.1108	0.2252	0.2520	0.2323	0.2604	0.2343	0.2613	0.2332	0.2634	0.2306	0.2569	0.2306	0.2569
	(0.1891)	(0.1884)	(0.2318)	(0.2596)	(0.1913)	(0.1902)	(0.1897)	(0.1886)	(0.1896)	(0.1886)	(0.1902)	(0.1890)	(0.1902)	(0.1889)	(0.1902)	(0.1889)
Vulnerable Employment	-0.0759	-0.0711	-0.0828	-0.2448**	-0.0797	-0.0760	-0.0758	-0.0715	-0.0748	-0.0701	-0.0760	-0.0717	-0.0747	-0.0703	-0.0747	-0.0703
	(0.0599)	(0.0596)	(0.1056)	(0.1041)	(0.0607)	(0.0604)	(0.0600)	(0.0596)	(0.0602)	(0.0598)	(0.0600)	(0.0596)	(0.0603)	(0.0599)	(0.0603)	(0.0599)
Government Expenditure	-0.0027	-0.0208	-0.0135	-0.0230	-0.0002	-0.0165	-0.0074	-0.0237	-0.0018	-0.0179	-0.0033	-0.0195	-0.0874	-0.0671	-0.0066	0.0215
	(0.0838)	(0.0832)	(0.0894)	(0.0901)	(0.0842)	(0.0835)	(0.0849)	(0.0841)	(0.0841)	(0.0834)	(0.0841)	(0.0834)	(0.2461)	(0.2451)	(0.0851)	(0.0844)
Financial Deepening	-0.0312	-0.0631	-0.0226	-0.2358	-0.0251	-0.0547	-0.0447	-0.0745	-0.0257	-0.0527	-0.0302	-0.0614	-0.0391	-0.0647	-0.1331	-0.1533
	(0.2735)	(0.2710)	(0.4495)	(0.4519)	(0.2743)	(0.2717)	(0.2761)	(0.2736)	(0.2754)	(0.2729)	(0.2740)	(0.2715)	(0.2780)	(0.2755)	(0.3919)	(0.3896)
Tariff			0.1661	1.5106**												
			(0.8175)	(0.7623)												
Trade Openness					-0.0283	-0.0319										
					(0.0716)	(0.0710)										
Kof. Overall Globalisation							-0.0940	-0.0880								
							(0.2430)	(0.2423)								
Kof. Economic Globalisation									-0.0686	-0.1035			-0.0685	-0.1016	-0.0685	-0.1016
									(0.3402)	(0.3389)			(0.3408)	(0.3391)	(0.3408)	(0.3391)
Kof. Social Globalisation											-0.0498	-0.0096				
											(0.2965)	(0.2947)				
Kof. Economic Glob. × Gov.													-0.0940	-0.0886		
													(0.2435)	(0.2425)		
Kof. Economic Glob. × Fin.															-0.0940	0.0886
															(0.2435)	(0.2425)
Constant	-12.6428*	-4.4959	6.0758	4.9131	-12.1143	-4.4551	-14.0955*	-6.3682	-11.4446	-3.2668	-11.8092	-4.8645	-12.8987	-4.9985	-12.8987	-4.9985
	(7.2573)	(6.4000)	(12.6369)	(8.4096)	(7.3907)	(6.6399)	(8.1813)	(7.4870)	(9.3886)	(8.6825)	(8.8039)	(8.2771)	(10.1303)	(9.5027)	(10.1303)	(9.5027)
Observations	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275	275
R-squared	0.0516	–	0.0221	–	0.0521	–	0.0521	–	0.0517	–	0.0517	–	0.0523	–	0.0523	–
Countries	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Hausman Statistic	5.22	–	29.29	–	5.09	–	5.04	–	4.95	–	5.00	–	4.00	–	4.67	–
P-value	0.390	–	0.000	–	0.532	–	0.539	–	0.550	–	0.543	–	0.549	–	0.700	–

*Note: Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1*

Kof. Economic Glob. × Fin. is interaction term for financial deepening and economic globalisation;

Kof. Economic Glob. × Gov. is interaction term for government expenditure and economic globalisation

FE(1), ……., FE(8) are fixed effect models while RE(1), ……, RE(8) are random effect models