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Economics and Business Review, Vol. 6 (20), No. 3, 2020: 45-67
DOI: 10.18559/ebr.2020.3.3

The impact of private capital flows on economic growth in the MENA region[1]

Ousama Ben-Salha[2], Mourad Zmami[3]

Abstract: The aim of the article is to conduct an empirical analysis of the impact of aggregate and disaggregate private capital flows on economic growth in eleven MENA countries between 1980 and 2018. Unlike prior empirical studies, the fixed effect panel quantile approach developed by Canay (2011) is implemented. Findings suggest that there is a significant difference in the effects of private capital flows on economic growth across lower and higher quantiles. More specifically, the effects of total private capital flows, foreign direct investment flows, portfolio flows and debt flows are positive and statistically significant only for low and medium quantiles, indicating that the enhancing impact of private capital flows in terms of economic growth is only confirmed in countries with relatively low and medium growth rates. Moreover, debt flows affect economic growth in countries recording high growth rates, stressing the importance of financial development in routing those flows into the most productive projects in the economy.

Keywords: private capital flows, economic growth, MENA, fixed effect panel quantile.

JEL codes: C21; F21; F43.

Introduction

One of the most outstanding phenomena observed during the past century has been the secular increase in international financial transactions and

[1] Article received 16 March 2020, accepted 27 July 2020.

Acknowledgement: The authors gratefully acknowledge the approval and the support of this research study by the grant No. BA-2018-3-9-F-7729 from the Deanship of Scientific Research at Northern Border University, Arar, K.S.A.

[2] Department of Economics, Northern Border University, 91431, Arar, Saudi Arabia; Department of Economics, University of Sousse, 4054, Sousse, Tunisia; Economic Research Forum, 12311, Giza, Egypt, corresponding author: ousama.bensalha@gmail.com, ORCID: https://orcid.org/0000-0002-0253-313X.

[3] Department of Economics, Northern Border University, 91431, Arar, Saudi Arabia; Department of Economics and Quantitative Methods, University of Tunis, 1007, Tunis, Tunisia, mourad_zmami@yahoo.fr, ORCID: https://orcid.org/0000-0002-8838-6512.

international capital movements. Indeed, private capital flows have undergone considerable expansion inducing the so-called 'financial globalization' which has substituted national markets with a globalized market where capital flows move freely from a country to another. Historically, international capital movements have been dominated by debt flows during the first era of financial globalization covering the period 1870-1914. During the two World Wars, the Great Depression and the Bretton Woods era, international capital movements have collapsed due to the presence of capital and exchange rate controls (Bordo, 2017). The dominance of debt flows firstly characterized the second era of financial globalization and starting from the mid-1980s the share of equity flows in international capital movements has continually increased. Indeed, following the debt crisis experienced by many Latin American countries in the early 1980s, a set of economic and financial reforms has been suggested by Bretton Woods institutions in the so-called 'Washington Consensus'. Among those reforms is the liberalization of inward foreign direct investment (hereafter FDI) flows.

The debate on the effects of private capital flows on the economy is still open although an extensive literature has focused on the subject. Among others empirical studies have examined the impact of private capital flows on the occurrence of financial crises (Kahler, 1998; Eichengreen, 2003; Bustelo, 2004), exchange rate dynamics (Kapur, 2005; Rafi & Ramachandran, 2018; Gelman, Jochem, Reitz, & Taylor, 2015), employment (Fitzgeral & Mavrotas, 1997; Ben-Salha, 2013) and economic growth (Reisen & Soto, 2001; Vo, 2010). Some studies have focused on the impact of all types of private capital flows on economic growth (Aizenman, Jinjarak, & Park, 2013; Agbloyor, Abor, Adjasi, & Yawson, 2014; Neanidis, 2019), while others focused only on FDI flows (Iamsiraroj & Ulubaşoğlu, 2015; Makiela & Ouattara, 2018) or portfolio flows (de Vita & Kyaw, 2009; Ferreira & Laux, 2009).

This study falls in this area of literature and intends to examine the impact of private capital flows on economic growth in a sample of eleven Middle East and North African (MENA) countries between 1980 and 2018. Compared to previous literature, the study has three key novelties. First, the study estimates the impact of private capital flows on economic growth using the panel quantile approach. Indeed, while there has been a considerable literature analyzing the response of economic growth to private capital flows, none of the prior studies used the quantile regression approach to deal with this issue. Most of previous works on the subject have been based on the OLS and fixed/random effects estimators (Shen, Lee, & Lee, 2010; Tahir, Estrada, & Afridi, 2019), GMM estimator (Choong, Baharumshah, Yusop, & Habibullah, 2010; Alley, 2015; Combes, Kinda, Ouedraogo, & Plane, 2019) and cointegration analysis (Pegkas, 2015; Klobodu & Adams, 2016; Soylu, 2019). As it is well-known, coefficients obtained using the aforementioned estimators represent the conditional mean of the parameters. The conditional mean has limited informa-

tional value since it allows an estimation of the mean effects of explanatory variables on the dependent variable but not their effects on the dependent variable for different quantile conditional distributions. Regarding this point, Binder and Coad (2011) mention that considering only the conditional mean effect may lead to a flawed estimation of coefficients. Differently from previous studies, this study is the first to estimate the effects of private capital flows on economic growth using Canay's (2011) fixed effect panel quantiles approach. This choice is motivated by the need to assess if the impact of private capital flows on economic growth depends upon the level of economic growth. In other words, the quantile regression allows one to assess the reaction of economic growth to private capital flows concerning its different quantile conditional distributions.

It is useful to note that some recent studies have estimated the impact only of FDI flows on economic growth using the quantile approach. Kamara (2014) investigates the reaction of welfare to FDI flows in 47 Sub-Saharan African countries between 1990 and 2011. The author concludes that FDI flows positively affect welfare only in countries with higher welfare while in countries with lower and middle welfare, the impact is insignificant and sometimes negative. Moreover, Huo, Kim and Kim (2015) focus on the impact of FDI on economic growth in a sample of 60 developed and developing countries from 1991 to 2008. Results suggest that FDI flows exert a positive impact on economic growth in countries characterized by relatively low levels of growth rates. In contrast, by considering a sample of 95 countries between 1970 and 1999, Cai, Chen and Fang (2018) conclude that FDI flows positively affect economic growth only in fast growing countries. Finally, Khobai and others (2019) investigate the impact of FDI on economic growth in South Africa during the period 1970-2016. Surprisingly, authors find that FDI flows have negative effects on economic growth in periods of low growth rates. Ibrahim, Mazlina, Azman-Saini and Zakaria (2016) estimate the impact of financial integration on economic growth in a sample of 73 countries during the period 1980–2013. Differently from the aforementioned studies, the international financial integration is measured by i) capital inflows and outflows (sum of foreign direct investment and portfolio) as a share of GDP, and ii) the ratio of capital inflows as a share of GDP. The authors conclude that there are no significant effects of international financial integration on economic growth in extreme quantiles, i.e. in countries with low and high economic growth rates. Although some studies have dealt with the FDI-growth nexus using quantile analysis, there have been no previous attempts that developed a quantile regression disaggregate analysis by estimating separately the impact of FDI, portfolio and debt flows on economic growth.

The second novelty of the study lies in focusing on economies of the MENA region. Although the region comprises some emerging economies that have been engaged in a set of neoliberal reforms (among others the liberalization of

capital movements) during the last decades, few studies on the effects of these reforms have been carried out. For instance, Kherfi and Soliman (2005) find surprising results since FDI flows are found to affect negatively the economic growth in the MENA region. Omri and Kahouli (2014) show that there has been a positive association between FDI flows and economic growth is a sample of thirteen MENA countries between 1990 and 2010. Based on a sample of nineteen MENA countries between 1984 and 2011, Brahim and Rachdi (2014) reveal that FDI flows enhance economic growth only in countries with good institutional quality. Accordingly, up to now, very little is known regarding the effects of private capital flows on economic growth in the MENA region.

The third novelty of this study lies in shedding light on the impact of a broad measure of capital flows on economic growth in the MENA region. More specifically, the study considers different types of private capital flows, namely total private capital flows, FDI flows, portfolio flows and debt flows. To the best of our knowledge, there are no prior studies that have done such an analysis for MENA countries. As revealed above, the few studies focusing on the MENA region have mainly analyzed the effects of FDI flows. No prior studies have shed light on the impact of portfolio flows or debt flows on economic growth in the MENA region. It is crucial to disaggregate total capital flows and assess the impact of each type of them on economic growth. For example, it is well-known that FDI flows are more stable than portfolio capital flows and thus their effects on economic growth are more conspicuous. Thus, the contribution of the study is to compare the reaction of economic growth to different types of private capital flows

The remainder of the article is structured as follows. The first Section describes data and the empirical methodology. In Section two, the empirical results of the impact of aggregate and disaggregate capital flows on economic growth obtained using the fixed effect panel quantile approach developed by Canay (2011) are discussed. Finally, some concluding remarks and potential axes for future research close the article.

1. Empirical issues

1.1. Methodology and model specification

This paper uses the fixed effects panel quantile regression model to investigate the effects of private capital flows on economic growth in MENA countries. As mentioned previously, the quantile regression allows a more comprehensive picture of the reaction of the dependent variable to explanatory variables to be drawn. Moreover, the quantile regression is robust to outliers, heteroskedasticity and extreme distributions on the dependent variable (Koenker & Hallock, 2001; Jiang, Zhang, & Sun, 2020).

The quantile regression was first developed in the writings of Koenker and Bassett (1978). The general form of the conditional quantile of y_i given x_i may be written as follows:

$$Q_{y_i}(\tau|x_i) = x_i^T \beta_\tau \tag{1}$$

where $0 < \tau < 1$, $Q_{y_i}(\tau|x_i)$ represents the τth conditional quantile of y_i, while x_i is the independent variable. β_τ is the coefficient to be estimated and measures the effects of the independent variable x_i on the conditional τ^{th} quantile of the conditional distribution of the dependent variable y_i.

While the model presented in Equation 1 allows estimating the reaction of the dependent variable to the independent variable by considering the distribution of the dependent variable, it does not take into account the unobserved heterogeneity of a country. Since a fixed effects panel quantile regression model is used, it will be possible to estimate the conditional heterogeneous covariance effects of private capital flows and control for unobserved individual heterogeneity. Equation 1 may be re-written as follows to take into account the presence of fixed effects:

$$Q_{y_{it}}(\tau_k|\alpha_i, x_i) = \alpha_i + x_{it}'\beta(\tau_k) \tag{2}$$

The estimation of Equation 2 poses some serious challenges since the inclusion of fixed effects α_i is subject to the incidental parameters problem (Zhu, Duan, Guo, & Yu, 2016). As mentioned by Abrevaya and Dahl (2008), few theoretical developments have been achieved on the combination of panel fixed-effects and quantile regression. The few theoretical attempts to combine quantile regression with fixed effects panel data have been developed by Koenker (2004), Lamarche (2010), Galvao (2011), Canay (2011) and recently Powell (2016). In this paper, we rely on the approach developed by Canay (2011) for many reasons. First, Canay's (2011) estimator is consistent and asymptotically normal with standard errors computed using a bootstrap methodology (Jetter, Agudelo, & Hassan, 2015). Second, Canay's (2011) approach is simple to implement and allows avoiding exhaustive computation of Koenker's (2004) approach (Jiang et al., 2020). Finally, Le, Su and Nguyen (2019) suggest that Canay's (2011) approach is preferred because of its computational simplicity. Indeed, Canay (2011) develops a two-stage approach to deal with fixed effects in panel quantile regression. The first stage consists of eliminating the incidental variable problem (fixed effects) through a simple transformation. The author suggests estimating the fixed effects model, generating the individual fixed effect variable ($\hat{\alpha}_i$) and then constructing a new dependent variable calculated as the difference from the original minus the estimated residuals The second stage consists of running a standard quantile regression using the newly obtained dependent variable.

Based on what has been developed above, the following growth regression model is considered:

$$Q_{g_{i,t}}(\tau \mid \alpha_i, x_{i,t}) = \alpha_i + \beta_{1\tau} PCF_{i,t} + \beta_{2\tau} POPG_{i,t} + \beta_{3\tau} GOVC_{i,t} + \beta_{4\tau} INF_{i,t} \quad i = 1, \ldots, N, \quad t = 1, \ldots, T \tag{3}$$

where g indicates the growth rate of per capita GDP, *PCF* represents the private capital flows, while *POPG*, *GOVC* and *INF* stand for population growth, government expenditure and the inflation rate, respectively. Finally, the subscripts i and t represent the country and year, respectively.

1.2. Data

This paper aims to estimate the impact of different types of capital flows on economic growth in a sample of eleven MENA countries, namely Algeria, Bahrain, Egypt, Jordan, Kuwait, Lebanon, Morocco, Oman, Saudi Arabia, Syria and Tunisia. The choice of countries is mainly dictated by data availability, particularly those of private capital flows. The study covers the period 1980-2018. Following many previous studies, such as Kottaridi and Stengos (2010), Cai and others (2018) and Neanidis (2019), the dependent variable is measured by the growth rate of per capita GDP. Private capital flows are proxied by total private capital net flows as a share of GDP. However, since economic growth may react differently to various types of private capital flows, this paper also disaggregates total private capital flows to capture the impact of each one of them on economic growth.[4] For example it is known that FDI flows are more stable than portfolio flows and thus the expected impact of FDI on economic growth is probably positive and more pronounced. On the contrary, portfolio flows are more volatile and thus their effects on economic growth may be positive or negative. Finally, the impact of debt flows on economic growth cannot be also determined a priori. International debt flows may be seen as an additional financing source for national firms, which allows a boosting of output and economic growth but may also induce the building up of debt bubbles which may destabilize the financial system and hurt economic growth (see Altman and Kuehne (2016) for a discussion of the effects of credit bubbles). Given the aforesaid reasons, this study follows Agbloyor

[4] Some authors, such as Hausmann and Sturzenegger (2006, 2007) and Sobański (2019), criticized the use of the balance of payments dataset (BoP) because of the presence of the "dark matter" phenomenon. The "dark matter" phenomenon states that countries' net foreign assets are not well estimated in the BoP dataset and consequently it does not reflect the real country-level situation. However, despite this criticism, the World Bank and IMF's BoP dataset is considered as the most complete, credible and used dataset on disaggregate capital flows (foreign direct investment flows, portfolio investment flows, debt flows).

and others (2014) by using four proxies of capital flows, namely total private capital net flows as a share of GDP, foreign direct investment net inflows as a share of GDP, portfolio equity net inflows as a share of GDP and private non-guaranteed debt flows as a share of GDP.[5] At least two reasons contribute to the use of net flows rather than gross flows. First, net flows are less procyclical and less volatile than gross flows (Neanidis, 2019). Second, data on net flows are more available than those on gross flows.

Alongside the private capital flows variable, a set of control variables is included in the specification. As in Barguellil, Ben-Salha and Zmami (2018) and Gaies and Nabi (2019), the population growth is introduced. According to Barro (1997), economic growth is negatively linked to the fertility rate. The government final consumption expenditure as a share of GDP is also introduced to check the size of the government. The expected impact may be positive since a rise of public expenditure exerts a positive effect on infrastructure and consequently on economic growth or negative since an increase of government consumption needs more resources to finance the deficit. Finally, the inflation rate, measured as a year-on-year percentage change in the consumer price index, is considered (López-Villavicencio & Mignon, 2011). All data used in the empirical investigation are extracted from the World Development Indicators of the World Bank.

2. Empirical results

2.1. Preliminary analysis

Before estimating the growth model in Equation 3 using the fixed effects panel quantile approach, two issues have to be checked, namely the normal distribution of the dependent variable and the stationary properties of variables included in the analysis. Testing if the dependent variable follows normal distribution is essential in this case since the quantile regression gives more robust parameters than standard OLS-based techniques in the presence of non-normally distributed dependent variable (Buchinsky, 1998). To do so, Table 1 summarizes the results of some tests of normality frequently used in the empirical literature, namely the skewness, kurtosis, Jarque-Bera, Shapiro-Wilk and Shapiro-Francia tests.

The value of skewness is different from zero while the value of kurtosis exceeds three, meaning that the per capita GDP growth rate is not normally distributed. These results are confirmed by the Jarque-Bera, Shapiro-Wilk and Shapiro-Francia tests which reject the null hypothesis of normal distribution at the 1% significance level. Accordingly, the different normality tests confirm

[5] Definitions and sources of variables are presented in Table A1 in the Appendix.

Table 1. Results of normality tests

	Skewness	Kurtosis	Jarque-Bera test		Shapiro-Wilk test		Shapiro-Francia test	
			statistics	*p*-value	statistics	*p*-value	statistics	*p*-value
GDP	2.269	34.162	16817.43	0.000	0.690	0.000	0.680	0.000

Source: Authors' own estimation.

that the dependent variable is not normally distributed and consequently, the appropriateness of the panel quantile regression to estimate the impact of private capital flows on economic growth.

Regarding the stationary properties of variables, the LLC panel unit root test developed by Levin, Lin and Chu (2002) and the IPS panel unit root test developed by Im, Pesaran and Shin (2003) are implemented. While the former test assumes the presence of common unit root process, the latter is less restrictive since it assumes the presence of individual unit root process and thus allows for heterogeneous coefficients. Since first generation panel unit root tests, such as LLC and IPS, may not be appropriate in the presence of cross-sectional dependence, a second generation panel unit root test is used, namely the cross-sectionally augmented ADF (CADF) panel unit root test proposed by Pesaran (2007). To decide whether the cross-section dependence is present across panel groups and thus the appropriate panel unit root test to be used (first or second generation), the Pesaran's (2004) CD test was run. Cross-sectional dependence may be due to many factors such as the presence of common shocks and unobserved components (Hoyos & Sarafidis, 2006). The null hypothesis of the test is the absence of cross-sectional dependence. Results of the CD and panel unit root tests are summarized in Table 2. Unit root tests are carried-out including only 1) a constant and 2) a constant and a time trend.

The CD test suggests mixed results regarding the presence of cross-sectional dependence. On the one hand, the null hypothesis cannot be rejected for the growth rate of per capita GDP, portfolio flows and debt flows, which imply that there is no cross-sectional dependence for these variables. On the other hand, the same table shows that there is enough evidence to reject the null hypothesis of cross-sectional independence for the case of total private capital flows, FDI flows and the control variables. For these variables, the CADF test is more suitable than the IPS and LLC tests. Results of the panel unit root tests show that there is no significant difference between the three panel unit root tests for all variables except debt flows and population growth. For the first group of variables, the three unit root tests suggest that they are stationary at level whether a constant or a constant and a time trend are included, i.e. I(0). For debt flows and population growth, the unit roots tests yield conflicting results. However, since the CD test suggests that there is no cross-sectional dependence for debt

Table 2. Cross-sectional dependence and unit root tests

	CD test	LLC		IPS		CADF		Decision
		C	C & T	C	C & T	C	C & T	
GDP	1.575	−13.997***	−13.669***	−13.829***	−12.681***	−8.359***	−7.563***	I(0)
TPCF	17.939***	−4.547***	−4.840***	−4.552***	−5.434***	−5.367***	−4.552***	I(0)
FDI	17.253***	−3.692***	−2.010**	−5.080***	−3.970***	−4.652***	−3.005***	I(0)
PFI	−0.127	−6.354***	−6.950***	−8.203***	−8.505***	−2.882***	−2.211**	I(0)
DEBT	−0.03	−3.250***	−3.826***	−3.932***	−4.034***	0.803	0.583	I(0)
GOVC	7.366***	−1.625*	−1.384*	−1.536*	−3.153***	−2.314***	−1.966**	I(0)
POPG	8.208***	−0.835	−0.192	−1.456*	−4.087***	−8.792***	−9.447***	I(0)
INF	11.025***	−3.384***	−1.607*	−4.126***	−1.189	−3.217***	−1.754**	I(0)

Note: CD test stands for the cross-section dependence test, while LLC, IPS and CADF represent the Levin-Lin-Chu, Im-Pesaran-Shin and the cross-sectionally augmented ADF unit root tests, respectively. ***, ** and * denote the rejection of the null hypothesis at the 1%, 5%, and 10% levels, respectively.

Source: Authors' own estimation.

flows, the decision was based on the LLC and IPS unit root tests, which suggest that the variable is stationary at the 1% statistical level. Regarding population growth, cross-sectional dependence is present. The suitable test to be considered is the CADF unit root test, which shows that the variable is stationary at level. To conclude, the CD test and the various panel unit root tests reveal that all variables considered in the analysis do not exhibit unit roots and may be introduced in levels in the fixed effects panel quantile regression model in Equation 3.

2.2. Panel quantile regression results

2.2.1. OLS-based techniques results

For comparison purposes, the growth model is first estimated using the ordinary least squares (OLS) and fixed-effects techniques. Results are displayed in Table 3.

As can be seen, the two estimation techniques yield almost similar results. Coefficients associated with government expenditure and population growth are generally negative and statistically significant. While the coefficient of the inflation rate is also negative, it is rarely significant. The most important findings in Table 3 are those related to total private capital flows. Indeed, the impact of total private capital flows is positive but not statistically significant when using the OLS pooled or fixed effects estimator. When disaggregating total private capital flows, no significant changes are detected since the impact of for-

Table 3. OLS and fixed effects results—all types of capital flows

	OLS pooled				OLS fixed effects			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GOVC	−0.350*** (0.049)	−0.350*** (0.048)	−0.087 (0.060)	−0.111* (0.067)	−0.432*** (0.067)	−0.433*** (0.067)	−0.046 (0.091)	−0.108 (0.098)
POPG	−0.901*** (0.187)	−0.897*** (0.185)	−1.396*** (0.199)	−1.027*** (0.243)	−0.981*** (0.249)	−0.973*** (0.250)	−1.480*** (0.271)	−1.281*** (0.342)
INF	−0.073* (0.044)	−0.073* (0.043)	0.004 (0.046)	−0.030 (0.035)	−0.062 (0.050)	−0.062 (0.050)	−0.024 (0.055)	−0.026 (0.039)
TPCF	0.055 (0.073)	–	–	–	0.055 (0.084)	–	–	–
FDI	–	0.080 (0.081)	–	–	–	0.056 (0.091)	–	–
PFI	–	–	0.376 (0.305)	–	–	–	0.420 (0.323)	–
DEBT	–	–	–	−0.195 (0.331)	–	–	–	0.546 (0.587)
Constant	9.884*** (1.197)	9.824*** (1.191)	6.264*** (1.265)	6.115*** (1.186)	11.595*** (1.699)	11.611*** (1.700)	5.898*** (1.965)	6.440*** (1.809)

Notes: Dependent variable: per capita GDP growth rate. ***, ** and * represent the statistical significance at 1%, 5% and 10%, respectively.

Source: Authors' own estimation.

eign direct investment flows, portfolio flows and debt flows are positive and not statistically significant in most cases. To summarize, the estimation of the growth model using the OLS pooled and fixed effects show that the impact of total private capital flows and their different subcategories have no significant impact on economic growth in MENA countries. One potential explanation of such findings is that the aforementioned estimated effects are conditional mean effects. As mentioned previously, the use of OLS and fixed effects may cloud the effects across the different quantiles of the conditional distribution of the dependent variable.

2.2.2. Total private capital flows and economic growth

In what follows, the impact of private capital flows on economic growth presented in Equation 3 based on the Canay's (2011) fixed effects panel quantile approach is estimated. The estimation is performed for various quantiles of the conditional distribution, namely the 10th, 20th, 25th, 30th, 40th, 50th, 60th, 70th, 75th, 80th and 90th. The effects of total private capital flows on economic growth for the different quantiles are reported in Table 4.

It is clear from Table 4 that the effects of all control variables, except the inflation rate, on economic growth are heterogeneous. The inflation rate has no significant impact on economic growth for all percentiles of the conditional distribution. Regarding the other control variables, findings suggest that they have adverse effects on economic growth but that the strength of the effect is much different across the considered quantiles. Results show that the impact of population growth and government expenditure are negative and statistically significant but decreases when going from lower to higher quantiles. Economically speaking, these findings suggest that government expenditure exerts a more pronounced impact on economic growth in countries with low growth rates of per capita GDP, while in countries that record more economic growth rates, the negative impact of government expenditure continually declines. The same statement is also observed for population growth since the associated coefficients are negative and more pronounced for countries having the lowest growth rates. This may be explained by the fact that when countries record more growth rates the importance of human capital becomes more critical and thus the negative impact of population growth diminishes.

The Table 4 also suggests that there are significant differences in the effect of total private capital flows on economic growth across lower and higher quantiles in the conditional distribution of the dependent variable. Although the coefficient associated with total private capital flows is almost positive (except at the 90th quantile), it is not statistically significant for all quantiles. As shown, the coefficient is significant for low quantiles (10th–60th), while it is not significant for higher quantiles (70th–90th). Consequently, in countries with low and medium growth rates of per capita GDP, total private capital flows boost economic growth, while in those recording higher growth rates no significant

Table 4. Fixed effects panel quantile regression results—total private capital flows

	10th	20th	25th	30th	40th	50th	60th	70th	75th	80th	90th
GOVC	−0.697*** (0.131)	−0.523*** (0.080)	−0.487*** (0.050)	−0.448*** (0.059)	−0.349*** (0.056)	−0.335*** (0.049)	−0.251*** (0.053)	−0.224*** (0.048)	−0.222*** (0.059)	−0.179*** (0.066)	0.156 (0.115)
POPG	−1.188** (0.508)	−1.318*** (0.192)	−1.284*** (0.176)	−1.351*** (0.162)	−1.061*** (0.151)	−1.074*** (0.146)	−1.037*** (0.166)	−0.871*** (0.142)	−0.807*** (0.145)	−0.861*** (0.112)	−0.755*** (0.169)
INF	−0.043 (0.051)	−0.028 (0.045)	−0.039 (0.031)	−0.032 (0.029)	−0.017 (0.032)	−0.021 (0.029)	−0.013 (0.033)	−0.031 (0.044)	0.001 (0.048)	0.028 (0.058)	0.102 (0.075)
TPCF	0.201** (0.101)	0.196** (0.088)	0.224*** (0.058)	0.241*** (0.044)	0.152*** (0.042)	0.123*** (0.025)	0.102*** (0.038)	0.045 (0.033)	0.028 (0.043)	0.006 (0.031)	−0.049 (0.082)
Constant	11.492*** (2.283)	10.967*** (1.352)	10.773*** (0.720)	10.462*** (0.997)	9.095*** (0.945)	9.749*** (0.912)	8.901*** (0.983)	9.224*** (0.929)	9.208*** (1.012)	8.963*** (1.030)	4.649** (1.824)

Notes: Dependent variable: per capita GDP growth rate. Robust standard errors are in parentheses. ***, ** and * represent the statistical significance at 1%, 5% and 10%, respectively.

Source: Authors' own estimation.

impact is captured. These findings may be explained as follows. Countries that experience periods of low economic growth made more efforts to attract foreign capital flows to finance new projects in order to boost investments and economic growth. There is generally a need for more foreign financing in those countries given the lack of domestic saving. Efforts made by those countries may result in a rise of capital flows and they try to orient flows towards the most productive investments. In countries with high economic growth rates, there is generally enough domestic capital to finance new investments so that they will be less interested in attracting foreign capital flows. Another important finding that emerges from Table 4 is that the impact of total private capital flows on economic growth is higher in low quantiles than in the median (0.123) and the 60th quantile (0.102). Even for quantiles for which the coefficient is positive and statistically significant (10th–60th), there is a general descending trend, meaning that the impact of total private capital flows is higher for countries recording lower growth rates of per capita GDP. When countries experience more economic growth rates, they need less foreign capital flows since they reuse the fruits of the recorded growing GDP to finance new investments and then the coefficient starts declining until it becomes statistically insignificant.

2.2.3. Disaggregated private capital flows and economic growth

The previous analysis yields new findings on the effects of private capital flows on economic growth in MENA countries. However, an important issue that may refine more the analysis consists of disaggregating total private capital flows according to their nature. Accordingly, three types of capital flows are considered in what follows, namely foreign direct investment flows, portfolio flows and debt flows. In this section, Equation 3 is re-estimated using Canay's (2011) fixed effect panel quantiles approach for each of the three abovementioned types of capital flows. The estimation results are reported in Table 5.

Regarding the control variables, Table 5 shows that the coefficient of the inflation rate is always negative and statistically insignificant meaning that the inflation rate has no impact on economic growth in MENA countries. Government expenditure and population growth exert negative and significant impacts on economic growth and the evolution of coefficients through quantiles are almost similar as in the case of total private capital flows. The highest effects are found for economies with low growth rates and then as the growth rate increases the effects become less and less important. Findings suggest that the impact of FDI flows on economic growth is positive but statistically significant only for low and medium quantiles. More specifically, coefficients are found to be significant for the 10th–60th quantiles. Moreover, two issues have to be mentioned. First, coefficients associated with low quantiles are higher than the median effect. Second, the highest coefficients are associated with the 25th and 30th quantiles. These results are almost similar to those associated with total private capital flows and suggest that FDI flows exert positive effects

Table 5. Fixed effects panel quantile regression results—disaggregated capital flows

	10th	20th	25th	30th	40th	50th	60th	70th	75th	80th	90th
Foreign direct investment flows											
GOVC	−0.699*** (0.127)	−0.519*** (0.078)	−0.487*** (0.057)	−0.462*** (0.057)	−0.356*** (0.053)	−0.341*** (0.053)	−0.260*** (0.049)	−0.228*** (0.051)	−0.214*** (0.054)	−0.176** (0.070)	0.156 (0.116)
POPG	−1.209** (0.517)	−1.317*** (0.184)	−1.300*** (0.180)	−1.239*** (0.162)	−1.051*** (0.118)	−1.043*** (0.143)	−1.039*** (0.139)	−0.867*** (0.147)	−0.825*** (0.116)	−0.863*** (0.112)	−0.754*** (0.246)
INF	−0.062 (0.057)	−0.026 (0.047)	−0.040 (0.042)	−0.035 (0.030)	−0.017 (0.031)	−0.021 (0.029)	−0.022 (0.031)	−0.031 (0.046)	0.0004 (0.041)	0.031 (0.059)	0.103 (0.078)
FDI	0.195* (0.103)	0.224** (0.114)	0.236*** (0.070)	0.252*** (0.030)	0.156*** (0.021)	0.122** (0.048)	0.107*** (0.028)	0.048 (0.049)	0.045 (0.044)	0.007 (0.035)	−0.051 (0.082)
Constant	11.749*** (2.284)	10.846*** (1.295)	10.868*** (0.929)	10.467*** (0.935)	9.187*** (0.853)	9.811*** (0.963)	9.154*** (0.841)	9.289*** (0.955)	9.028*** (0.901)	8.913*** (0.977)	4.642** (1.887)
Portfolio flows											
GOVC	−0.297* (0.161)	−0.194** (0.090)	−0.159** (0.066)	−0.144** (0.058)	−0.125** (0.053)	−0.098* (0.054)	−0.121** (0.062)	−0.096* (0.058)	−0.034 (0.060)	0.090 (0.074)	0.405*** (0.113)
POPG	−2.070 *** (0.676)	−1.500*** (0.316)	−1.460*** (0.212)	−1.460*** (0.185)	−1.338*** (0.179)	−1.162*** (0.212)	−0.954*** (0.206)	−0.965*** (0.152)	−0.989*** (0.050)	−0.883*** (0.101)	−0.971*** (0.305)
INF	−0.078 (0.148)	−0.045 (0.076)	−0.004 (0.052)	−0.019 (0.040)	−0.026 (0.032)	−0.010* (0.006)	−0.060 (0.045)	−0.004 (0.044)	0.001 (0.062)	−0.0004 (0.041)	0.058 (0.088)
PFI	0.566 (0.384)	0.516** (0.231)	0.570*** (0.153)	0.530*** (0.149)	0.421* (0.244)	0.297 (0.294)	0.112 (0.207)	0.073 (0.155)	0.041 (0.099)	−0.012 (0.096)	−0.061 (0.835)
Constant	7.484*** (2.820)	6.025*** (1.642)	5.736*** (1.111)	6.029*** (1.045)	5.934*** (0.995)	5.929*** (0.989)	7.026*** (1.183)	7.052*** (0.980)	6.693*** (0.913)	4.809*** (0.965)	1.394 (1.876)

	Debt flows										
GOVC	−0.299** (0.125)	−0.139 (0.090)	−0.118 (0.067)	−0.132** (0.059)	−0.124** (0.059)	−0.108* (0.060)	−0.084 (0.072)	−0.127* (0.069)	−0.083 (0.077)	−0.036 (0.087)	0.117 (0.145)
POPG	−1.346** (0.538)	−1.402*** (0.137)	−1.463*** (0.181)	−1.490*** (0.206)	−1.406*** (0.222)	−1.195*** (0.213)	−1.197*** (0.316)	−1.280*** (0.306)	−1.020*** (0.323)	−0.900*** (0.294)	−1.365** (0.541)
INF	−0.084** (0.041)	−0.067 (0.053)	−0.051 (0.048)	−0.007 (0.040)	−0.016 (0.041)	−0.037 (0.031)	−0.005 (0.041)	−0.028 (0.032)	−0.012 (0.058)	−0.019 (0.074)	0.109 (0.092)
DEBT	0.704 (0.520)	0.480*** (0.127)	0.403*** (0.132)	0.438 (0.300)	0.671*** (0.241)	0.434* (0.230)	0.329 (0.456)	0.226 (0.552)	0.985* (0.553)	0.958* (0.497)	0.939** (0.393)
Constant	6.197*** (2.123)	5.403*** (1.476)	5.662*** (1.277)	5.854*** (1.065)	6.054*** (1.072)	8.929*** (1.227)	6.388*** (1.298)	8.227*** (1.216)	7.230*** (1.381)	6.632*** (1.405)	5.726** (2.460)

Notes: Dependent variable: per capita GDP growth rate. Robust standard errors are in parentheses. ***, ** and * represent the statistical significance at 1%, 5% and 10%, respectively.

Source: Authors' own estimation.

on economic growth only in countries with low and medium growth rates of per capita GDP. As detailed previously, countries with low economic growth rates generally have a lack of financial resources and this may attract more FDI flows due to the existence of investment opportunities.

The same table also suggests that the impact of portfolio flows is positive and statistically significant for low quantiles (20th–40th). Accordingly, in countries with low growth rates of per capita GDP, portfolio flows enhance economic growth since they are seen as additional financial resources needed by local firms operating in stock markets. These results are somewhat surprising since most of MENA countries have premature and underdeveloped stock markets that modestly participate in the development process of their economies. On the other hand, some other countries with high growth rates have relatively more developed stock markets (especially Middle Eastern countries). In these countries, sufficient financial resources are generally available. Results show that portfolio flows have no significant impact on the growth rate of per capita GDP in those countries. Finally, the effect of debt flows on economic growth is investigated. Table 5 reveals new findings compared to those found previously. As shown, coefficients associated with debt flows are positive and statistically

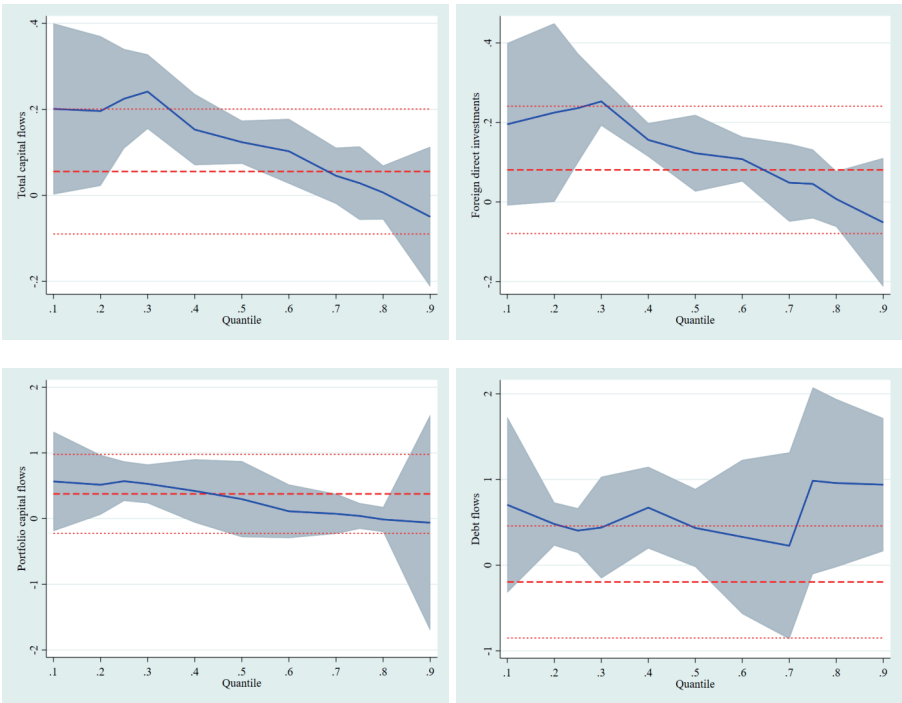

Figure 1. The impact of various categories of private capital flows on economic growth. The solid line represents the panel quantile regression coefficients with their 95% confidence interval (shaded area). The dashed line represents OLS estimates with their 95% confidence interval (dot lines)

significant not only for low quantiles as in the case of FDI flows and portfolio flows but also for the highest quantiles (75th, 80th, 90th). In low quantiles, debt flows have a positive impact on economic growth since they allow the banking system to provide additional financial resources to the domestic private sector. This means that in countries recording low economic growth rates, debt flows allow the financing of domestic investments and the support of economic growth. Different from FDI and portfolio flows, coefficients of debt flows are found to be also significant for the three highest quantiles meaning that they also support economic growth in countries with high levels of economic growth. Even more, the results show that debt flows exert a higher impact on economic growth in countries with high economic growth rates than in countries with low economic growth rates. This may be explained by the fact that debt flows may need relatively developed banking systems that allow the direction of these flows to the most productive sectors of the economy which spurs economic growth. This issue has been debated and proved in many previous studies (Choong et al., 2010; Agbloyor et al., 2014). Finally, it is important to mention that the effects of portfolio and debt flows on economic growth are higher than those of foreign direct investment and total private capital flows. The corresponding coefficients of the various types of capital flows obtained using the Canay's (2011) panel quantile regression and the ordinary least squares are provided in Figure 1.

2.3. The Wald test for equality of slopes

Once coefficients have been estimated using the panel quantile regression, it is possible to check the validity of coefficient heterogeneity and ensure whether the estimated coefficients for the considered quantiles are statistically different. Following many previous studies, such as Dufrenot, Mignon and Tsangarides (2010) and Lv and Xu (2017), the Wald test for equality of slopes is used. Since the findings suggest that the impact of private capital flows is mainly present

Table 6. Wald test for the equality of slopes (25th against 50th and 75th quantiles)

	Against the 50th quantile		Against the 75th quantile	
	test statistic	***p*-value**	**test statistic**	***p*-value**
TPCF	3.950**	0.047	5.360**	0.021
FDI	3.870**	0.049	8.540***	0.003
PFI	6.530**	0.011	5.510**	0.019
DEBT	3.400*	0.066	4.330**	0.038

Notes: The variance-covariance matrixes of the corresponding coefficients are obtained using the bootstrap procedure.

Source: Authors' own estimation.

for low and medium quantiles, the Wald test for the 25th quantile against the 50th and 75th quantiles was run. Findings are reported in Table 6.

As shown in Table 6, the Wald test rejects the hypothesis of parameter homogeneity in all cases which means that the estimated coefficients of private capital flows for the considered quantiles are statistically different. More specifically, coefficients of total private capital flows, foreign direct investment flows, portfolio flows and debt flows associated with the 25th quantile are statistically different from those of the 50th quantile. The same applies when comparing the 25th quantile with those of the 75th quantile. Therefore, the Wald test strongly confirms that considering the heterogeneity of the conditional distribution of the dependent variable and consequently the use of quantile regression is imperative when examining the impact of private capital flows on economic growth in MENA countries. Private capital flows are found to affect differently economic growth in countries with different levels of economic growth.

Conclusions

The effects of international private capital flows on economic growth are still being debated among scholars as well as policymakers. Unlike prior studies, this study differentiates itself by implementing a panel quantile regression estimator proposed by Canay (2011) to investigate the reaction of per capita GDP growth to various types of international private capital flows. More specifically, the analysis considers total private capital flows and three subcategories, namely foreign direct investment flows, portfolio equity flows and debt flows, in eleven Middle East and North African countries between 1980 and 2018.

The preliminary analysis shows that the dependent variable (per capita GDP growth) is not normally distributed which confirm the suitability of the panel quantile regression. Moreover, a set of panel unit root tests suggests that all variables considered in the empirical investigation are stationary at level. Turning to the panel quantile regression analysis, findings show that there is a significant difference in the effects of total private capital flows on economic growth across lower and higher quantiles. More specifically, the impact of total private capital flows is positive and statistically significant only for low and medium quantiles indicating that the enhancing impact of total private capital flows in terms of economic growth is only confirmed in countries with a relatively low and medium growth rate of per capita GDP or in countries facing periods of low and medium economic growth. When disaggregating total private capital flows it is also possible to reach relatively new findings compared to previous studies in terms of the statistical significance and magnitude of the impact across the different quantiles. First, results corroborate those found for total private capital flows given that the three considered types of capital flows have a positive and significant impact for low and medium quantiles. Subsequently,

only countries recording low and medium economic growth rates benefit from the three types of capital flows. However, unlike FDI flows and portfolio flows, debt flows are found to also boost economic growth in countries recording high growth rates which may be explained by the fact that the impact of debt flows are more pronounced in the presence of a good and well-developed financial system. Second, the disaggregation of total capital flows suggests that debt flows have the highest impact on economic growth followed by portfolio flows and finally FDI flows. Subsequently, the results of the current study represent an argument towards the use of the panel quantile analysis and the disaggregation of total private capital flows when focusing on the effects of private capital flows on economic growth in the MENA region.

Although this research contributes to the understanding of the response of economic growth to private capital flows in MENA countries, it may be subject to some limitations. First, the study is based on the fixed effect panel quantile approach developed by Canay (2011) which has been recently been proved to have some deficiencies (Besstremyannaya & Golovan, 2019, for details). Second, it would be useful to dissect the whole period and estimate the effects of private capital flows on economic growth in the pre-crisis period (1980–2008) and post-crisis period (2009-2018). This analysis allows a check to be made if and how the global financial crisis affected the private capital flows-economic growth nexus in the MENA region. Finally, the current research may also be extended by focusing on the impact of capital flows on economic growth for poor, middle and rich income MENA countries.

Appendix

Table A1. Definitions and sources of data

Variable	Definition	Source
GDP	GDP per capita growth rate	World Development Indicators (WDI), The World Bank
TPCF	Sum of FDI, PF and DEBT	World Development Indicators (WDI), The World Bank
FDI	Foreign direct investment, net inflows (% of GDP)	World Development Indicators (WDI), The World Bank
PF	Portfolio equity, net inflows (% of GDP)	World Development Indicators (WDI), The World Bank
DEBT	Net flows on external debt, private nonguaranteed (% of GDP)	World Development Indicators (WDI), The World Bank
GOVC	General government final consumption expenditure (% of GDP)	World Development Indicators (WDI), The World Bank
POPG	Population growth (annual %)	World Development Indicators (WDI), The World Bank
INF	Inflation rate, measured by the annual percentage change of the consumer price index (annual %)	World Development Indicators (WDI), The World Bank

References

Abrevaya, J., & Dahl, C. M. (2008). The effects of birth input on birthweight. *Journal of Business & Economic Statistics*, *26*(4), 379-397.

Agbloyor, E. K., Abor, J. Y., Adjasi, C. K. D., & Yawson, A. (2014). Private capital flows and economic growth in Africa: The role of domestic financial markets. *Journal of International Financial Markets, Institutions and Money*, *30*, 137-152.

Aizenman, J., Jinjarak, Y., & Park, D. (2013). Capital flows and economic growth in the era of financial integration and crisis, 1990-2010. *Open Economies Review*, *24*(3), 371-396.

Alley, I. (2015). Private capital flows and economic growth of Sub-Saharan African countries. *African Development Review*, *27*, 469-483.

Altman, E. I., & Kuehne, B. J. (2016), Credit markets and bubbles: Is the benign credit cycle over?. *Economics and Business Review*, *2*(3), 20-31.

Barguellil, A., Ben-Salha, O., & Zmami, M. (2018). Exchange rate volatility and economic growth. *Journal of Economic Integration*, *33*, 1302-1336.

Barro, R. J. (1997). *Determinants of economic growth: A cross-country empirical study*. (NBER Working Paper No. 5698). Cambridge: National Bureau of Economic Research.

Ben-Salha, O. (2013). Does economic globalization affect the level and volatility of labor demand by skill? New insights from the Tunisian manufacturing industries. *Economic Systems*, *37*(4), 572-597.

Besstremyannaya, G., & Golovan, S. (2019). Reconsideration of a simple approach to quantile regression for panel data. *Econometrics Journal*, *22*, 292-308.

Binder, M., & Coad, A. (2011). From Average Joe›s happiness to Miserable Jane and Cheerful John: Using quantile regressions to analyze the full subjective well-being distribution. *Journal of Economic Behavior & Organization*, *79*, 275-290.

Bordo, M. D. (2017). *The second era of globalization is not yet over: An historical perspective*. (NBER Working Paper No. 23786). Cambridge, MA: National Bureau of Economic Research.

Brahim, M., & Rachdi, H. (2014). Foreign direct investment, institutions and economic growth: Evidence from the MENA region. *Journal of Reviews on Global Economics*, *3*, 328-339.

Buchinsky, M. (1998). Recent advances in quantile regression models: A practical guideline for empirical research. *The Journal of Human Resources*, *33*, 88-126.

Bustelo, P. (2004). *Capital flows and financial crises: A comparative analysis of East Asia (1997-98) and Argentina (2001-02)*. (Working Paper No. 2004-017). Madrid: Complutense University of Madrid.

Cai, Z., Chen, L., & Fang, Y. (2018). A semiparametric quantile panel data model with an application to estimating the growth effect of FDI. *Journal of Econometrics*, *206*, 531-553.

Canay, I. A. (2011). A simple approach to quantile regression for panel data. *The Journal of Econometrics*, *14*, 368-386.

Choong, C. K., Baharumshah, A. Z. Yusop, Z., & Habibullah, M. S. (2010). Private capital flows, stock market and economic growth in developed and developing countries: A comparative analysis. *Japan and the World Economy*, *22*, 107-117.

Combes, J. L., Kinda, T., Ouedraogo, R., & Plane, P. (2019). Financial flows and economic growth in developing countries. *Economic Modelling*, *83*, 195-209.

de Vita, G., & Kyaw, K. (2009). Growth effects of FDI and portfolio investment flows to developing countries: A disaggregated analysis by income levels. *Applied Economics Letters*, *16*, 277-283.

Dufrenot, G., Mignon, V., & Tsangarides, C. (2010). The trade-growth nexus in the developing countries: A quantile regression approach. *Review of World Economics*, *146*, 731-761.

Eichengreen, B. (2003). *Capital flows and crisis*. Cambridge, MA: MIT Press.

Ferreira, M. A., & Laux, P. A. (2009). Portfolio flows, volatility and growth. *Journal of International Money and Finance*, *28*(2), 271-292.

Fitzgerald, E. V. K., & Mavrotas, G. (1997). *The employment impact of external capital flows in developing countries*. Geneva: ILO Employment and Training Papers 5.

Gaies, B., & Nabi, M. S. (2019). Financial openness and growth in developing countries: Why does the type of external financing matter?. *Journal of Economic Integration*, *34*, 426-464.

Galvao, A. F. (2011). Quantile regression for dynamic panel data with fixed effects. *Journal of Econometrics*, *164*, 142-157.

Gelman, M., Jochem, A., Reitz, S., & Taylor, M. P. (2015). Real financial market exchange rates and capital flows. *Journal of International Money and Finance*, *54*, 50-69.

Hausmann, R., & Sturzenegger, F. (2006). Why the US current account deficit is sustainable. *International Finance*, *9*, 223-240.

Hausmann, R., & Sturzenegger, F. (2007). The valuation of hidden assets in foreign transactions: Why 'dark matter' matters. *Business Economics*, *42*, 28-34.

Hoyos R. E. D., & Sarafidis, V. (2006). Testing for cross-sectional dependence in panel-data models. *Stata Journal*, *6*, 482-496.

Huo, L., Kim, T. H., & Kim, Y. (2015). *Revisiting the effect of FDI on economic growth using quantile regression*. (Working Papers No. 2015rwp-83). Seoul: Economic Research Institute, Yonsei University.

Iamsiraroj, S., & Ulubaşoğlu, M. A. (2015). Foreign direct investment and economic growth: A real relationship or wishful thinking?. *Economic Modelling*, *51*, 200-213.

Ibrahim, S., Mazlina A. R., Azman-Saini, W. N. W., & Zakaria, M. F. M. (2016). Financial integration-growth nexus: A quantile regression analysis. *Journal of Economic Integration*, *31*, 531-546.

Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, *115*, 53-74.

Jetter, M., Agudelo, A. M., & Hassan, A. R. (2015). The effect of democracy on corruption: Income is key. *World Development*, *74*, 286-304.

Jiang, H., Zhang, J., & Sun, C. (2020). How does capital buffer affect bank risk-taking? New evidence from China using quantile regression. *China Economic Review*, *60*, 101300.

Kahler, M. (1998). *Capital flows and financial crises*. Ithaca, NY: Cornell University Press.

Kamara, Y. U. (2014). *Essays on the effects of foreign direct investment on economic growth and welfare: The case of Sub-Saharan Africa*. Kansas: PhD Thesis, Department of Economics, Graduate Faculty of the University of Kansas.

Kapur, B. K. (2005). *Capital flows and exchange rate volatility: Singapore's experience*. (NBER Working Paper No. 11369). Cambridge, MA: National Bureau of Economic Research.

Kherfi, S., & Soliman, M. (2005). FDI and economic growth in CEE and MENA countries: A tale of two regions. *International Business & Economics Research Journal*, 4, 113-120.

Khobai, H., Hamman, N., Mkhombo, T., Mhaka, S., Mavikela, N., & Phiri, A. (2019). The FDI-growth nexus in South Africa: A re-examination using quantile regression approach. *Studia Universitatis Babes-Bolyai Oeconomica*, *63*, 33-55.

Klobodu, E. K. M., & Adams, S. (2016). Capital flows and economic growth in Ghana. *Journal of African Business*, *17*, 291-307.

Koenker, R. (2004). Quantile regression for longitudinal data. *Journal of Multivariate Analysis*, *91*, 74-89.

Koenker, R., & Bassett, G. J. (1978). Regression quantiles. *Econometrica*, *46*, 33-50

Koenker, R., & Hallock, K. F. (2001). Quantile regression. *Journal of Economic Theory*, *15*, 143-156.

Kottaridi, C., & Stengos, T. (2010). Foreign direct investment, human capital and non-linearities in economic growth. *Journal of Macroeconomics*, *32*, 858-871.

Lamarche, C. (2010). Robust penalized quantile regression estimation for panel data. *Journal of Econometrics*, *157*, 396-408.

Le, M. S., Su, J. J. & Nguyen, J. (2019). Trade liberalisation, poverty, and inequality in Vietnam: A quantile regression approach. *Applied Economics*, *51*, 3971-3981.

Levin, A., Lin, C. F., & Chu. C. S. J. (2002). Unit root tests in panel data: Asymptotic and finite-sample properties. *Journal of Econometrics*, *108*, 1-24.

López-Villavicencio, A., & Mignon, V. (2011). On the impact of inflation on output growth: Does the level of inflation matter?. *Journal of Macroeconomics*, *33*, 455-464.

Lv, Z., & Xu, T. (2017). A panel data quantile regression analysis of the impact of corruption on tourism. *Current Issues in Tourism*, *20*, 603-616.

Makiela, K., & Ouattara, B. (2018). Foreign direct investment and economic growth: Exploring the transmission channels. *Economic Modelling*, *72*, 296-305.

Neanidis, K. C. (2019). Volatile capital flows and economic growth: The role of banking supervision. *Journal of Financial Stability*, *40*(C), 77-93.

Omri, A., & Kahouli, B. (2014). The nexus among foreign investment, domestic capital and economic growth: Empirical evidence from the MENA region. *Research in Economics*, *68*, 257-263.

Pegkas, P. (2015). The impact of FDI on economic growth in Eurozone countries. *The Journal of Economic Asymmetries*, *12*, 124-132.

Pesaran, M. H. (2004). *General diagnostic tests for cross section dependence in panels*. (Cambridge Working Papers in Economics No. 0435). Cambridge: Faculty of Economics, University of Cambridge.

Pesaran, M. H. (2007). A simple panel unit root test in the presence of cross-section dependence. *Journal of Applied Econometrics*, *22*, 265-312.

Powell, D. (2016). *Quantile regression with nonadditive fixed effects*. Mimeo, RAND Corporation.

Rafi, O. P. C. M., & Ramachandran, M. (2018). Capital flows and exchange rate volatility: Experience of emerging economies. *Indian Economic Review*, *53*, 183-205.

Reisen, H., & Soto, M. (2001). Which types of capital inflows foster developing-country growth?. *International Finance*, *4*(1), 1-14.

Shen, C. H., Lee, C. C., & Lee, C. C. (2009). What makes international capital flows promote economic growth? An international cross-country analysis. *Scottish Journal of Political Economy*, *57*, 515-546.

Sobański, K. (2019). Dark matter' in the external sector of the United States. *Economics and Business Review*, *5*(2), 86-108.

Soylu, Ö. B. (2019). Do foreign direct investment and savings promote economic growth in Poland?. *Economics and Business Review*, *5*(4), 3-22.

Tahir, M., Estrada, M. A. R., & Afridi, M. A. (2019). Foreign inflows and economic growth: An empirical study of the SAARC region. *Economic Systems*, *43*, 100702.

Vo, X. V. (2010). Net private capital flows and economic growth–the case of emerging Asian economies. *Applied Economics*, *42*, 3135-3146.

Zhu, H., Duan, L., Guo, Y., & Yu, K. (2016). The effects of FDI, economic growth and energy consumption on carbon emissions in ASEAN-5: Evidence from panel quantile regression. *Economic Modelling*, *58*, 237-248.