www.devbankng.com

DBN
Development
Bank of Nigeria
RC 1215724

...Financing Sustainable Growth

WORKING PAPER SERIES

227, 2023

DEMOGRAPHIC CHANGE AND WEALTH INEQUALITY: GLOBAL EVIDENCE

Simplice A. Asongu
African Governance and Development Institute,
P.O. Box 8413, Yaoundé, Cameroon
E-mails: asongusimplice@yahoo.com, asongus@afridev.org

Beatrice D. Simo-Kengne
School of Economics, University of Johannesburg,
Johannesburg, South Africa
E-mail: bdsimo-kengne@uj.ac.za

Abstract

This study explores the effect of various demographic features on wealth share using yearly data for 43 countries. Empirical results from quantile regressions indicate that besides macroeconomic and institutional factors, population ageing and the high size of working population exhibit some mitigating effects on wealth inequality at lower quantiles and the opposite effect at high quantiles. Whereas at the quantile above 75, rising share of working age population, population growth and high fertility rate may help contribute to wealth share equalisation. These finding implies that efficient redistribution strategies depend not only on the level of development but also on the stage of the demographic transition. Accordingly, improving access to education and decent jobs can help fight inequality in relatively young population context while labour market adjustment through government effectiveness could lead to wealth inequality reduction in relatively old population context.

Keywords: Population; Demographic Change; Wealth Inequality

***JEL Classification*:** C32; J14; I32; O15; O40

1. Introduction

The positioning of this study on the nexus between demographic change and wealth inequality is premised on three main fundamentals in the scholarly and policy literature on the subject, notably: (i) changing demographic patterns; (ii) growing levels of wealth inequality around the world and (ii) gaps in the attendant literature on inequality and demographic change, respectively. These motivational elements are expanded in the same chronology as highlighted in what follows.

First, as supported by Zage and Breen (2019), there have been substantial variations in the patterns of demographic change over the past decades, especially as it pertains to family make-up. The narrative is consistent with the position that, the underlying demographic tendencies have been considerably influenced by progress in both institutional and market factors (Atkinson, 2003; McCall & Percheski, 2010; Asongu, 2015). The corresponding literature maintains that extant studies are consistent with the position that three principal themes have been covered in the debate, notably, variations in: (i) the numerical value of households that are either headed by a single individual or by a couple; (ii) households that are led by two people earning some amount of income and (iii) the educational homogamy of couples in households (Breen & Andersen, 2012; Zagel & Breen, 2019). It is maintained by Nieuwenhuis et al. (2017) that the last-two themes are linked to changes in the labour market.

Second, there is a consensus in the extant literature that inequality levels are growing, especially as it pertains to dynamics in income and wealth disparities (Tchamyou et al., 2019a, 2019b; Asongu et al., 2020a, 2020b; Njangang *et al*., 2022). The corresponding literature maintains that the extant studies have largely focused, on the one hand, on the relevance of income inequality and economic growth and on the other, the incidence of economic prosperity on how wealth is distributed across the population. Moreover, owing to data availability constraints on wealth inequality, the extant studies have focused for the most par, on nexuses between income inequality and macroeconomic dynamics (see Tadadjeu *et al*. 2021).

To put the above elements on income inequality into greater perspective, the attendant literature has largely been concerned with nexuses among factors such as, *inter alia*, interest rates, economic prosperity, inflation, monetary policy tendencies, financial access, trade, political stability, entrepreneurship, savings, inheritance, returns of stochastic nature, information and communication technology (ICT) and endowment in terms demography genetics (Campanale, 2007; Benhabib *et al*., 2017; Lusardi *et al*., 2017; De Nardi & Fella, 2017; Elinder et al., 2018; Berisha & Meszaros, 2020; Bagchi et al., 2019; Hasan et al., 2020; Barth et al., 2020; Njangang *et al*., 2021). The factor on demographic endowment is closest to the current positioning, not least, because the present research is focused on the linkage between demographic change and wealth inequality around the world. By

extension, the positioning of the study is also premised on a gap in the extant literature on the subject.

Third, gaps in the attendant literature can be discussed in two main strands, notably: studies focusing on income inequality and those on demographic change. These two main streams of research are expanded in chronological order. On the one hand, with respect to studies within the remit of income inequality, according to Oxfam (2016), the richest 62 people on the planet had wealth that was compared to the bottom half of the population of the world. Moreover, as maintained by Piketty (2014), about 50% of the wealth in the wordld is held by the top 1% whereas the bottom 50% approximately accounts for only about 5% of the corresponding wealth of the world. Within the remit of this same strand, it is maintained by Davies et al. (2008) that wealth holding in the world is substantialy concentrated compared to income. Moreover, according to the narrative, country-centric Gini coefficients with respect to dispostable income is within the region of 0.3 to 0.5, whereas in relation to wealth, these are largely between 0.6 and 0.80 (Njangang et al., 2022). According to the narrrative, the top 10% of adults were in possession of 70.7% of the total wealth in households as of 2000 and the corresponding inequality measurement (i.e. Gini coefficient) for wealth worldwilde was 0.802 (Davies et al., 2011; Njangang et al., 2022). For example, with respect to the Credit Suisse (2014), between 1910 and 2013, the mean wealth share of the top 1% of the population in the United States was about 20% more relative to income share while with regard to the top 10%, the mean share of wealth was about 30% points higher relative to the share in income (Tadadjeu et al., 2021).

On the other hand, with respect to studies focusing on demography, according to Zage and Breen (2019), the considered demographic trends in the family contribute to influencing disparities in the distribution of income between countries and across time (Gornick & Jantti, 2013; Martin, 2006; Organisation for Economic Co-operation and Development, 2011) . Morevoer, the attendant demographic trends are for the most part, acknowledged as influencing the growing disparities in income inequality in rich post-industrialised nations. For instance, it is maintaiend that the an increase in the number of dual-income households augments the share of income owned by households of high-income status. With improving socio-economic convergence, it is expected that the numerical value of households with dual-income will increase, not least, because resources are combined between women and men who are characterised by substantial market power. Moreover, it is also maintained that with the increasing number of households that are managed by single parents, income inequality is affected through increaments in the share of households with low-income. As supported by McLanahan (2004), these nexuses are also fundamental in boosting the paradigm of "diverging destinies": a paradigm which maintains that when there is

polarization in the higher-educated and lower-educated mothers' behavior in family formation, inequality is bound to widen.

Further to the above, as maintained by Zagel and Breen (2019), while the apparent absence of comparability in the design of studies renders it hard for solid quantitative conclusions to be derived, it is nonetheless apparent from existing evidence that growing single mother households is also accompanied by increasing levels of income inequality (Kollmeyer, 2013). Moreover, if some incidence can be apparent, it is argued by both contemporary and non-contemporary literature (Bradley et al., 2003; Asongu & Odhiambo, 2019) that improvements in the employment of women is associated with reductions in income inequality levels. According to Zagel and Breen (2019), mixed evidence is apparent for the impacts of educational matching inequality between couples. In essence, whereas increasing educational similarity among partners is seldom established to contribute to growing levels of inequality in income levels (Western et al., 2008; Breen & Salazar, 2011), when there is some similarity in increasing earning, income inequality levels are affected (Burtless, 1999; Schwartz, 2010). Moreover, it has been shown by Nieuwenhuis et al. (2017) that the relevance of variations in earnings inequality in women influence tendencies in general inequality of income. Accordingly, in nations in which women's earnings inequality witness a decrease, such a decreasing tendency is associated with growing levels of net inequality levels among couples.

Of the engaged studies in the highlighted literature, the closest to the present positioning is Njangang et al. (2022) which has investigated the role of governance in reducing the impact of oil wealth on wealth inequality. The present study uses the same dataset on wealth inequality as in Njangang et al. (2022) while focusing on how demographic change affects wealth inequality in the same sampled countries. As argued by the underlying literature or Njangang et al. (2022), in the light of data availability constraints on wealth inequality, the literature has for the most part, been concerned about nexuses between macroeconomic variables and income inequality. By extension, it is in the light of sparse studies focusing on wealth inequality that the present study is premised as motivated in the preceding paragraphs. The policy relevance of understanding how demographic change affects wealth inequality can be understood in the light the sustainable development goals (SDGs) project of the United Nations' Agenda 2030, not least, because understanding how changes in population growth affects wealth inequality is fundamental in adapting both demographic policies to SDGs which are mostly related to poverty and inequality. In order to improve room for policy options, the empirical strategy is also tailored such that the nexuses are contingent on initial levels of wealth inequality, not least, because blanket policies on wealth share owing to demographic change are unlikely to succeed unless such policies are contingent on initial levels of wealth share and thus, tailored distinctly

across countries experiencing differing levels of wealth inequality. As articulated in the abstract, empirical findings and concluding sections, the empirical results lend credit on the need to assess the underlying nexus contingent on initial levels of the outcome variable.

The rest of the study is structured as follows. The data and methodology are covered in Section 2. The empirical results are presented and discussed in Section 3 while Section 4 concludes with policy implications and future research directions.

2. Data and methodology

2.1 Data

Subject to data availability, the empirical investigation uses an unbalanced panel dataset for 43 countries spanning the period from 2000 to 2014. The outcome variable, wealth inequality is proxied by the top ten percent wealth share (Wealth Inequality 1) as well as the top one percentile wealth share (Wealth Inequality 2), both obtained from Credit Suisse (2014). On the demography variable, six indicators are used to capture changes in both demographic structure (Age Dependency, Old Age Dependency, Young Age Dependency and Working Population) and demographic development (Population Growth and Fertility Rate). As informed by the literature, the study also includes control variables to account for the living standard (GDP per capita), economic globalization (Foreign Investment and Trade),human capital development (Education), quality of institution (Government Effectiveness) and the level of industrialization (Manufacturing).With the exception of Government Effectiveness drawn from the World Bank's World Governance Indicators, all the covariates are sourced from the World Bank's World Development Indicators database. The description of the variables is provided in Appendix 1.

Based on the summary statistics presented in Appendix 2, the number of observations oscillates between 551 and 645. The cross-country wealth distribution depicts noteworthy heterogeneities in inequality with the top decile wealth share ranging between 46.8 and 84.8 percent of the total wealth. Similarly, the top percentile wealth share fluctuates between 16.9 and 66.2 percent of the total wealth across the sample countries. Moreover, the standard deviations of 8.389 and 9.582, portray a high variation in individual wealth share within each of the two wealth distribution groups. Similar variability is observed with covariates; implying the non-normality of data, which is further confirmed by highly significant Jarque-Bera (JB) normality test statistics. This relatively high inequality appears to exhibit a negative correlation with Old Age Dependency and Working Population as evidenced by the pairwise correlation coefficient. Interestingly, the correlation between inequality variables and Old Age Dependency is stronger; the correlation coefficient standing at -0.601 and -0.698 with Inequality 1 and 2, respectively. Unlike these two demographic variables, Age Dependency,

Young Age Dependency, Population Growth and Fertility Rate display positive and moderate correlation coefficients with Inequality 1 and 2. However, these correlations are subject to confounding factors and hence require a robust econometric analysis to draw valid inference.

2.2 Methodology

To evaluate the distributional effect of demographic change on wealth inequality, the quantile regression approach is adopted. The choice of this empirical strategy is underpinned by the assumption that the relative importance of the wealth inequality determinants depends on the level of inequality experienced at different wealth share quantiles. Unlike the mean effect methods that estimate how covariates are linked to the average value of the response variable, quantile regression analysis allows to study the impact of covariates on different quantiles of the response distribution, in this case, wealth inequality. For example, older population may be less vulnerable to high-inequality than younger population as the richest people often belong to the elderly population group (Vandenbroucke & Zhu, 2017). This potential asymmetric effect violates the normality assumption and makes the distribution free model such as quantile regression a suitable empirical strategy for our analysis. In addition, not only quantile regression is robust to outliers (Buchinsky, 1994) but it is also able to cover the entire conditional distribution of the explained variable (Coad & Rao, 2011).

Assuming that errors are not identically distributed on the entire conditional distribution and that slope coefficients differ at various quantiles of the distribution, Koenker and Bassett (1978) represent the quantile regression model as:

$$y_{it} = X_{it}\beta_\theta + \varepsilon_{\theta it} \text{with} Quant_\theta(y_{it}/X_{it}) = X_{it}\beta_\theta \quad (1)$$

Where y is the dependent variable, X is the vector of covariates, β is the vector of parameters, ε is the vector of error terms and $Quant_\theta(y_{it}/X_{it})$ determines the θth conditional quantile of y given X.

We apply the quantile regression on the following inequality equation:

$$Inequality_{it} = \beta_0 + \beta_1 Demography_{it} + \beta_2 GDP_{it} + \beta_3 FDI_{it} + \beta_4 Trade_{it} + \beta_5 Education_{it} + \beta_6 Governance_{it} + \beta_7 Manufacturing_{it} + \varepsilon_{it} \quad (2)$$

Where i=country $(i = 1, \dots, N)$ and t=year $(t = 1, \dots, T)$, Inequality is the wealth share, Demography is the demographic variable, GDP is the per capita GDP growth, FDI is the foreign direct investment inflows, Trade is the trade openness, Education is the gross secondary school enrolment, Governance is the government effectiveness and

Manufacturing is the manufacturing value added to the GDP. We estimate the pooled quantile regression (QREG) and the panel quantile regression (QREGPD) with non additive fixed effects (Powell, 2014, 2015).

3. Empirical results

Tables 1, 2 and 3 show the pooled quantile regression outputs. As expected, the results identify significant heterogeneities of inequality effects of demographic development across quantiles. However, not all the estimated coefficients of the variables of interest are significant across quantiles; given rise to the worry that all the countries are not truly homogenous as hypothesized in the pooled regression. In addition, the existence of possible intra-cluster correlation is proved to be possible even in data drawn from independent and identically distributed groups (Parente & Santos Silva, 2016). We address these concerns by estimating a panel quantile regression with bootstrap standard errors; resulting in an improvement of the individual significance of the estimated coefficients as reported in Table 4. These results are relatively robust regardless of the inequality proxy used and more so when endogeneity is accounted for (Panel B).

We find consistent evidence of demographic effects on wealth inequality. In general, Age Dependency, Young Age Dependency, Population Growth and Fertility Rate exhibit significant and positive effects on inequality below quantile 90 and negative effects at quantile 90. This implies that inequality expands more in countries with younger population than those with older population. In terms of magnitude, Fertility Rate scores highest effects ranging between 2 to 6 followed by Population Growth with effects from 0.134 to 4 while Age Dependency and Young Age Dependency are of moderate impacts (from 0.09 to 0.5).

However, these variables have negative effects mainly at higher quantile (for the top decile wealth share) or at middle to high quantile (for the top percentile wealth share) although to a lesser extent than the positive effects, which become significant once endogeneity is controlled for. It could be inferred that large population density and namely large number of young population represents an opportunity to challenge extreme inequality, possibly through labour force replacement as older people retire. However, the relatively smaller size of the negative effects than positive effects could indicate the need to equip younger generations to ensure effective replacement/transition which produces wealth transfer and/or redistribution.

Conversely, Old Age Dependency and Working Age consistently exhibit negative effects at quantiles below 90, implying that greater number of population at working age and population ageing reduce wealth inequality. The estimates of Old Age Dependency are larger (in magnitude) below quantile 75 for pooled and IV panel results; suggesting that an

additional one unit increase in old dependency ratio reduces top decile and top percentile wealth share by 0.6 to 0.7 across quantiles 10, 25 and 50. In subsequent ratio intervals, inequality is reduced by 0.2 to 0.4. A similar pattern emerges with Working Age estimates, displaying inequality effects ranging between -0.3 to -0.7 for the first three quantiles and between -0.09 to -0.4 for the 75th quantile after controlling for endogeneity. However, both variables exhibit positive inequality effects above the 90th quantile, except Old Age Dependency when inequality is measured by the top percentile wealth share; suggesting that population ageing and working age may contribute to increasing wealth share of the richest population.

Besides the demographic change, institutional and economic conditions prove to be significant drivers of inequality. Tables 1, 2 and 3 show selected quantiles in which these variables are not significant, but their significance[1] improve in the panel framework as it is the case with demographic factors. On the one hand, wealth inequality mitigating factors include FDI inflows, Education and Government effectiveness across country. Expectedly, government effectiveness ensures efficient resources allocation and distribution, education improves the likelihood to have decent job while increased FDI inflows imply jobs creation, technology and skill transfer; all of which participating to narrow down the wealth share gap between richest and poorest population. On the other hand, per capita GDP growth, Trade and manufacturing tend to benefit the richest population group. Therefore, the advancement achieved in economic growth, globalization and industrialization are yet to be inclusive.

In sum, the wealth equalising/disequalising effects of demographic development vary across quantiles. This unifies the puzzling conclusions identified in previous studies while revealing the advantage of the distributional regression over mean regression analysis. At lower quantiles (below 75), our findings are consistent with Vandenbroucke and Zhu (2017) who document that population ageing can help mitigate inequality. Likewise, the low quantile output is favourable to Odusola et al. (2017)'s finding that an increasing share of working population is conducive to inequality although at similar quantiles, higher size of working age population is found to be inequality mitigating. This apparent contradiction is addressed by Fournier and Koske (2012) who show that the narrowing inequality effect of working age population is well understood when educating and employment status are considered. These authors provide supportive evidence that indeed high share of working population with an upper secondary or post- secondary non-tertiary education and a growing share of workers on permanent contracts have equalising wealth effect. This is consistent with the strong negative association

[1] The full panel output is available from the authors upon request.

between our education variable and wealth shares at different quantiles irrespective of the specification (Panel A of Tables 2 and 3).

Above the 75th quantile, our findings are consistent with Compante and Do (2006), Odusola et al. (2017) and Dolls and al. (2019). Particularly, at quantile 90, high fertility rate and population growth are negatively associated with wealth (Compante and Do, 2006 and Odusola et al., 2017) while demographic change driven by the increase share of old population tends to increase wealth share of the top 10% and 1% richest population (Dolls and al., 2019). However, with the exception of Compante and Do (2006) who carried out a global cross-country study, these studies focus on a specific region, namely Sub-Saharan Africa and Europe. In addition, Compante and Do (2006) indicate that the negative relationship between population size and inequality apply to non-democratic countries. Considering that distributional analysis captures distinctive features beyond the democracy criteria, our findings provide a much bigger picture of the wealth inequality drivers across country.

Table 1: Wealth Inequality, Age Dependency and Old Age Dependency

Dependent variable: Wealth Inequality

Panel A: Wealth Inequality and Age Dependency Ratio

	Top 10% wealth Share					**Top 1% Wealth Share**				
	Q.10	Q.25	Q.50	Q.75	Q.90	Q.10	Q.25	Q.50	Q.75	Q.90
Constant	**53.429*** **	**64.122*** **	**73.646*** **	**92.600*** **	**84.792*** **	**26.749*** **	**36.407*** **	**40.902*** **	**49.579*** **	**54.644*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Age Dependency	**0.286*** **	**0.242*** **	**0.259*** **	0.003	**-0.121** **	**0.217*** **	**0.170** **	**0.265*** **	**0.134** **	-0.018
	(0.000)	**(0.000)**	**(0.000)**	(0.960)	**(0.039)**	**(0.000)**	**(0.016)**	**(0.000)**	**(0.036)**	(0.842)
GDP pcg	-0.049	-0.001	**0.246** **	0.244	0.071	-0.010	0.063	**0.335** **	**0.440*** **	0.298
	(0.731)	(0.989)	**(0.034)**	(0.112)	(0.582)	(0.933)	(0.679)	**(0.011)**	**(0.002)**	(0.147)
FDI Inflows	-0.076	-0.032	**-0.118** **	**-0.251*** **	**-0.130** **	-0.054	-0.041	**-0.125** **	**-0.173*** **	**-0.171* **
	(0.241)	(0.613)	**(0.026)**	**(0.000)**	**(0.027)**	(0.362)	(0.560)	**(0.036)**	**(0.007)**	**(0.068)**
Trade	**0.070*** **	**0.051*** **	**0.041*** **	**0.035*** **	**0.022*** **	**0.071*** **	**0.054*** **	**0.058*** **	**0.062*** **	**0.057*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.009)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Education	**-0.228*** **	**-0.233*** **	**-0.263*** **	**-0.208*** **	**-0.075*** **	**-0.202*** **	**-0.209*** **	**-0.234*** **	**-0.177*** **	**-0.115*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.005)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.007)**
Gov. Effectiveness	-0.158	**-1.223* **	-0.539	**-1.732** **	**-2.069*** **	**-1.699*** **	**-2.429*** **	**-3.262*** **	**-5.605*** **	**-7.031*** **
	(0.814)	**(0.064)**	(0.324)	**(0.017)**	**(0.001)**	**(0.006)**	**(0.001)**	**(0.000)**	**(0.000)**	**(0.000)**
Manufacturing	**0.304*** **	**0.157** **	-0.032	**-0.305*** **	0.073	**0.207*** **	0.089	-0.062	-0.118	-0.006
	(0.000)	**(0.035)**	(0.597)	**(0.000)**	(0.288)	**(0.003)**	(0.276)	(0.377)	(0.114)	(0.949)
Pseudo R^2	0.293	0.297	0.265	0.192	0.125	0.297	0.312	0.356	0.398	0.373
Observations	514	514	514	514	514	514	514	514	514	514

Panel B: Wealth Inequality and Old Age Dependency Ratio

	Top 10% wealth Share					**Top 1% Wealth Share**				
	Q.10	Q.25	Q.50	Q.75	Q.90	Q.10	Q.25	Q.50	Q.75	Q.90
Constant	**80.371*** **	**81.753*** **	**83.762*** **	**84.670*** **	**76.030*** **	**48.826*** **	**50.801*** **	**53.929*** **	**61.116*** **	**55.263*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**

Old Age Dependency	**-0.676*** **	**-0.696*** **	**-0.605*** **	**-0.295*** **	0.066	**-0.628*** **	**-0.628*** **	**-0.640*** **	**-0.404*** **	**-0.217***
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	(0.427)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.061)**
GDP pcg	-0.030	0.033	0.070	**0.301** **	0.113	0.004	0.014	0.108	**0.293*** **	**0..388***
	(0.765)	(0.753)	(0.590)	**(0.044)**	(0.445)	(0.955)	(0.883)	(0.415)	**(0.004)**	**(0.059)**
FDI Inflows	-0.031	**-0.100** **	**-0.215*** **	**-0.274*** **	-0.109	-0.036	**-0.087***	**-0.188*** **	**-0.131*** **	**-0.159***
	(0.500)	**(0.039)**	**(0.000)**	**(0.000)**	(0.106)	(0.362)	**(0.056)**	**(0.002)**	**(0.005)**	**(0.089)**
Trade	**0.024*** **	**0.026*** **	**0.034*** **	**0.033*** **	**0.027*** **	**0.033*** **	**0.031*** **	**0.052*** **	**0.049*** **	**0.052*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.003)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Education	**-0.097*** **	**-0.118*** **	**-0.111*** **	**-0.095*** **	**-0.064***	**-0.093*** **	**-0.107*** **	**-0.121*** **	**-0.159*** **	**-0.085***
	(0.000)	**(0.000)**	**(0.000)**	**(0.004)**	**(0.050)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.058)**
Gov. Effectiveness	-0.228	0.449	0.357	-0.844	**-2.383*** **	**-1.477*** **	-0.734	**-1.387** **	**-3.575*** **	**-6.288*** **
	(0.665)	(0.415)	(0.596)	(0.274)	**(0.002)**	**(0.001)**	(0.158)	**(0.044)**	**(0.000)**	**(0.000)**
Manufacturing	**-0.214*** **	-0.024	-0.111	**-0.240*** **	0.056	**-0.215*** **	**-0.131** **	-0.033	**-0.161*** **	-0.085
	(0.000)	(0.665)	(0.111)	**(0.003)**	(0.481)	**(0.000)**	**(0.015)**	(0.643)	**(0.003)**	(0.440)
Pseudo R^2	0.394	0.390	0.313	0.206	0.115	0.406	0.407	0.407	0.431	0.382
Observations	514	514	514	514	514	514	514	514	514	514

*,**,***: significance levels of 10%, 5% and 1% respectively. GDPpcg: GDP per capita growth. FDI: Foreign Direct Investment. Gov: Government. Lower quantiles (e.g., Q 0.1) signify nations where Wealth Inequality is least.

Table 2: Wealth Inequality, Young Age Dependency and Population Growth

Dependent variable: Wealth Inequality

Panel A: Wealth Inequality and Young Age Dependency Ratio

	Top 10% wealth Share					**Top 1% Wealth Share**				
	Q.10	Q.25	Q.50	Q.75	Q.90	Q.10	Q.25	Q.50	Q.75	Q.90
Constant	**55.415*** **	**63.175*** **	**73.348*** **	**84.178*** **	**78.839*** **	**24.972*** **	**30.238*** **	**36.911*** **	**43.257*** **	**52.236*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Young Age Dependency	**0.366*** **	**0.308*** **	**0.250*** **	**0.101***	-0.060	**0.346*** **	**0.362*** **	**0.296*** **	**0.242*** **	0.063
	(0.000)	**(0.000)**	**(0.000)**	**(0.081)**	(0.148)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	(0.369)
GDP pcg	-0.095	0.027	0.173	**0.319***	0.107	-0.008	0.087	**0.277** **	**0.333*** **	**0.427***
	(0.291)	(0.842)	(0.144)	**(0.076)**	(0.409)	(0.907)	(0.515)	**(0.030)**	**(0.008)**	**(0.050)**
FDI Inflows	-0.063	-0.069	**-0.171*** **	**-0.253*** **	**-0.155*** **	**-0.057***	-0.077	**-0.182*** **	**-0.139** **	**-0.171***
	(0.130)	(0.279)	**(0.002)**	**(0.002)**	**(0.009)**	**(0.079)**	(0.208)	**(0.002)**	**(0.015)**	**(0.088)**
Trade	**0.061*** **	**0.045*** **	**0.040*** **	**0.037*** **	**0.027*** **	**0.063*** **	**0.053*** **	**0.065*** **	**0.064*** **	**0.059*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.001)**	**(0.001)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Education	**-0.181*** **	**-0.197*** **	**-0.204*** **	**-0.168*** **	**-0.059** **	**-0.170*** **	**-0.173*** **	**-0.186*** **	**-0.140*** **	**-0.116** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.033)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.013)**
Gov. Effectiveness	0.533	0.477	0.440	-1.185	**-2.481*** **	-0.256	-0.530	**-1.407** **	**-4.706*** **	**-7.015*** **
	(0.241)	(0.494)	(0.459)	(0.189)	**(0.000)**	(0.474)	(0.429)	**(0.029)**	**(0.000)**	**(0.000)**
Manufacturing	**0.091***	0.063	-0.093	**-0.292*** **	0.076	**0.079** **	-0.044	0.011	**-0.122***	-0.075
	(0.060)	(0.398)	(0.142)	**(0.003)**	(0.271)	**(0.038)**	(0.531)	(0.872)	**(0.068)**	(0.516)
Pseudo R^2	0.379	0.348	0.297	0.197	0.121	0.388	0.371	0.397	0.421	0.375
Observations	514	514	514	514	514	514	514	514	514	514

Panel B: Wealth Inequality and Population Growth

Top 10% wealth Share	**Top 1% Wealth Share**

	Q.10	Q.25	Q.50	Q.75	Q.90	Q.10	Q.25	Q.50	Q.75	Q.90
Constant	**67.421*** **	**74.650*** **	**83.057*** **	**85.928*** **	**76.834*** **	**37.994*** **	**41.426*** **	**46.517*** **	**51.947*** **	**53.332*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Population Growth	**2.611*** **	**2.524*** **	**2.232*** **	**1.189***	-0.642	**2.563*** **	**3.051*** **	**3.440*** **	**2.287*** **	1.161
	(0.000)	**(0.000)**	**(0.000)**	**(0.082)**	(0.346)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	(0.217)
GDP pcg	-0.050	0.042	0.165	**0.265***	0.086	0.021	0.087	**0.378*** **	**0.403*** **	**0.380***
	(0.746)	(0.764)	(0.208)	**(0.068)**	(0.552)	(0.878)	(0.508)	**(0.005)**	**(0.001)**	**(0.057)**
FDI Inflows	-0.066	-0.055	**-0.177*** **	**-0.243*** **	**-0.165** **	-0.038	-0.065	**-0.127** **	**-0.204*** **	**-0.159***
	(0.356)	(0.393)	**(0.003)**	**(0.000)**	**(0.013)**	(0.545)	(0.282)	**(0.040)**	**(0.000)**	**(0.082)**
Trade	**0.052*** **	**0.041*** **	**0.033*** **	**0.036*** **	**0.030*** **	**0.058*** **	**0.048*** **	**0.050*** **	**0.061*** **	**0.056*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.001)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Education	**-0.192*** **	**-0.215*** **	**-0.219*** **	**-0.158*** **	**-0.054***	**-0.179*** **	**-0.188*** **	**-0.193*** **	**-0.145*** **	**-0.117*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.079)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.006)**
Gov. Effectiveness	-0.583	**-1.143***	-0.787	**-2.096*** **	**-2.167*** **	**-2.893*** **	**-1.994*** **	**-3.135*** **	**-5.976*** **	**-7.186*** **
	(0.429)	**(0.086)**	(0.205)	**(0.002)**	**(0.002)**	**(0.000)**	**(0.002)**	**(0.000)**	**(0.000)**	**(0.000)**
Manufacturing	0.073	0.097	-0.072	**-0.245*** **	0.048	0.047	0.029	0.038	**-0.123***	-0.050
	(0.383)	(0.199)	(0.305)	**(0.002)**	(0.531)	(0.526)	(0.675)	(0.594)	**(0.062)**	(0.635)
Pseudo R^2	0.273	0.293	0.265	0.195	0.115	0.297	0.325	0.362	0.409	0.377
Observations	514	514	514	514	514	514	514	514	514	514

*,**,***: significance levels of 10%, 5% and 1% respectively. GDPpcg: GDP per capita growth. FDI: Foreign Direct Investment. Gov: Government. Lower quantiles (e.g., Q 0.1) signify nations where Wealth Inequality is least.

Table 3: Wealth Inequality, Working Population and Fertility Rate

Dependent variable: Wealth Inequality

Panel A: Wealth Inequality and Working Population

	Top 10% wealth Share					**Top 1% Wealth Share**				
	Q.10	Q.25	Q.50	Q.75	Q.90	Q.10	Q.25	Q.50	Q.75	Q.90
Constant	**110.660*** **	**114.044*** **	**124.886*** **	**94.626*** **	**60.086*** **	**71.643*** **	**70.078*** **	**95.715*** **	**76.669*** **	**50.727*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Working Population	**-0.639*** **	**-0.565*** **	**-0.577*** **	**-0.050**	**0.281** **	**-0.508*** **	**-0.374** **	**-0.623*** **	**-0.308** **	0.043
	(0.000)	**(0.000)**	**(0.000)**	**(0.753)**	**(0.041)**	**(0.000)**	**(0.018)**	**(0.000)**	**(0.030)**	(0.839)
GDP pcg	-0.056	-0.004	**0.240** **	0.254	0.074	-0.0007	0.068	**0.360*** **	**0.437*** **	0.297
	(0.668)	(0.973)	**(0.038)**	(0.100)	(0.575)	(0.995)	(0.656)	**(0.000)**	**(0.001)**	(0.151)
FDI Inflows	-0.077	-0.038	**-0.122** **	**-0.256*** **	**-0.132** **	-0.057	-0.042	**-0.129** **	**-0.170*** **	**-0.171***
	(0.200)	(0.527)	**(0.021)**	**(0.000)**	**(0.030)**	(0.330)	(0.539)	**(0.031)**	**(0.007)**	**(0.069)**
Trade	**0.072*** **	**0.053*** **	**0.043*** **	**0.036*** **	**0.021** **	**0.073*** **	**0.054*** **	**0.061*** **	**0.063*** **	**0.057*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.016)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Education	**-0.231*** **	**-0.234*** **	**-0.259*** **	**-0.194*** **	**-0.075*** **	**-0.206*** **	**-0.209*** **	**-0.236*** **	**-0.177*** **	**-0.114*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.006)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.008)**
Gov. Effectiveness	-0.191	**-1.237***	-0.629	**-1.902*** **	**-2.040*** **	**-1.704*** **	**-2.478*** **	**-3.279*** **	**-5.625*** **	**-7.039*** **
	(0.759)	**(0.050)**	(0.248)	**(0.009)**	**(0.001)**	**(0.000)**	**(0.001)**	**(0.000)**	**(0.000)**	**(0.000)**
Manufacturing	**0.316*** **	**0.155** **	-0.036	**-0.293*** **	0.070	0.224***	0.088	-0.052	-0.104	-0.004
	(0.000)	**(0.030)**	(0.552)	**(0.000)**	(0.324)	(0.001)	(0.278)	(0.451)	(0.152)	(0.966)
Pseudo R^2	0.294	0.298	0.266	0.192	0.125	0.297	0.313	0.357	0.398	0.373
Observations	514	514	514	514	514	514	514	514	514	514

Panel B: Wealth Inequality and Fertility Rate

	Top 10% wealth Share	**Top 1% Wealth Share**

	Q.10	Q.25	Q.50	Q.75	Q.90	Q.10	Q.25	Q.50	Q.75	Q.90
Constant	**58.283*** **	**68.782*** **	**77.865*** **	**86.648*** **	**78.806*** **	**29.709*** **	**34.885*** **	**41.814*** **	**46.697*** **	**51.784*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Fertility Rate	**4.802*** **	**4.782*** **	**3.397*** **	1.488	-1.106	**4.550*** **	**5.290*** **	**4.619*** **	**3.326*** **	0.912
	(0.000)	**(0.000)**	**(0.000)**	(0.139)	(0.148)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	(0.478)
GDP pcg	0.123	0.081	**0.215***	**0.331***	0.083	0.130	0.173	**0.344*** **	**0.428*** **	0.340
	(0.215)	(0.535)	**(0.084)**	**(0.055)**	(0.522)	(0.176)	(0.209)	**(0.006)**	**(0.001)**	(0.123)
FDI Inflows	-0.067	-0.076	**-0.212*** **	**-0.261*** **	**-0.139** **	**-0.084***	-0.092	**-0.137** **	**-0.176*** **	**-0.168***
	(0.140)	(0.206)	**(0.000)**	**(0.001)**	**(0.021)**	**(0.058)**	(0.144)	**(0.018)**	**(0.003)**	**(0.097)**
Trade	**0.061*** **	**0.044*** **	**0.043*** **	**0.038*** **	**0.026*** **	**0.065*** **	**0.055*** **	**0.058*** **	**0.064*** **	**0.060*** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.002)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
Education	**-0.196*** **	**-0.222*** **	**-0.230*** **	**-0.187*** **	**-0.056** **	**-0.187*** **	**-0.191*** **	**-0.212*** **	**-0.157*** **	**-0.114** **
	(0.000)	**(0.000)**	**(0.000)**	**(0.000)**	**(0.044)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**	**(0.015)**
Gov. Effectiveness	0.059	-0.254	-0.170	-1.372	**-2.223*** **	**-1.259*** **	**-1.637** **	**-2.577*** **	**-5.260*** **	**-7.246*** **
	(0.902)	(0.691)	(0.777)	(0.101)	**(0.001)**	**(0.007)**	**(0.015)**	**(0.000)**	**(0.000)**	**(0.000)**
Manufacturing	**0.167*** **	-0.001	-0.065	**-0.289*** **	0.060	**0.091***	-0.059	0.002	-0.074	-0.021
	(0.002)	(0.988)	(0.325)	**(0.002)**	(0.392)	**(0.078)**	(0.423)	(0.966)	(0.270)	(0.855)
Pseudo R^2	0.341	0.330	0.284	0.195	0.1199	0.344	0.352	0.387	0.413	0.376
Observations	514	514	514	514	514	514	514	514	514	514

*,**,***: significance levels of 10%, 5% and 1% respectively. GDPpcg: GDP per capita growth. FDI: Foreign Direct Investment. Gov: Government. Lower quantiles (e.g., Q 0.1) signify nations where Wealth Inequality is least.

Table 4: Wealth Inequality and demographic variables

Panel A: Panel quantile

	Top 10% wealth Share					Top 1% Wealth Share		
	Q.10	Q.25	Q.50	Q.75	Q.90	Q.10	Q.25	Q.50
Age Dependency	0.276***	0.237***	0.253***	0.0962***	-0.118***	0.229***	0.186***	0.300***
	(0.003)	(0.000)	(0.003)	(0.008)	(0.000)	(0.003)	(0.003)	(0.027)
Old Age Dependency	-0.718***	-0.689***	-0.662***	-0.320***	0.073***	-0.615***	-0.595***	-0.916***
	(0.000)	(0.001)	(0.024)	(0.008)	(0.023)	(0.003)	(0.003)	(0.008)
Young Age Dependency	0.361***	0.330***	0.234***	0.110***	-0.061***	0.375***	0.260***	0.293***
	(0.002)	(0.008)	(0.016)	(0.001)	(0.000)	(0.009)	(0.031)	(0.002)
Working Population	-0.613***	-0.643***	-0.626***	-0.139***	**-0.197**	-0.455***	-0.436***	1.160***
	(0.000)	(0.001)	(0.003)	(0.007)	**(0.222)**	(0.000)	(0.002)	(0.180)
Population Growth	3.008***	2.411***	**1.422**	1.330***	**-0.234**	3.727***	3.181***	2.851***
	(0.009)	(0.019)	**(0.886)**	(0.004)	**(0.412)**	(0.008)	(0.001)	(0.327)
Fertility Rate	4.904***	5.000***	-6.519***	2.106***	-1.121***	5.364***	5.292***	4.303***
	(0.008)	(0.041)	(0.701)	(0.138)	(0.126)	(0.038)	(0.007)	(0.147)

Panel B: Panel IV quantile

	Top 10% wealth Share					Top 1% Wealth Share		
	Q.10	Q.25	Q.50	Q.75	Q.90	Q.10	Q.25	Q.50
Age Dependency	0.264***	0.210***	0.208***	-0.059***	-0.142***	0.232***	0.194***	0.195***
	(0.001)	(0.001)	(0.006)	(0.002)	(0.001)	(0.000)	(0.009)	(0.005)
Old Age Dependency	-0.640***	-0.742***	-0.650***	-0.249***	0.037***	-0.636***	-0.642***	-0.683***
	(0.000)	(0.001)	(0.003)	(0.001)	(0.001)	(0.001)	(0.000)	(0.002)
Young Age Dependency	0.426***	0.252***	0.221***	0.125***	-0.054***	0.331***	0.384***	0.300***
	(0.011)	(0.002)	(0.004)	(0.000)	(0.001)	(0.001)	(0.002)	(0.002)
Working Age	-0.462***	-0.569***	-0.389***	-0.090***	0.149***	-0.508***	-0.280***	-0.608***
	(0.004)	(0.000)	(0.013)	(0.005)	(0.001)	(0.000)	(0.002)	(0.004)
Population Growth	2.504***	2.614***	2.430***	1.405***	-0.383***	1.551***	3.771***	2.333***
	(0.002)	(0.003)	(0.047)	(0.001)	(0.004)	(0.014)	(0.016)	(0.069)
Fertility Rate	4.858***	5.087***	3.458***	2.663***	-0.790***	4.943***	5.661***	-1.000**
	(0.041)	(0.012)	(0.088)	(0.047)	(0.006)	(0.015)	(0.170)	(0.488)
Observations	514	514	514	514	514	514	514	514
Groups	40	40	40	40	40	40	40	40

4. Concluding implications and future research directions

This paper contributes to unify the puzzling effects of demographic change on inequality. To this end, use is made of quantile regressions to explore the effect of demographic characteristics on wealth share, besides macroeconomic and institutional factors. We use an unbalanced dataset of 43 countries collected from 2000 to 2014. Pooled and panel quantile estimations are analysed, which are proved to be robust of possible endogeneity. We find that population ageing and high size of working age population have an equalizing effect on wealth share at lower quantiles while high population growth, greater share of working population and rising fertility rate have similar effect but only at quantiles above 75. Furthermore, education, FDI inflows and government effectiveness consistently depict a

negative correlation with wealth inequality, whereas per capita GDP growth, trade openness and manufacturing share to GDP are found to be conducive to wealth inequality expansion.

From the policy perspective, increasing access to education and decent jobs are likely to improve equal wealth distribution in relatively young population context, which can be achieved through education and job creation. This is particularly the case of developing countries where quality education makes it possible for young people to access job markets. Moreover, educated workers are the potential beneficiaries of the skill and technology transfer from FDI inflows. Likewise, improved an institutional environment attracts FDI inflows, leading to job creation.

For the relatively old population context, characteristics of the developed world, the effect of upskilling might be ambiguous since unemployment is less pervasive. Instead, labour market adjustment can be effective in mitigating wealth inequality. This includes wage adjustment and work contract switch from temporary to permanent. In effect, Dolls et al. (2019) show that in the presence of population ageing, there exists a new labour market equilibrium in which a new wage and employment condition can reweight income distribution so as to reduce income inequality. In terms of employment condition, Fournier and Koske (2012) document that high share of working age with permanent employment tend to equalize income share. We, therefore conclude that government effectiveness is likely to ensure labour market adjustment in relatively old population context, which in turn contributes to reduce wealth inequality.

It is worth noting that the inference of this study relies on the within-quantile linearity assumption. However, demographic change undergoes complex dynamics, which may entail non-linear association between inequality and demographic variables. Therefore, extending this analysis to a nonlinear framework could shed further light on alternative inequality mitigating channels. This suggestion, *inter alia*, is a worthwhile future research direction.

Appendices

Appendix 1: Definitions and sources of variables

Variables	Definitions of variables	Sources
Wealth Inequality 1	Top ten percent wealth shares	Credit Suisse (2013, 2014)
Wealth Inequality 2	Top one percentile wealth share	Credit Suisse (2013, 2014)
Age Dependency	"This indicator is the ratio between the number of persons aged 65 and over (age when they are generally economically inactive) and the number of persons aged between 15 and 64. The value is expressed per 100 persons of working age (15-64)".	WDI (World Bank)
Old Age Dependency	"The old-age dependency ratio is the ratio of the number of elderly people at an age when they are generally economically inactive (i.e. aged 65 and over), compared to the number of people of working age (i.e. 15-64 years old)".	WDI (World Bank)
Young Age Dependency	"The young-age dependency ratio is the ratio of the number of young people at an age when they are generally economically inactive, (i.e. under 15 years of age), compared to the number of people of working age (i.e. 15-64)".	WDI (World Bank)
Population Growth	Population Growth" is the annual population growth rate. For year t, the annual population growth rate is the exponential rate of growth of midyear population from year t-1 to t, expressed as a percentage. Population is the number of all the residents regardless of legal status or citizenship	WDI (World Bank)
Working Population	"Working population" is the number of people of working age (i.e. 15-64 years old) as the percentage of the total population.	WDI (World Bank)
Fertility Rate	Fertility rate, total (births per woman)	WDI (World Bank)
GDP per capita	Gross Domestic Product Growth Rate (% of annual)	WDI (World Bank)
Foreign Investment	Net Foreign Direct Investment Inflows (% of annual)	WDI (World Bank)
Trade	Imports plus Exports of Goods and Services (% of GDP)	WDI (World Bank)
Education	"Gross enrollment ratio is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Secondary education completes the provision of basic education that began at the	WDI (World Bank)

	primary level, and aims at laying the foundations for lifelong learning and human development, by offering more subject- or skill-oriented instruction using more specialized teachers".	
Government Effectiveness	"Government effectiveness (estimate): measures the quality of public services, the quality and degree of independence from political pressures of the civil service, the quality of policy formulation and implementation, and the credibility of governments' commitments to such policies".	WGI (World Bank)
Manufacturing	Manufacturing, value added (% of GDP). Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs.	WDI (World Bank)

Note. WDI: World Development Indicators of the World Bank. WGI: World Governance Indicators of the World Bank.

Appendix 2: Summary Statistics

Variables	Mean	S.D	Min	Max	J.B	Obs
Wealth Inequality 1 (top decile)	62.936	8.389	46.800	84.800	28.58***	645
Wealth Inequality 2 (top percentile)	32.129	9.582	16.900	66.200	35.25***	645
Age Dependency	50.108	7.566	26.990	71.743	14.31***	645
Old Age Dependency	17.973	7.736	5.609	41.173	32.04***	645
Young Age Dependency	32.135	11.250	14.873	66.029	86.21***	645
Population Growth	0.877	0.697	-1.853	5.321	306.8***	645
Working Population	66.790	3.441	58.226	78.746	64.93***	645
Fertility Rate	1.890	0.564	0.901	3.811	89.67***	645
GDP per capita	2.221	3.138	-11.854	13.635	87.69***	645
Foreign Investment	4.955	7.878	-5.682	86.589	1.7e+04***	645
Trade	86.689	72.877	19.798	442.620	3290***	645
Education	98.842	18.969	44.871	162.299	86.32***	551
Government Effectiveness	0.994	0.845	-0.877	2.437	50.26***	602
Manufacturing value added	16.366	5.969	1.233	32.452	27.88***	639

S.D: Standard Deviation. Min: Minimum. Max: Minimum. Obs: Observations. JB: JarqueBera normality test statistics. ***: significance level of 1%

Appendix 3: Correlation matrix (uniform sample size: 514)

	Wealth Inequality		Demographic Change Variables						Control Variables					
	Top10%	Top1%	DepA	DepAO	DepAY	Popg	WPop	Fert	GDP	FDI	Trade	Edu	G.E	Manu
Top10%	1.000													
Top1%	0.924	1.000												
DepA	0.081	0.051	1.000											
DepAO	-0.601	-0.698	-0.183	1.000										
DepAY	0.459	0.506	0.743	-0.793	1.000									
Popg	0.314	0.332	0.471	-0.621	0.714	1.000								
WPop	-0.064	-0.026	-0.997	0.156	-0.723	-0.456	1.000							
Fert	0.378	0.407	0.805	-0.638	0.933	0.739	-0.786	1.000						
GDP	0.245	0.305	-0.122	-0.378	0.181	0.058	0.136	0.080	1.000					
FDI	-0.115	-0.082	-0.254	0.075	-0.208	-0.084	0.260	-0.179	0.078	1.000				
Trade	0.069	0.087	-0.431	0.058	-0.306	-0.062	0.453	-0.297	0.038	0.575	1.000			
Edu	-0.562	-0.620	-0.079	0.653	-0.493	-0.318	0.055	-0.361	-0.317	0.234	0.107	1.000		
G.E	-0.397	-0.579	-0.243	0.650	-0.592	-0.247	0.222	-0.457	-0.242	0.260	0.367	0.622	1.000	
Manu	0.177	0.207	-0.047	-0.369	0.221	0.137	0.056	0.143	0.303	-0.197	-0.069	-0.329	-0.266	1.000

Top 10%: Top 10% of the Wealthy. Top 1%: Top 1% of the Wealthy. DepA: Age Dependency. DepAO: Old Age Dependency. DepAY: Young Age Dependency. Popg: Population growth. Fert: Fertility rate. GDPpcg: Gross Domestic Product per capita growth. FDI: Foreign Direct Investment. Trade: Trade Openness. Edu: Secondary School Enrollment. G.E: Government Effectiveness. Manu: Manufacturing value added.

References

Asongu, S. A., (2015). "Long-term effects of population growth on aggregate investment dynamics: Selected country evidence for Africa", African *Journal of Economic and Management Studies*, 6(3), p. 225-250.

Asongu, S. A., Nnanna, J., & Acha-Anyi, P. N. (2020a). "Finance, inequality and inclusive education in Sub-Saharan Africa". *Economic Analysis and Policy*, *67*, pp. 162-177.

Asongu, S. A., Nnanna, J., & Acha-Anyi, P. N. (2020b). "Inequality and gender economic inclusion: The moderating role of financial access in Sub-Saharan Africa". *Economic Analysis and Policy*, *65*, pp. 173-185.

Asongu, S. A., & Odhiambo, N. M., (2019). "Inequality and the Economic Participation of Women in Sub-Saharan Africa: An Empirical Investigation", *African Journal of Economic and Management Studies*, 11(2), pp. 193-206.

Atkinson, A. B. (2003). "Income inequality in OECD countries: Data and explanations". *CESifo Economic Studies*, 49(4), pp. 479–513.

Bagchi, S., Curran, M., & Fagerstrom, M. J. (2019). "Monetary growth and wealth Inequality". *Economics Letters*, *182*, pp. 23-25.

Barth, D., Papageorge, N. W., & Thom, K. (2020). "Genetic endowments and wealth Inequality". *Journal of Political Economy*, *128*(4), pp. 1474-1522.

Benhabib, J., Bisin, A., & Luo, M. (2017). "Earnings inequality and other determinants of wealth inequality". *American Economic Review*, *107*(5), pp. 593-97.

Berisha, E., & Meszaros, J. (2020). "Macroeconomic determinants of wealth inequality Dynamics". *Economic Modelling*, *89*, pp. 153-165.

Bradley, D., Huber E, Moller, S., Nielsen, F., & Stephens J. D. (2003). "Distribution and redistribution in postindustrial democracies". *World Politics*, 55(2), pp. 193–228.

Breen, R., & Andersen S., (2012). "Educational assortative mating and income inequality in Denmark". *Demography*, 49(3), pp. 867–887.

Breen, R., & Salazar, L. (2011). "Educational assortative mating and earnings inequality in the United States". *American Journal of Sociology*, 117(3), pp. 808–843.

Burtless, G., (1999). "Effects of growing wage disparities and changing family composition on the U.S. income distribution". *European Economic Review*, 43(4–6), pp. 853–865.

Campanale, C. (2007). "Increasing returns to savings and wealth inequality". *Review of Economic Dynamics*, *10*(4), pp. 646-675.

Campante, F.R. & Do, Q. (2006). "Inequality, distribution and population". Department of Economics.
http://web.stanford.edu/group/peg/Papers%20for%20call/april06%20papers/Campante.pdf

Credit Suisse. (2013). "Global wealth report 2013". Zurich: Crédit Suisse. https://www.creditsuisse.com/about-us/en/reports-research/global-wealthreport.html

Credit Suisse. (2014). Global wealth report 2014. *Zurich: Crédit Suisse*. *https://www.credit-suisse.com/about-us/en/reports-research/global-wealthreport.html*

Davies, A. A., Huttner, D., Daigaku, Y., Chen, S., & Ulrich, H. D. (2008). "Activation of

ubiquitin-dependent DNA damage bypass is mediated by replication protein". *Molecular cell*, *29*(5), pp. 625-636.

De Nardi, M., & Fella, G. (2017). "Saving and wealth inequality". *Review of Economic Dynamics*, 26, pp. 280-300.

Dolls, M.,Doorley, K. Paulus, A., Schneider, H. & Sommer, E. (2019). "Demographic change and the European income distribution". *The Journal of Economic Inequality*, 17, pp. 337–357.

Elinder, M., Erixson, O., &Waldenström, D. (2018). "Inheritance and wealth inequality: Evidence from population registers". *Journal of Public Economics*, *165*, pp. 17-30.

Fournier, J.M. & Koske, I. (2012). "The determinants of earnings inequality: evidence from quantile regressions", *OECD Journal: Economic Studies*, 2012/1. http://dx.doi.org/10.1787/eco_studies-2012-5k8zs3twbrd8

Gornick J. C., & Jantti, M., (2013). Introduction. In: Gornick JC and Ja¨ntti M (eds) Income Inequality: Economic Disparities and the Middle Class in Affluent Countries. Stanford, CA: Stanford University Press, pp.1–47.

Hasan, I., Horvath, R., & Mares, J. (2020). "Finance and wealth inequality". *Journal of International Money and Finance*, 102161.

Kollmeyer, C. (2013). "Family structure, female employment, and national income inequality: A cross-national study of 16 Western countries". *European Sociological Review*, 29(4), pp. 816–827.

Lusardi, A., Michaud, P. C., & Mitchell, O. S. (2017). "Optimal financial knowledge and wealth inequality". *Journal of Political Economy*, *125*(2), pp. 431-477.

Nieuwenhuis, R., Van der Kolk, H., & Need. A., (2017). "Women's earnings and household inequality in OECD countries, 1973–2013". Acta Sociologica 60(1), pp. 3–20.

Martin M. A. (2006). "Family structure and income inequality in families with children, 1976 to 2000". Demography 43(3), pp. 421–445.

McCall. L., & Percheski, C. (2010). "Income inequality: New trends and research directions". *Annual Review of Sociology*, 36(1), pp. 329–347.

McLanahan, S. (2004). "Diverging destinies: How children are faring under the second demographic transition". *Demography*, 41(4), pp. 607–627.

Njangang, H., Asongu, S. A., Tadadjeu, S., Nounamo, Y., & Kamguia, B., (2022). "Governance in mitigating the effect of oil wealth on wealth inequality: a cross-country analysis of policy thresholds". *Resource Policy*, 76, June 2022, 102561

Njangang, H., Beleck, A., Tadadjeu, S., & Kamguia, B. (2021). "Do ICTs drive wealth inequality? Evidence from a dynamic panel analysis". *Telecommunications Policy*, 102246.

Odusola, A., Mugisha, F., Workie, Y. and Reeves, W. (2017). "Income Inequality and Population Growth in Africa in Income Inequality Trends in Sub-Saharan Africa: Divergence, Determinants and Consequences", Available at SSRN: https://ssrn.com/abstract=3101800

Organisation for Economic Co-operation and Development (2011). "Divided We Stand: Why Inequality Keeps Rising". Washington, DC: Organisation for Economic Co-operation and Development, and Brookings Institution Press.

Oxfam, A. (2016). Economy for the 1%. *Oxfam Briefing Paper*, *210*, 44.

Piketty, T. (2014). "About Capital in the 21st Century" (PDF), PSE Website. 31 DecemberProgress but Relative Decline." *Development Policy Review*, 22 (1), pp. 41-48.

Powell, D. (2015). "Quantile Regression with Nonadditive Fixed Effects". RAND Labor and Population Working Paper.

Powell, D. (2014). "Did the Economic Stimulus Payments of 2008 Reduce Labor Supply? Evidence from Quantile Panel Data Estimation". RAND Labor and Population Working Paper 710-3.

Schwartz, C. R. (2010). "Earnings inequality and the changing association between spouses' earnings". *American Journal of Sociology*, 115(5), pp. 1524–1557.

Tadadjeu, S., Njangang, H., Asongu, S., & Nounamo, Y., (2021). "Natural resources and wealth inequality: a cross-country analysis". *Journal of Economic and Administrative,* DOI: 10.1108/JEAS-05-2021-0099.

Tchamyou, V. S., Asongu, S. A., & Odhiambo, N. M. (2019a). "The role of ICT in Modulating the effect of education and lifelong learning on income inequality and economic growth in Africa". *African Development Review*, *31*(3), pp. 261-274.

Tchamyou, V. S., Erreygers, G., & Cassimon, D. (2019b). "Inequality, ICT and financial access in Africa". *Technological Forecasting and Social Change*, *139*, pp. 169-184.

Vandenbroucke, G.& Zhu, H. (2017). "Aging and wealth inequality". Federal Reserve Bank of St. Louis Economic Synopses, 2. https://doi.org/10.20955/es.2017.2

Western, B., Bloome, D., & Percheski, C., (2008). "Inequality among American families with children, 1975 to 2005". *American Sociological Review*, 73(6), pp. 903–920.

Zagel, H., & Breen, R., (2019). "Family demography and income inequality in West Germany and the United States". *Acta Sociologica*, 62(2), pp. 174–192.