

Economic Inequality in the Arab Region

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Abstract

The paper uses harmonized household survey micro-data to assess the levels and determinants of economic inequality in 12 Arab countries. It focuses on the sources of rural-urban, as well as metropolitan-nonmetropolitan, inequalities and applies the unconditional quantile regression decomposition technique to analyze the welfare gaps across the entire distribution. The analysis finds moderate inequality levels, with the Gini coefficient for the distribution of household real per capita total

expenditures ranging between 30.7 in Libya and 45 in Mauritania. Differences in households' endowments, such as demographic composition, human capital, and community characteristics, appear as the main sources of the urban-rural welfare gap. There is inequality between metropolitan and non-metropolitan regions in many countries, mainly because of differences in returns to households' characteristics and particularly returns to human capital.

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1. INTRODUCTION

Deteriorating standards of living, high and rising unemployment, and growing perceptions of exclusion were among the many reasons that prompted people in the Arab streets to rise in early 2011 and demand, *inter alia*, a new socioeconomic model of economic participation and development. That model, which was adopted by many countries in the region following their independence, saw the state as an instrument of social transformation, political mobilization and economic distribution. Up until the late 1980s this model has managed to produce remarkable improvements in human development indicators and a moderate incidence of poverty and income inequality (Page, 2007). These improvements were fueled by massive public investments in infrastructure, health and education, as well as state-owned enterprises, rising oil prices, intra-regional flows of capital and labor, and workers' remittances. By the early 1990s, only 9 percent of the population in the Arab region lived on less than \$1.25 per person a day, compared with 65 percent in East Asia and the Pacific, and 13 percent in Latin America and the Caribbean.¹

However, and beginning in the mid-1990s, as basic education and land ownership began to lose their importance in determining economic status, and as the public sector across the region became bloated, these gains started to unravel, ushering in different forms of rising inequality (Bibi and Nabli, 2009). Indeed, disparities among socioeconomic groups and along urban-rural and regional lines have widened. Inequality of opportunity in various economic and non-economic outcomes appears also to be a serious concern in the region (Belhaj Hassine, 2011; Assaad *et al.*, 2012).

The social and political unrest sweeping the Arab world has further deteriorated the economic and social situation and fueled perceptions of declining welfare of average citizens and rising inequality (AfDB, 2012). Understanding the factors that are driving economic inequality in the Arab countries is a critical issue, not just for equity and economic inclusion reasons, but also for political reasons. Even though the roots of the popular discontent go further than the economic factors and inequality, the latter are inextricably entwined and further exacerbate the tensions.²

This paper aims to contribute to this understanding by examining the extent and evolution of economic inequality and exploring the critical factors underlying distributional patterns in 12 Arab countries.

Considerable work has been undertaken on inequality and has helped to reach a better understanding of the economic processes behind its evolution at both the national and international levels. Two groups of studies can be distinguished: those that provide descriptive analyses of global (or world) inequality, mostly using secondary data, and empirical studies that are based on micro-data and focus on individual countries or groups of countries. Among the first group of research, a study by UNDP (2013) reveals that between 1990 and 2010, inequality has risen by 9 percent in developed countries and by 11 percent in developing countries.³ However, this increasing trend was not sustained over the two decades; following a continued increase since the beginning of globalization, the worldwide trend in inequality started to decrease from early 2000s (Cornia and Martorano, 2012; Milanovic, 2012).⁴ In addition, the changes in income disparities were not uniform across all regions. While inequality kept rising in Asian and European transition countries, income gaps have been narrowing in Sub-Saharan Africa and Latin America and the Caribbean countries. The Arab States did not exhibit a meaningful change in household income inequality, with the exception of Tunisia and Morocco where a slight increase in inequality was observed (UNDP, 2013, Kanbur, 2013). Economies that have witnessed the sharpest increase in inequality are mainly those that experienced vigorous growth and managed to graduate into higher income brackets. But this does not point to a direct positive link between growth and inequality, but rather to a non-inclusive growth pattern.⁵

There is evidence showing that above a certain threshold, inequality undermines growth and poverty alleviation efforts, and affects the length of growth spells (Chambers and Krause, 2010; Berg and Ostry, 2011). However, the welfare cost of inequality is likely to be even higher in relation to inter-group inequalities which lead to inter-generational transmissions of inequities and self-perpetuation of poverty, driving social tensions and conflicts (Stewart and Langer, 2007; Kabeer, 2010).

There is some literature that finds a positive association between, on the one hand, openness to trade and financial globalization, and, on the other, rising inequalities.

However, the literature also finds that national policy choices have contributed as well to exacerbating the adverse effects on welfare distribution. These include policies that biased public investments in infrastructure and services towards specific geographic regions at the expense of the rural and remote areas; the inefficient allocation of resources to basic services; and the limited institutional capacities among others (UNDP, 2013).

The second group of research comprises a wealth of empirical country-case studies as well as cross-country studies examining the extent and determinants of inequality, the interplay between income distribution, growth and poverty, and the political economy of inequality. However, few studies focused on the Arab countries due to lack of access and comparability of household surveys, and to the political sensitivity surrounding poverty and inequality issues in the region. Adams and Page (2003) used aggregate cross-country data and detailed country-case studies to examine poverty, inequality and economic growth trends in a number of Middle East and North African (MENA) countries over the period 1980 and 2000. The study found that a large number of Arab countries have managed to achieve low poverty levels and relatively equal income distribution in the face of stagnant economic growth. These successes were driven mainly by international migration and public employment. Similarly, Page (2007) found that during the 1980s and 1990s, the Middle East was among the lowest inequality regions in the developing world in terms of income distribution. Remittances from international migration and, to a lesser extent, government employment were the main driving forces behind the region distributional dynamics. But the study argued that these drivers may be running out of steam in the face of increasing barriers to migration and pressure towards privatization. In a review of the empirical literature on inequality in the Arab region, Bibi and Nabli (2009) show that, compared to other regions of the world, MENA has moderately high levels of inequality in terms of household expenditures. The authors report marked variations in the consumption expenditures distribution patterns across Arab countries, and indicate that Egypt, Syria and Kuwait tend to exhibit low levels of inequality while Morocco and Tunisia tend to have relatively high levels of inequality. The study suggests that the region is not performing better than Latin America in terms of economic equality when the inequality estimates are based on income, but the limited availability of micro-data on income precludes testing this.⁶ The authors argue that the region is also suffering

significant within-countries disparities in education and health particularly along spatial lines. Likewise, Boutayeb and Helmert (2011) found that despite improvements in social and human development indicators, sharp inequalities in health and education are persisting and even increasing along regional and urban-rural dimensions in many North African countries. In an analysis of equality of opportunity in educational achievement in MENA, Salehi-Isfahani *et al.* (2013) found high levels of inequality of opportunity even compared to Latin American countries. The community location characteristics of the schools appeared to be among the most important determinants of inequality in educational achievement in a number of countries, pointing to the potential importance of the regional dimension of inequality in these economies. Regional disparities in economic well-being have been also of concern in some studies on Arab countries. Shahateet (2006) found persistent and growing regional income inequalities in Jordan between 1997 and 2002. Another study on Jordan by Mansour (2012) revealed that despite the importance of regional income disparities in overall inequality, there was a slight decline in inequality between 2002 and 2010 mainly driven by a regional catching-up effect. Laithy *et al.* (2008) showed striking regional income differences in Lebanon despite the moderate levels of poverty and inequality at the national level.

Notwithstanding the contribution of these studies to advancing knowledge on inequality in the Arab World, there is a dearth of recent evidence on the extent and direction of change of inequality. Little is known as yet about how inequality compares across the Arab economies and how it has evolved during the recent years. Even though the countries have managed to keep their national inequality indicators at a moderate level, these may hide severe regional disparities and inter-groups inequalities. A number of studies have raised concerns over the issue of regional inequalities within each Arab country, but few have investigated it in detail and, in cases where they have, the studies limited themselves to a descriptive analysis.

This paper attempts to bridge some of these gaps by examining the levels and determinants of economic inequality in 12 Arab countries. The study draws on comparable and harmonized micro-data from 28 household surveys to analyze inequality in the distribution of household consumption expenditures. It devotes particular attention

to differences in the distributions of welfare between urban and rural, as well as metropolitan and nonmetropolitan, regions inside the Arab economies.

Specifically, the paper combines a descriptive analysis of inequality levels and trends and an empirical analysis of the sources of regional disparities. The first compares inequality measures between the Arab countries and over time on the basis of comparable consumption expenditure aggregates. It also examines the structure of inequality as it relates to the nature of the households within these countries. The second uses the Recentered Influence Function (RIF) regression approach proposed by Firpo, Fortin, Lemieux (2009) to decompose the urban–rural, and metropolitan-nonmetropolitan, gaps across the entire distribution of consumption expenditures and isolate the contributions of geographical differences in the distributions of household attributes from the differences in the returns to these attributes.

Understanding the differences in welfare distribution across geographic areas is essential for explaining overall inequality and addressing inequities in the region. If these differences contribute to growing inequality they may exacerbate regional imbalances and tensions by disintegrating underdeveloped areas. They would also strengthen the popular resistance to transition reforms that can be perceived as adversely affecting the neediest such as market-oriented policies and private sector development.

To the best of our knowledge this is the first paper providing an analysis of economic inequality in a large panel of Arab countries, which is entirely based on harmonized household survey micro-data and which offers a detailed analysis of regional inequalities inside the Arab countries.

Consistent with the findings of previous studies, the analysis reveals moderate levels of inequality in consumption expenditures with Gini coefficients varying from a low of 32 and less in Egypt and Libya to a high of 40 and over in Mauritania Tunisia and Yemen. Inequality appears to have persisted in most countries and seems to have increased in Mauritania, Syria and Yemen by the mid of the last decade. The analysis of the structure of inequality indicates that the family type, the geographical location of the household and, to a lesser extent, the level of education of the head are the most important determinants of overall economic inequality.

The differences in living standards between urban and rural areas appear to be mainly driven by the better endowment of urban households of marketable characteristics compared to their rural counterparts. On the other hand, the difference in many countries between metropolitan and non-metropolitan distributions appears to be the result of higher returns to household attributes in metropolitan regions.

Households in the urban areas and metropolitan cities who enjoy higher human capital endowments and better demographic characteristics were more able to take advantage of the favorable economic growth and reforms that many Arab countries experienced. Without additional policy actions and reforms, less well-endowed population might continue to experience as a steady widening in their welfare gap.

The rest of the paper is organized as follows: Section 2 briefly discusses Arab countries development experience and compares the region with international evidence on growth, employment, poverty and inequality. Section 3 contains an overview of the data and reports the inequality and static inequality decomposition results. Section 4 analyzes the sources urban-rural and interregional inequality. Section 5 concludes.

2. A BRIEF OVERVIEW OF THE DEVELOPMENT INDICATORS IN THE ARAB REGION

Poverty and inequality levels in the Arab countries began to improve in a dramatic way, albeit from low levels, following these countries' independence in the 1940s, and this trend continued unabated until the mid-1990s (Adams and Page, 2003, AfDB, 2012). By the end of the 1990s and onward, and despite a deceleration in the rate of improvement in inequality and poverty, their levels compared favorably with all other developing regions, save in the case of Europe and Central Asia (Table 1).⁷ This achievement took place despite the fact that growth in the Arab region lagged behind that in all the other developing countries' regions over the past two decades. This was also the case at the country level, except in the case of Yemen. As is evident from the data reported in Table 1, economic growth in Egypt, Tunisia and Jordan was higher than the region's average level and was coupled with a decrease in poverty and inequality; however, these are the very economies that have been suffering from the highest youth unemployment rates in the developing world.

Studies show that the success of these countries in achieving low poverty and broadly equitable growth owes a great deal to the post-independence development model that was adopted across the Arab region. This model included heavy reliance on state planning, import substitution policies, nationalization of private and foreign assets and a social contract where the state provided education, housing, health care and food subsidies. Rising oil prices, intra-regional flows of capital and labor, and workers' remittances fuelled these expenditures (Adams and Page, 2003; Bibi and Nabli, 2009). Thus, most sources of growth during this period were external.

Declining oil prices since the mid-1980s and until the early 2000s exacted a heavy toll on social expenditures, with commensurate deterioration on both the poverty and inequality fronts. Despite the recovery in oil prices during the early 2000s and the accompanying pick-up in economic growth in most of the countries in the region, the state-led economic model began to feel the burden of its weight: a bloated public sector with declining real wages and productivity combined with obstacles to migration to reduce employment opportunities for the rapidly expanding labor force. With these failures and the growing perceptions of widening inter-personal and regional welfare disparities, the need for a new development paradigm became evident. But the Arab countries are struggling with designing a new model and are caught

between the populations desire to keep the gains of the old model and the need to undertake substantial reforms to stimulate job generating growth. Most of the resistance to the reforms is emanating from the actual or perceived inequality that might be generated by the changes. A better understanding of the extent and sources of inequality in the Arab economies is essential for predicting the potential equity implications of the reforms and for helping draw popular support for the changes. These considerations make a deeper analysis of inequality, based on household survey data, all the more important for Arab countries.

TABLE 1. GROWTH, EMPLOYMENT, POVERTY AND INEQUALITY DATA BY SELECTED COUNTRIES AND DEVELOPING REGIONS

	GDP per capita (PPP, 2005 int. dollars)			Employment Rate			Youth Unemployment (% of tot. force ages 15-24)			Poverty Headcount (\$1.25/person/day)			Gini			Income Share to Lowest Quintile Group		
	Averages		% change	Averages		% change	Averages		% change	Averages		% change	Averages		% change	Averages		% change
	1990s	2000s		1990s	2000s		1990s	2000s		1990s	2000s		1990s	2000s		1990s	2000s	
<i>Selected Arab Countries</i>																		
Djibouti	2082.65	1879.59	-9.75%	n/a	n/a					18.84	n/a		39.96	n/a		6.03	n/a	
Egypt	3569.89	4983.68	39.60%	42.04	42.51	1.10%	21.75	27.34	25.69%	3.46	1.83	-47.11%	31.07	31.89	2.66%	9.11	9.05	-0.66%
Iraq	4162.15	3361.28	-19.24%	33.39	33.84	1.35%	n/a	n/a		2.82	n/a		n/a	30.86		8.70	n/a	
Jordan	3391.05	4533.21	33.68%	35.34	35.78	1.25%	n/a	28.74		2.14	0.43	-79.79%	39.89	36.46	-8.60%	6.78	7.45	10.00%
Lebanon	9247.58	10705.91	15.77%	39.77	42.09	5.85%	n/a	19.60					n/a	n/a				
Libya	12502.75	14018.68	12.12%	n/a	n/a								n/a	n/a				
Mauritania	1732.30	1956.43	12.94%	32.87	35.71	8.64%	n/a	n/a		33.10	23.33	-29.50%	43.67	40.25	-7.82%	5.78	6.17	6.78%
Palestine	1416.52	1222.43	-13.70%	30.39	30.68	0.95%	n/a	37.98		n/a	0.22		n/a	37.08		n/a	6.97	
Syria	3535.33	4180.12	18.24%	47.58	42.12	-11.48%	n/a	20.21		n/a	1.71		n/a	35.78		n/a	7.68	
Tunisia	5046.16	7422.76	47.10%	40.86	40.52	-0.83%	31.90	31.04	-2.69%	6.18	1.65	-73.23%	40.95	39.43	-3.71%	5.76	6.21	7.75%
UAE	68549.85	57776.87	-15.72%	72.84	74.44	2.20%	6.30	10.05	59.52%	n/a	n/a		n/a	n/a		n/a	n/a	
Yemen	1945.51	2263.70	16.35%	39.34	40.05	1.78%	18.30	30.95	69.13%	12.88	17.53	36.10%	33.44	37.69	12.71%	7.41	7.18	-3.10%
<i>Regional Aggregates (Developing Countries)</i>																		
Arab World	5827.27	7328.63	25.76%	42.38	43.06	1.60%	n/a	24.02		4.65	5.52	18.71%	37.80	38.52	1.90%	6.91	6.57	-4.92%
East Asia & Pacific	2015.00	4505.11	123.58%	72.89	69.12	-5.18%	n/a	n/a		43.42	18.04	-58.45%	39.04	38.60	-1.13%	6.45	6.10	-5.43%
Europe & C. Asia	5818.88	7890.88	35.61%	53.22	50.19	-5.69%	n/a	20.61		3.10	1.34	-56.73%	32.93	33.71	2.37%	7.59	7.62	0.40%
LAC	7639.26	8988.13	17.66%	58.64	60.59	3.33%	14.36	15.78	9.86%	10.89	7.69	-29.38%	51.81	52.47	1.27%	3.79	3.38	-10.82%
MENA	4650.15	5804.29	24.82%	40.17	40.33	0.41%	n/a	24.68		3.32	2.19	-34.04%	38.42	38.29	-0.34%	6.97	6.80	-2.44%
South Asia	1379.91	2278.74	65.14%	58.32	56.67	-2.83%	8.55	10.49	22.69%	50.34	36.02	-28.45%	35.21	35.45	0.68%	7.47	7.92	6.02%
Sub-Saharan Africa	1490.82	1782.57	19.57%	63.56	64.07	0.81%	n/a	n/a		55.24	51.06	-7.57%	46.65	44.83	-3.90%	4.81	5.62	16.84%

Inequality indicators by region are simple averages of country-level Gini coefficients, following Deininger and squire (1996).

Notes: The poverty line is in 2005 purchasing power parity (PPP) exchange rate. For Palestine: GDP is in 2005 constant US\$; 1990s averages are for the period 1994-1999 and 2000s averages are for 2000-2005.

Source: Author's calculations from World Development Indicators (2013) and PovCal World Bank databases.

3. DATA AND STATIC DECOMPOSITION OF INEQUALITY

The study uses 28 household income and expenditure surveys for 12 Arab countries, namely Djibouti, Egypt, United Arab Emirates (UAE), Iraq, Jordan, Lebanon, Libya, Mauritania, Palestine, Syria, Tunisia and Yemen. Table A.1, in the appendix, details the countries considered in the study along with the names and years of the surveys, the living standard indicators included (income and/or consumption expenditures) and the sample sizes.

A consistent analysis of the patterns of welfare distribution across countries and over time depends on the quality and comparability of the underlying surveys. Such consistency is hard to achieve in the case of household surveys, where methods of collection and data quality vary within and between countries and challenge the compilation of micro-data to common standards. Data driven variations in inequality measures may be misleadingly attributed to distributional differences. We try to harmonize the collected household surveys in accordance with current best practice and experts recommendations to produce comparable welfare and distribution estimates.⁸ The process involves the standardization of the different household characteristics, socio-demographic, and flow variables (income, consumption, etc.) in terms of conceptual content and coding structure on the basis of international standard definitions and classifications.⁹ We particularly ensure that the components of expenditures, and of income when available, are defined the same way across all datasets and that income and expenditure aggregates are as comparable as possible across all datasets. However, full harmonization and comparability are difficult to achieve due to differences in the surveys design such as the use of recall modules versus diary, the length of the recall period and the degree of commodity details. Although these differences affect living standards and distributional measures, their impact on inequality remains less significant than on poverty.¹⁰

As most available surveys only partially cover income items, we focus on consumption expenditures as a measure of welfare and further attempt to address the comparability issues through using different expenditure indicators.¹¹ Specifically, we consider three consumption expenditure aggregates: 1) one taking into account only food expenditures, including own-produced and in-kind food items; 2) a second including both food and nonfood items but excluding both rental housing and durable goods expenses; and 3) a third expenditure aggregate expanding the latter to include actual and imputed values of housing and durable goods expenditures.¹² However, payment of financial transactions and loans, taxes and mortgages,

sporadic expenditures on marriage dowries, births and funerals as well as the value of publicly provided goods are excluded. This is not to downplay their contribution to welfare, but it is difficult to estimate the value, or shadow prices, that reflects what some of these components are worth to the households. Likewise, it is difficult to smooth some lumpy and transitory expenditures to get a consistent assessment of average living standards and economic welfare (Deaton and Zaidi, 2002).

We estimate a set of inequality indicators based on real monthly household per capita consumption expenditures using the three alternative consumption expenditure aggregates and adjusting for temporal variations in cost of living by Consumer price indices (CPI).¹³

Table 2 presents mean and median real monthly household per capita consumption expenditures, in constant 2005 purchasing power parity (PPP) international dollars, along with Gini and Theil GE(1) inequality measures for each country and survey year.

TABLE 2. PER CAPITA HOUSEHOLD EXPENDITURE AND INEQUALITY MEASURES
(constant 2005 PPP international dollars)

	Food Expenditure				Expend. Food & Non-Durables				Total Expenditure			
	Mean	Median	Gini	Theil	Mean	Median	Gini	Theil	Mean	Median	Gini	Theil
Djibouti												
1996	61.10	52.66	29.43	15.03	133.17	103.11	37.83	25.76	167.23	128.44	38.63	27.04
2002	45.38	35.63	36.04	24.68	94.09	70.62	39.86	29.74	n/a	n/a	n/a	n/a
Egypt												
2000	50.94	43.35	26.18	12.13	97.34	75.21	33.45	22.74	108.49	83.78	34.05	24.07
2005	51.47	44.41	26.42	12.39	94.63	75.13	31.67	19.82	108.36	86.03	31.64	19.93
2009	39.81	35.11	25.98	11.81	84.10	68.39	30.56	18.50	99.64	79.89	31.46	20.45
Iraq												
2007	48.65	41.26	31.31	16.91	104.53	82.79	35.55	22.94	153.86	118.46	37.32	25.74
Jordan												
2002	67.42	56.33	32.27	18.01	146.08	116.81	35.11	21.66	182.60	145.51	35.46	22.07
2006	64.59	53.60	32.50	20.90	161.56	127.78	34.30	21.27	202.84	156.37	35.80	24.40
2008	69.98	58.85	30.83	16.72	160.98	128.99	32.63	18.86	199.33	155.74	33.96	20.99
Lebanon												
2004	78.12	65.01	30.82	16.88	308.54	233.14	38.69	26.55	358.22	272.58	38.41	26.34
Libya												
2003	53.84	44.78	31.72	19.22	103.32	87.34	31.22	17.74	141.11	118.29	30.69	16.87
Mauritania												
2000	45.62	35.49	38.85	28.12	55.40	41.72	40.76	31.36	57.13	42.78	41.15	32.04
2004	97.98	61.81	47.64	45.68	122.73	83.04	45.00	40.35	125.59	84.07	45.12	40.52
Palestine												
1996	43.12	37.35	29.50	14.86	106.94	86.79	35.25	22.44	133.80	106.07	35.47	22.72
1997	42.65	36.71	29.46	15.02	107.38	87.58	34.53	21.09	133.40	108.18	34.14	20.67
1998	43.62	35.94	32.30	18.92	106.28	85.32	35.21	22.72	132.94	106.48	34.59	21.82
2004	41.30	35.27	32.33	18.20	102.25	81.60	36.18	23.67	129.74	101.20	35.61	22.96
2005	42.14	35.89	31.39	16.57	110.11	86.12	36.92	24.13	141.80	108.78	37.44	24.76
2006	41.35	34.98	31.62	17.59	107.80	85.43	36.41	25.10	136.60	104.37	36.98	25.71
2007	39.67	33.95	32.55	18.68	101.72	77.65	39.13	27.17	130.03	95.76	39.70	28.74
2009	42.57	35.34	32.32	19.07	120.04	93.79	36.45	23.65	149.67	112.18	37.55	25.80
Syria												
1997	49.94	42.41	29.10	14.66	80.28	65.97	32.43	18.76	80.67	66.26	32.50	18.85
2004	77.66	62.93	32.70	19.30	139.44	104.61	37.63	26.73	159.6	122.02	36.29	24.65
Tunisia												
2005	75.96	63.24	33.28	20.94	168.31	124.31	40.55	30.05	217.91	158.76	41.40	32.61
2010	74.59	62.81	32.33	17.76	173.97	134.80	38.33	25.77	247.41	188.80	38.50	26.44
UAE												
2008	115.18	94.22	33.28	19.33	412.62	314.53	39.48	30.14	694.74	533.72	38.27	27.60
Yemen												
1998	51.38	43.13	32.65	18.28	93.17	77.04	33.49	19.76	105.82	77.04	38.24	28.44
2006	34.14	28.41	33.38	20.01	68.83	52.27	37.79	31.73	80.93	57.15	42.09	42.85

Note: we use PPP conversion factor for private consumption, provided by the World Bank, for all countries except Palestine and United Arab Emirates where we use PPP conversion factor for GDP.

Source: Author's calculations from national Household Income and Expenditure Surveys

Three main findings are revealed by Table 2. First, inequality estimates appear to differ across varying definitions of consumption expenditures and seem to increase with a more comprehensive measure of expenditures. The mean difference between total expenditures-based and food-based Gini coefficients is 4.8, ranging from -3 (for Mauritania 2004) to 9 (for Djibouti 1996 and Yemen 2006). Expanding the food and nonfood expenditure aggregates to include durable and housing expenses appears also to increase inequality for most countries, though the differences are not marked and do not exceed 0.6 on average. Therefore, variations in the nonfood and non-durable expenditure items included in consumption aggregates can affect the magnitude and comparability of the inequality estimates.¹⁴ The sensitivity of inequality measures to data definition is corroborated by the observed difference in the ranking of countries by inequality across the alternative expenditures aggregates (Atkinson and Brandolini, 2001).

Second, consistent with findings from the literature, the results indicate medium levels of inequality in the Arab countries, with total expenditures-based Gini coefficients ranging from less than 32 in Libya and Egypt to more than 40 in Mauritania, Tunisia and Yemen. Although some of the variations across countries can be due to the residual noise from incomplete harmonization of the datasets, we don't expect this effect to be very important. The comparability of these figures remain much higher than most of the inequality measures available for the Arab region, which rely most of the time on welfare aggregates calculated by the National Statistical Offices.

It is worth mentioning that inequality levels are likely more important than the figures reported above as the available surveys fail to sample the richest households and to capture the rising concentration of wealth among people at the top end of the distribution. Also, expenditure-based measures of inequality tend to underestimate income inequality since expenditure is closer to permanent income and is likely to be less dispersed than current income.¹⁵

Third, country rankings for per capita household consumption expenditure and for inequality appear to differ quite significantly. The evidence suggests that there is little relationship between the pattern of inequality and the average level of welfare per capita in a country. Also, welfare distributions tend to be skewed to the right for all the countries, particularly Tunisia, Lebanon and UAE. While relatively even and highly skewed distributions can be observed for countries at similar income levels, those in the highest income bracket tend to have higher skewed distributions.

Ranking the countries by their levels of per capita expenditures and of inequality, we observe on one hand countries struggling with low income and high inequality such as Djibouti, Mauritania and Yemen, and on the other hand better off countries with fairly higher levels of income and more equal welfare distributions such as Syria and Jordan. The three resource rich countries in the panel, Libya, Iraq and Syria, have fairly low levels of per capita consumption expenditures and low to moderate inequality, with Libya displaying the most equal welfare distribution.

The lack of availability of household surveys for different time periods limits the possibility of a dynamic analysis of the pattern of inequality. The few available data indicate an increase in inequality and income in Mauritania, Syria and (to a lower extent) Palestine, and a decrease in both variables in Egypt. Jordan and Tunisia appear to have experience an improvement in per capita welfare coupled with a slight decline in inequality, while in Djibouti and Yemen the economic situation seem to have worsened with the drop of welfare accompanied by widening disparities. These figures can only be indicative of the distributional trends given the short time span.

Turning to the analysis of the structure of inequality, we first carry out a standard decomposition technique to examine how the differences in households' characteristics affect the level of inequality across countries and over time.

We focus on eight family attributes: the gender, age, marital status, educational attainment, and employment status of the head, the regional location, urban/rural status and demographic composition of the household. The selection of these variables is based on the study by Ferreira *et al.* (2008) who conducted a similar decomposition for Brazil.

The gender of the household head is simply male or female. His age is split into five categories: (i) under 30, (ii) 30-39, (iii) 40-49, (iv) 50-59, and (v) 60+ years.

Five categories of the head marital status are also considered: (i) never married, (ii) married monogamous, (iii) married polygamous, (iv) divorced or separated, and (v) widowed.

The head educational attainment is classified into seven categories: (i) illiterate and read & write; (ii) primary; (iii) low secondary; (iv) secondary; (v) post-secondary or equivalent; (vi) university; and (vii) postgraduate. Four groups are considered for the head employment status: (i) employee; (ii) employer; (iii) self-employed; and (iv) other.

The urban/rural and regional locations are those used in the surveys. We tried to divide the geographical regions in large countries into Metropolitan, Northeast, Northwest, Center, Southeast, and Southwest.

Households are also grouped into six categories by the demographic types: (i) “one or two adults, no kids”, (ii) “one or two adults and less than three children”, (iii) “one or two adults and three children or more”; (iv) “three adults or more, no kids”, (v) “three adults or more, up to three kids”, (vi) “three adults or more, four kids or more”.

We measure the amount of inequality explained by a given characteristic or set of characteristics following the conventional decomposition method of Cowell and Jenkins (1995). As the most commonly decomposed measures in the inequality literature come from the General Entropy class, we use the mean log deviation, GE(0), in per capita monthly total consumption expenditure to identify the share of inequality explained by the between-group differences in the attributes listed above, which is denoted by R_B .¹⁶

The contribution of between groups inequality to overall inequality depends on the number and relative sizes of groups under examination which may cause comparability problems. To address this issue, Elbers *et al.* (2008) suggest an alternative measure based on normalizing observed between-group inequality by a benchmark of the maximum between-group inequality that could be obtained when the number and relative sizes of sub-groups under examination are fixed. We also use this alternative measure, denoted R_B^* , to complement the conventional between-group share R_B and provide a more comprehensive perspective on the importance of household characteristics in explaining income disparities within Arab countries.

The results, reported in Table 3, reveal quite important welfare disparities between socioeconomic groups and across spatial locations. Family composition, regional and urban/rural locations of the household appear as the most important determinants of overall economic inequality in the Arab countries. The share of total inequality explained by differences in households’ demographic composition ranges from the low of 9 percent in UAE to the high of 30 percent in Libya. The results indicate significant and widening gaps in mean incomes across family type groups in Palestine, Syria, Jordan and Egypt, where R_B exceeds 19 percent and keeps increasing, suggesting a high vulnerable situation for certain household types. Families with three or more dependent children, particularly those featuring more than two adults, have mean per capita incomes considerably below the average income. Despite the decline of the proportion

of these households, the rising contribution of households' composition to income discrepancy in many countries suggests that economic growth did not trickle down to these families which face increasing vulnerability and poverty risks.

Regional differences account for an important share in overall inequality in many Arab countries and appear to be meaningful in Egypt, Iraq and UAE where R_B exceeds 19 percent. Differences between urban and rural areas are also highly significant in many countries particularly Egypt, Mauritania and Tunisia where they explain between 14 and 26 percent of total inequality.

While a kind of regional and rural urban convergence is taking place in Egypt and Mauritania, the discrepancy between geographic regions and rural- urban zones seems to increase in in Jordan, Palestine, Syria and Tunisia.¹⁷ The welfare gap between rural and urban groups have widened also in Yemen despite a slight decrease of interregional inequality. In Jordan, households living in the center and the south of the country have seen deterioration in their mean per capita income compared to the rest of the population. These results are in line with the study by Mansour (2012) on Jordan, which reveals that regional consumption disparities are among the most important sources of inequality in the Kingdom. The study indicates also a decline inequality over time of economic inequality, but found a slight converge in consumption levels between governorates during the recent years.

In Syria, the increase of average incomes at the national level does not seem to have benefitted all the population groups evenly. Households living in the North of Syria (particularly those residing in Idlib) seem to continue to lag far behind the average income level in the country. Likewise, the Center West of Tunisia, the epicenter of the Arab revolt and where per capita income level is the lowest in the country, have seen a trivial improvement of average incomes over time despite the observed relatively important economic growth.

Besides the demographic and spatial dimensions, inequality among educational groups appears to significantly contribute to overall inequality in many countries. There is strong evidence of the important contribution of the educational attainment of the household head to welfare disparities in Egypt, Djibouti, Jordan, and Tunisia. Observed inequality between the seven education sub-groups accounts for between 13 percent and 29 percent of total inequality in Jordan and Egypt respectively. Although still highly significant, the share of inequality attributable to the household head education has fallen over time in Egypt.

The gender, age, employment and marital status of the household head appear to have a low explanatory power. The share of gender in the decomposition barely exceeds 1 percent and is due to the low share of women headed households in the sample and the particular status of women who head their own households. Most are widowed running their own business or benefitting from remittances from family abroad or married with a husband working outside in receipt of remittances. Poor divorced and widowed women live with family.

The age and marital status of the household head also have marginal explanatory powers, the R_B for both attributes is lower than 4 percent for all countries and years. The share of inequality attributable to the employment status of the head barely exceeds 6 percent in few countries mainly Djibouti and Jordan, suggesting that most inequality is occurring within sub-groups in different employment categories.

It is worth noting that the inequality shares based on the standard decomposition and the alternative measure R_B^* , based on the normalization by the maximum between-group inequality, are slightly different. While all R_B^* figures are higher than R_B figures, the differences are fairly small and the ranking of the countries in terms of the importance of the household attributes is pretty much the same for both measures, suggesting little impact of the relative sizes of the groups under examination.

Despite the moderate levels of overall economic inequality in the region, the pronounced and increasing spatial disparities in many countries are worrisome. The persistence of the regional divide and the rural–urban gap undermines inclusive growth prospects and may further jeopardize the already fragile social and political stability.

The decomposition in Table 3, while informative regarding the role played by certain household attributes, gives little information regarding the importance of interregional and urban–rural welfare gaps across the various quantiles of the distribution and about the sources of these gaps.

The next section attempts to address this drawback by analyzing the difference in the distribution of consumption expenditures between geographic locations, and by examining the contribution of households' characteristics to the gaps at different points of the welfare distribution.

TABLE 3. DECOMPOSITION OF INEQUALITY BY HOUSEHOLD ATTRIBUTES

	Education		Gender		Age		Employ. Status		Family type		Marital Status		Region		Urban/Rural	
	<i>Rb</i>	<i>Rb</i> *	<i>Rb</i>	<i>Rb</i> *	<i>Rb</i>	<i>Rb</i> *	<i>Rb</i>	<i>Rb</i> *	<i>Rb</i>	<i>Rb</i> *	<i>Rb</i>	<i>Rb</i> *	<i>Rb</i>	<i>Rb</i> *	<i>Rb</i>	<i>Rb</i> *
Djibouti																
1996	0.187***	0.268***	0.009*	0.017*	0.004	0.004	0.087***	0.132***	0.102***	0.114***	0.004	0.007	0.078***	0.126***	0.056***	0.169***
	(0.019)	(0.027)	(0.004)	(0.007)	(0.004)	(0.004)	(0.019)	(0.028)	(0.014)	(0.016)	(0.003)	(0.005)	(0.009)	(0.015)	(0.007)	(0.020)
2002	0.199***	0.274***	0.001	0.001	0.004***	0.004***	0.083***	0.126***	0.167***	0.186***	0.007***	0.012***	0.087***	0.128***	0.051***	0.185***
	(0.007)	(0.009)	(0.001)	(0.001)	(0.001)	(0.001)	(0.006)	(0.010)	(0.007)	(0.008)	(0.002)	(0.003)	(0.004)	(0.005)	(0.002)	(0.009)
Egypt																
2000	0.293***	0.359***	0.001*	0.002*	0.011***	0.012***	0.015***	0.019***	0.226***	0.241***	0.010***	0.019***	0.313***	0.394***	0.257***	0.436***
	(0.007)	(0.008)	(0.000)	(0.001)	(0.002)	(0.002)	(0.002)	(0.003)	(0.007)	(0.008)	(0.002)	(0.003)	(0.006)	(0.008)	(0.005)	(0.008)
2005	0.253***	0.305***	0.007***	0.012***	0.024***	0.027***	0.021***	0.025***	0.227***	0.241***	0.022***	0.041***	0.254***	0.328***	0.218***	0.352***
	(0.008)	(0.009)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)	(0.007)	(0.008)	(0.003)	(0.006)	(0.006)	(0.008)	(0.005)	(0.008)
2009	0.232***	0.285***	0.006***	0.010***	0.023***	0.026***	0.024***	0.030***	0.256***	0.274***	0.013***	0.029***	0.238***	0.311***	0.195***	0.322***
	(0.009)	(0.011)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.006)	(0.006)	(0.002)	(0.005)	(0.006)	(0.008)	(0.006)	(0.010)
Iraq																
2007	0.045***	0.051***	0.002	0.004	0.002	0.002	0.020***	0.024***	0.169***	0.189***	0.008***	0.016***	0.195***	0.217***	0.103***	0.187***
	(0.006)	(0.006)	(0.001)	(0.003)	(0.001)	(0.001)	(0.004)	(0.005)	(0.008)	(0.009)	(0.002)	(0.004)	(0.008)	(0.009)	(0.006)	(0.011)
Jordan																
2002	0.162***	0.175***	0.006	0.014	0.040***	0.046***	0.025**	0.031**	0.235***	0.257***	0.021*	0.046*	0.102***	0.132***	0.028**	0.066**
	(0.020)	(0.022)	(0.004)	(0.009)	(0.009)	(0.011)	(0.009)	(0.011)	(0.019)	(0.021)	(0.009)	(0.019)	(0.018)	(0.024)	(0.009)	(0.021)
2006	0.130***	0.140***	0.011*	0.027*	0.062***	0.069***	0.030**	0.042**	0.223***	0.240***	0.025**	0.055**	0.086***	0.115***	0.024***	0.052***
	(0.019)	(0.020)	(0.005)	(0.012)	(0.012)	(0.014)	(0.010)	(0.014)	(0.019)	(0.020)	(0.008)	(0.018)	(0.012)	(0.016)	(0.006)	(0.013)
2008	0.157***	0.167***	0.011*	0.024*	0.075***	0.084***	0.062***	0.086***	0.266***	0.284***	0.024**	0.036**	0.132***	0.172***	0.042***	0.091***
	(0.022)	(0.023)	(0.005)	(0.012)	(0.015)	(0.017)	(0.015)	(0.020)	(0.021)	(0.022)	(0.008)	(0.012)	(0.013)	(0.017)	(0.008)	(0.018)

TABLE 3. Continued

Lebanon																
2005	n/a	n/a	0.001	0.003	0.015***	0.017***	n/a	n/a	0.143***	0.155***	0.005*	0.009*	0.140***	0.160***	n/a	n/a
	n/a	n/a	(0.001)	(0.002)	(0.004)	(0.004)	n/a	n/a	(0.012)	(0.013)	(0.002)	(0.004)	(0.011)	(0.012)	n/a	n/a
Libya																
2003	0.022***	0.025***	0.010***	0.022***	0.045***	0.054***	0.001	0.001	0.302***	0.334***	0.022***	0.045***	0.010***	0.011***	0.004*	0.011*
	(0.004)	(0.004)	(0.003)	(0.006)	(0.005)	(0.006)	(0.001)	(0.001)	(0.010)	(0.011)	(0.004)	(0.007)	(0.002)	(0.003)	(0.001)	(0.004)
Mauritania																
2000	0.080***	0.158***	0.001	0.001	0.007*	0.008*	0.046***	0.059***	0.148***	0.170***	0.033***	0.050***	0.151***	0.184***	0.160***	0.271***
	(0.012)	(0.021)	(0.001)	(0.001)	(0.003)	(0.004)	(0.009)	(0.011)	(0.014)	(0.017)	(0.008)	(0.012)	(0.011)	(0.014)	(0.012)	(0.020)
2004	0.044***	0.065***	0.001	0.001	0.013**	0.015**	0.012**	0.014**	0.103***	0.113***	0.003	0.005	0.005*	0.006*	0.007*	0.012*
	(0.009)	(0.013)	(0.001)	(0.002)	(0.004)	(0.005)	(0.004)	(0.005)	(0.012)	(0.013)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)
Palestine																
1996	0.079***	0.089***	0.002	0.006	0.007*	0.008*	0.026***	0.033***	0.205***	0.226***	0.015***	0.036***	0.083***	0.144***	0.126***	0.154***
	(0.011)	(0.013)	(0.002)	(0.005)	(0.003)	(0.004)	(0.007)	(0.009)	(0.013)	(0.014)	(0.004)	(0.009)	(0.010)	(0.017)	(0.012)	(0.015)
1997	0.043***	0.048***	0.004	0.013	0.012*	0.013*	0.017***	0.020***	0.210***	0.234***	0.015***	0.034***	0.075***	0.129***	0.147***	0.180***
	(0.008)	(0.009)	(0.003)	(0.009)	(0.005)	(0.005)	(0.004)	(0.005)	(0.012)	(0.014)	(0.004)	(0.010)	(0.010)	(0.018)	(0.014)	(0.018)
1998	0.027***	0.030***	0.011*	0.030*	0.024***	0.027***	0.006*	0.007*	0.190***	0.214***	0.018**	0.039**	0.083***	0.143***	0.134***	0.164***
	(0.007)	(0.008)	(0.005)	(0.015)	(0.007)	(0.008)	(0.003)	(0.004)	(0.016)	(0.018)	(0.006)	(0.013)	(0.011)	(0.019)	(0.013)	(0.017)
2004	0.073***	0.080***	0.012*	0.036*	0.040***	0.044***	0.022**	0.029**	0.187***	0.209***	0.023***	0.054***	0.020**	0.033**	0.009*	0.011*
	(0.012)	(0.013)	(0.005)	(0.015)	(0.011)	(0.012)	(0.008)	(0.011)	(0.017)	(0.019)	(0.007)	(0.016)	(0.006)	(0.011)	(0.004)	(0.005)
2005	0.063***	0.067***	0.006	0.018	0.022**	0.024**	0.019*	0.024*	0.176***	0.194***	0.012	0.031	0.039***	0.062***	0.033***	0.042***
	(0.013)	(0.014)	(0.004)	(0.012)	(0.007)	(0.008)	(0.008)	(0.010)	(0.018)	(0.020)	(0.006)	(0.016)	(0.010)	(0.016)	(0.008)	(0.011)
2006	0.068***	0.073***	0.001	0.001	0.052**	0.058**	0.046**	0.052**	0.192***	0.211***	0.010	0.023	0.051***	0.082***	0.028**	0.035**
	(0.018)	(0.020)	(0.002)	(0.004)	(0.019)	(0.021)	(0.014)	(0.016)	(0.030)	(0.033)	(0.006)	(0.013)	(0.014)	(0.022)	(0.010)	(0.012)
2007	0.059***	0.064***	0.010	0.027	0.042*	0.046*	0.059***	0.074***	0.159***	0.175***	0.012	0.027	0.126***	0.206***	0.030**	0.037**
	(0.017)	(0.018)	(0.007)	(0.019)	(0.016)	(0.018)	(0.016)	(0.020)	(0.019)	(0.021)	(0.008)	(0.017)	(0.021)	(0.035)	(0.010)	(0.013)
2009	0.060***	0.063***	0.007*	0.018	0.046***	0.051***	0.038***	0.049***	0.195***	0.211***	0.019***	0.046***	0.052***	0.083***	0.007**	0.009**
	(0.010)	(0.011)	(0.004)	(0.009)	(0.009)	(0.010)	(0.010)	(0.013)	(0.018)	(0.020)	(0.005)	(0.012)	(0.011)	(0.019)	(0.002)	(0.003)

TABLE 3. *Continued*

Syria																
1997	0.031*** (0.003)	0.037*** (0.003)	0.004*** (0.001)	0.011*** (0.003)	0.016*** (0.002)	0.018*** (0.003)	0.014*** (0.002)	0.018*** (0.003)	0.146*** (0.006)	0.161*** (0.007)	0.010*** (0.002)	0.022*** (0.004)	0.007*** (0.001)	0.008*** (0.001)	0.009*** (0.002)	0.017*** (0.003)
2004	0.066*** (0.004)	0.074*** (0.004)	0.009*** (0.001)	0.022*** (0.003)	0.025*** (0.002)	0.028*** (0.003)	0.035*** (0.003)	0.042*** (0.003)	0.196*** (0.006)	0.211*** (0.006)	0.020*** (0.002)	0.046*** (0.005)	0.034*** (0.002)	0.038*** (0.003)	0.054*** (0.003)	0.086*** (0.005)
Tunisia																
2005	0.203*** (0.014)	0.228*** (0.015)	0.001 (0.001)	0.002 (0.001)	0.008** (0.003)	0.010** (0.004)	0.041*** (0.004)	0.054*** (0.005)	0.147*** (0.009)	0.158*** (0.009)	0.001 (0.001)	0.003 (0.002)	0.104*** (0.007)	0.112*** (0.008)	0.142*** (0.007)	0.254*** (0.013)
2010	0.227*** (0.012)	0.249*** (0.013)	0.000 (0.000)	0.000 (0.000)	0.010*** (0.002)	0.014*** (0.003)	0.037*** (0.005)	0.043*** (0.006)	0.120*** (0.007)	0.132*** (0.008)	0.001 (0.001)	0.006 (0.004)	0.135*** (0.006)	0.152*** (0.007)	0.144*** (0.006)	0.333*** (0.014)
UAE																
2008	0.091*** (0.013)	0.093*** (0.013)	0.001 (0.001)	0.003 (0.003)	0.004 (0.003)	0.005 (0.003)	0.052*** (0.012)	0.101*** (0.025)	0.093*** (0.007)	0.103*** (0.008)	0.024*** (0.003)	0.038*** (0.005)	0.185*** (0.010)	0.210*** (0.012)	NA	NA
Yemen																
1998	0.090*** (0.007)	0.145*** (0.011)	0.000 (0.000)	0.000 (0.001)	0.012*** (0.002)	0.014*** (0.003)	0.016*** (0.003)	0.021*** (0.004)	0.116*** (0.007)	0.131*** (0.008)	0.003* (0.002)	0.006* (0.003)	0.118*** (0.006)	0.136*** (0.007)	0.124*** (0.006)	0.209*** (0.011)
2006	0.089*** (0.011)	0.113*** (0.015)	0.004 (0.005)	0.010 (0.012)	0.006 (0.003)	0.006 (0.004)	n/a n/a	n/a n/a	0.101*** (0.013)	0.121*** (0.016)	0.012* (0.006)	0.02* (0.010)	0.092*** (0.010)	0.106*** (0.012)	0.140*** (0.016)	0.250*** (0.027)

* Significant at the 10 percent level; ** significant at the 5 percent level; *** significant at the 1 percent level.

Notes: R_B and R_B^* are respectively the conventional and alternative shares of between-group inequality computed using the mean log deviation in per-capita monthly total consumption expenditure for each country and year. Numbers in parentheses are bootstrap standard deviations based on 100 replications. n/a is not available.

Source: Author's calculation based on harmonized data from national household surveys.

4. UNCONDITIONAL QUANTILE REGRESSION MODEL AND SOURCES OF INEQUALITY

This section analyzes the sources of inequality between rural and urban areas and between metropolitan and non-metropolitan locations. It applies the unconditional quantile regression method to understand how the difference in the distributions of observed household characteristics between the locations contribute to the welfare gap and how the marginal effects of these characteristics vary across the entire distribution.

Popular approaches used in the decomposition of distributional statistics and the analysis of the sources of inequality include the standard Oaxaca–Blinder decomposition method, the reweighting procedure of DiNardo, Fortin, and Lemieux (1996) and the quantile-based decomposition approach of Machado and Mata (2005). The main drawback of the Oaxaca–Blinder technique is that it applies the decomposition to only the mean welfare differences between two population sub-groups and yields an incomplete representation of the inequality sources. The other conventional methods extend the decomposition beyond the mean and permit the analysis of the entire distribution, nevertheless they all share the same shortcoming in that they involve a number of assumptions and computational difficulties (Fortin *et al.*, 2010).

The Recentered Influence Function (RIF) regression approach recently proposed by Firpo, Fortin and Lemieux (2009, 2010) addresses these shortcomings and provides a simple regression-based procedure for performing a detailed decomposition of different distributional statistics such as quantiles, variance and Gini coefficient. The RIF-regression model is called unconditional quantile regression when applied to the quantiles. The technique consists of decomposing the welfare gaps at various quantiles of the unconditional distribution into differences in households endowment characteristics such as education, age, employment etc., and differences in the returns to these characteristics. These components are then further decomposed to identify the specific attributes which contribute to the widening welfare gap.

We apply the RIF unconditional quantile regression to examine the rural-urban as well as the metropolitan-nonmetropolitan welfare differentials at various points of the distribution. The procedure is carried out in two stages. The first stage consists of estimating unconditional quantile regressions on log real per capita monthly household expenditure for rural and urban (metropolitan and non-metropolitan) households, then constructing a counterfactual

distribution that would prevail if rural (non-metropolitan) households have received the returns that pertained to urban (metropolitan) area. The comparison of the counterfactual and empirical distributions allows to estimate the part of the welfare gap attributable to households characteristics differentials, the *endowment effect*, and the part explained by differences in returns to characteristics, the *return effect*. The second stage involves dividing the *endowment* and *return* components into the contribution of each specific characteristic variable.

The method can be easily implemented as a standard linear regression, and an ordinary least squares (OLS) regression of the following form can be estimated:

$$RIF(y, Q_\theta) = X\beta + \varepsilon \quad (1)$$

where y is log real per capita monthly household expenditure, and $RIF(y, Q_\theta)$ is the RIF of the θ^{th} quantile of y estimated by computing the sample quantile Q_θ and estimating the density of y at that point by kernel method.¹⁸ X is the regressors matrix including the intercept, β is the regression coefficient vector and ε is the error term. The regressors include four groups of variables selected on the basis of previous studies on inequality and data availability. The variables are included individually in the regression model and the contribution to inequality is evaluated for each specific characteristic variable and each group of variables separately. The four groups include: (1) the household demographic and general characteristics variables including household size, the proportion of household members aged below fourteen years and the proportion of those aged over 65 years (to measure the dependency ratio), the main sources of household income, and the gender of the household head; (2) the household human capital measured by the number of years of schooling of the more highly educated of the head or his spouse, the squared schooling years, the head's years of experience and the squared experience. The choice of the years of schooling variable is motivated by capturing the influence that family members with more education may have in household decision making; (3) the household head attributes variables which include a dummy variable indicating whether the head is over 65 years old and a dummy to indicate if he is polygamous. The variables also include the employment, activity and occupation status of the head as well as his sector of employment; and (4) external factors to the household capturing the community characteristics such as access to transportation, schooling and hospital facilities as well as geographic location fixed effects.¹⁹

We estimate model (1) for the 10th to 90th quantiles and use the unconditional quantile regression estimates to decompose the rural-urban inequality as well as the metropolitan-nonmetropolitan inequality into a component attributable to differences in the distribution of characteristics and a component due to differences in the distribution of returns as follows:

$$\hat{Q}_\theta^i - \hat{Q}_\theta^{i'} = \{\hat{Q}_\theta^i - \hat{Q}_\theta^*\} + \{\hat{Q}_\theta^* - \hat{Q}_\theta^{i'}\} = (\bar{X}^i - \bar{X}^{i'})\hat{\beta}_\theta^i + \bar{X}^{i'}(\hat{\beta}_\theta^i - \hat{\beta}_\theta^{i'}) \quad (2)$$

where \hat{Q}_θ is the θ^{th} unconditional quantile of log real per capita monthly household expenditures, \bar{X} represents the vector of covariate averages and $\hat{\beta}_\theta$ the estimate of the unconditional quantile partial effect. Superscripts i , i' and $*$ designate respectively the urban (or metropolitan), rural (or nonmetropolitan) and counterfactual values.²⁰

$\hat{Q}_\theta^* = X^{i'}\hat{\beta}^i$ is the counterfactual quantile of the unconditional counterfactual distribution which represents the distribution of welfare that would have prevailed for group i' (rural/non-metropolitan households) if they have received group i (urban/metropolitan households) returns to their characteristics.²¹

The first term on the right-hand side of equation (2) represents the contribution of the differences in distributions of household characteristics to inequality at the θ^{th} unconditional quantile, denoted *endowment effect*. The second term of the right-hand side of the equation represents the inequality due to differences (or discrimination) in returns to the household characteristics at the θ^{th} unconditional quantile,

The *endowment* and *return* effects can be further decomposed into the contribution of individual specific households characteristics as follows:

$$\hat{Q}_\theta^i - \hat{Q}_\theta^* = \sum_k (\bar{X}_k^i - \bar{X}_k^{i'})\hat{\beta}_{\theta,k}^i \quad \text{and} \quad \hat{Q}_\theta^* - \hat{Q}_\theta^{i'} = \sum_k \bar{X}_k^{i'}(\hat{\beta}_{\theta,k}^i - \hat{\beta}_{\theta,k}^{i'}) \quad k:1\dots K \quad (3)$$

where k designates the individual specific household characteristics.

The following two subsections respectively discuss the decomposition results of the rural-urban gaps and the metropolitan-nonmetropolitan inequality.

4.1. Analysis of rural-urban inequality

Estimates of the decompositions represented by Equation (2) and (3) are displayed in Figure A.1 and Table A.2 in the appendix. In the interest of space, we present the decomposition

results only for a selected number of countries where urban-rural inequality is most pronounced. Fig. A.1 illustrates the returns effects and endowment effects for Egypt, Iraq, Syria, Tunisia and Yemen for quantiles 10 to 90, with 95% confidence bounds. Several features of these graphs stand out. First, the endowment effects appear to significantly dominate the returns effects for Egypt, Syria 2004 and Tunisia indicating that urban households are better off because they have superior characteristics than their rural counterparts. Likewise, the endowment effects dominate at the bottom part of the welfare distribution, below the median, for Iraq. In Yemen, the returns effects appear to strongly dominate the endowment effects particularly at the lower and higher extremes of the distribution, indicating that for the poorest and the most well-off the welfare gap is mainly explained by the difference between rural and urban rewards for household characteristics.²²

Second, in most countries the welfare gap between urban rich and rural rich households is larger than the gap between the urban poor and rural poor ones. This is mainly driven by higher endowment and returns effects at upper quantiles.²³ In Iraq the endowment effects seem to decline at higher quantiles while the returns effects slightly increase suggesting that the country's urban poor and lower middle class households enjoy higher characteristics than the rural ones, whereas rural better-off families tend to be discriminated against compared to urban families with similar characteristics.

Third, the inspection of the welfare differentials over time show a decrease of the rural-urban gap in Egypt and a widening of the gap in Syria, Tunisia and Yemen. The decline of rural-urban inequality in Egypt between 2000 and 2009 is mainly due to a narrowing of the gap in household endowments between the two areas particularly for the poorest classes. However, the returns effects appear to increase between the two periods and show that the reward differential of the household characteristics has widened over time for population at the lower and middle tail of the welfare distribution. This suggests that despite an improvement in endowments of less well-off rural households, these face currently higher discrimination with regard to the returns to their endowments.

In Syria the significant widening of rural-urban gap between 1997 and 2004 is mainly due to an important increase of households' endowments differential. In Tunisia, the endowment effects appear to contribute proportionately more to widening the gap at middle quantiles while the contribution of returns effects to the increase of rural-urban inequality is higher at

the lowest and highest tails of the distribution. In Yemen the magnitude of the endowment effects considerably increased between 1998 and 2006 particularly for the poor and less well-off indicating significantly wider rural-urban differentials in households' characteristics. The slope of the returns effects generally declined between the two periods, showing that despite the dominance of returns effects they contributed proportionately less to the increase in the gap at higher quantiles.

Table A.2 reports, in addition to the overall endowment and returns effects, the contribution of each individual covariate (or group of covariates) to these two effects.

The findings reveal that differences in the distribution of household demographic and general characteristics matter the most for inequality between rural and urban households at the lower end of the welfare distribution. The household human capital, measured by education and head experience, followed by the geographic location and community characteristics are found to be the most important factors accounting for the gaps among rural-urban middle class and better-off households.

The returns to education and head experience appear to be the dominant factor accounting for rural-urban differences in returns to household characteristics.

The inspection of the change of the distribution of household covariates over time reveals a decline of the contribution of household human capital to the rural-urban welfare gap in Egypt. However, differences in households' human capital, between the two sectors, appear to have widened over the years in Syria, Tunisia and Yemen. On the other hand, the effect of the returns to household human capital is found to decline for the middle class and better-off households in Egypt and Syria, and to significantly increase in Tunisia and Yemen, for the same population categories, indicating that in these latter countries urban markets are now paying more for educational and experience attributes than rural markets would.

These results suggest that the development policies in the Arab countries contributed to a marked reduction of the difference in endowments between urban and rural households, at the lower and middle end of the distribution, in Egypt mainly through improvement of human capital and of access to basic services. These policies do not seem to have been effective in Syria, Tunisia and Yemen where the endowment gaps increased strikingly, particularly for poor and middle class households. The differences in education and access to basic services appear to have particularly widened of middle class Tunisian households. The reforms

towards market economy, implemented in Egypt and Tunisia during the late 1990s, seem to have been more beneficial to urban households who were better endowed in human capital at the time of the reforms. Liberalization appears to have contributed to a faster increase of the returns to urban households, particularly with regard to their education and experience, driving a wider difference between urban and rural rewards for human capital.

4.2. Analysis of metropolitan-nonmetropolitan inequality

Figure A.2 and Table A.3 in the appendix report the decomposition results of metropolitan-nonmetropolitan inequality. The welfare gap between metropolitan and nonmetropolitan households appears to be larger at higher quantiles in Egypt, Jordan, UAE and Yemen, mainly driven by proportionately larger differences in returns.²⁴ In Tunisia, Syria and Iraq, the interregional inequality seems higher between poorer households. The relatively lower inequality between well off metropolitan and nonmetropolitan households in these countries, seems to be mainly caused by the contraction of the differences in returns at higher quantiles.

Figure A.2 shows that the returns effects significantly dominate the endowment effects in UAE, Yemen 1998, Egypt middle and upper quantiles, and Iraq lower quantiles, suggesting that what makes metropolitan households better off than their nonmetropolitan counterparts, in these countries, is due more to the difference in the rewards of household characteristics between the two regions.²⁵ Even though metropolitan households enjoy higher characteristics, the inequality is mainly explained by the higher reward of these characteristics in capital cities. On the other hand, the endowment effects dominate the returns effects in Jordan 2008, Syria 2004, Tunisia and the bottom part of the welfare distributions in Egypt indicating that the metropolitan-nonmetropolitan welfare gap is mainly due to difference in household characteristics between the two regions.

The evolution of regional inequality over time shows a narrowing of the welfare gap across the entire distribution in Egypt and Yemen mainly driven by a decline of differences in endowment effects in the former and a considerable decrease of returns effects in the latter. However, poor households in Egypt appear to face higher discrimination in nonmetropolitan markets over time with regards to the returns to their characteristics. Likewise, we observe a decline of welfare disparity over time in Jordan at the lower and middle end of the distribution

despite an increase of the differences in household endowments between the two regions. The returns effects appear to significantly increase over time and dominate towards the top of the distribution resulting in higher inequality between well-off metropolitan and nonmetropolitan households. Syria exhibits an important increase in interregional inequality over time, particularly for households at the lower and middle end of the welfare distribution, primarily due to a widening of the gap in endowments between metropolitan and nonmetropolitan households. In Tunisia, interregional disparity in endowments seems to increase over time for the middle class, while the difference in returns to household characteristics appears to increase over time for the poor and well-off population.

Table A.3 shows that household general characteristics followed by human capital are the most important factors accounting for the disparity in endowments between metropolitan and nonmetropolitan households, but human capital exceeds the importance of general characteristics in UAE, Yemen and upper quantiles in Tunisia. Also, the contribution of education and head experience appears to decline over time in general, suggesting a semblance of convergence in human capital endowments between metropolitan and nonmetropolitan households. On the other hand, returns to human capital is found to be the dominant factor accounting for differences in returns in most countries and its contribution appears to increase over time in Egypt, Tunisia and Yemen.

5. CONCLUSION

Inequality has been prominent in the debates surrounding the events in the Arab region. Whether or not inequality has played a causal role in Arab Spring is difficult to ascertain, but the demand for more equity and inclusion has brought the economic inequality issue to the front burner of Arab governments' attentions. Although a number of studies have investigated inequality and its determinants for some Arab countries, the literature on this issue remains limited. This paper attempts to address the knowledge gap and contribute to the understanding of the extent, evolution and determinants of consumption expenditure inequality in different Arab countries and to examine the sources of inequality between rural urban areas and regional locations.

The analysis draws on harmonized micro-data from 28 household surveys for 12 Arab countries to assess inequality levels and changes over time, and to examine the sources and

structure of inequality. Given the importance of the regional disparities and imbalances in many Arab countries and their significant contribution to social unrest, the paper devotes a special attention to the analysis of rural-urban, as well as metropolitan-nonmetropolitan, inequality across the entire welfare distribution and attempts to draw some policy implications for the design of strategies to address inequality and promote equity.

Inequality, measured by the Gini coefficient for the distribution of household monthly real per capita total consumption expenditures, is found to range between 31 percent in Libya and Egypt to more than 40 percent in Mauritania, Tunisia and Yemen. Arab Spring countries exhibit varying patterns of income and inequality, with low income and low inequality in Egypt, low income and high inequality in Yemen, medium income and low inequality in Libya, medium income and medium inequality in Syria, and relatively high income and inequality in Tunisia. This suggests no strong direct causal effects of income inequality on Arab revolt.

The standard decomposition of inequality reveals that households' demographic composition, education of the head, and regional and urban-rural locations are the most important determinants of overall inequality in the Arab region. Families with three or more dependent children, in particular, are found to face severe hardships.

Regional and urban-rural locations of households appear to significantly contribute to welfare disparity in many Arab countries and their importance seems to increase over time in a number of countries. The persistence of the interregional divides is of serious concern for social cohesion and inclusive growth prospects in the region.

To gain a better understanding of the sources of inequality between rural and urban areas and between metropolitan and non-metropolitan locations, the paper uses the RIF unconditional quantile regression to examine inequality in log monthly real per capita total expenditure across the entire distribution. We decompose the welfare gap at each quantile into the contribution of differences in the distributions of observed household characteristics, and the contribution of differences in the distributions of returns to these characteristics.

The analysis of rural-urban inequality shows that the endowment effects dominate the returns effects and that both effects are larger at higher quantiles in most countries, indicating higher welfare gaps between better-off rural and urban households. Despite rural development attempts by Arab governments, urban households continue to be much better endowed than

their rural counterparts and this explains most of the welfare gap between the two areas. The endowment effects appear to more strongly dominate at the bottom and middle tails of the distributions, suggesting that differences in household characteristics have proportionately stronger effects on inequality for poor and middle class households.

The difference in household demographic characteristics are found to matter the most for inequality between poor rural and urban households, while human capital and community characteristics are the most important factors accounting for the gaps among rural-urban middle class and better-off households. Except in Egypt, the endowment effects appear to increase over time mainly due to a worsening of the demographic attributes of rural households and the deterioration of rural communities' characteristics. While the results suggest a process of welfare convergence over time between rural and urban areas in Egypt, mainly due to a decrease of the differences in households' endowments in human capital, the disparity in returns to the characteristics appears to increase particularly for less well-off households. This suggests that the improvement of the education levels in rural areas is not necessarily followed by an improvement of the returns to education and that urban markets better reward human capital attributes than rural markets would.

The results of the decomposition of metropolitan-nonmetropolitan inequality are mixed, the findings reveal different patterns of the endowment and returns effects across Arab countries. The returns effects are found to dominate the endowment effects particularly at the middle and upper quantiles in a number of countries such as Egypt, UAE, and Yemen suggesting that although metropolitan households enjoy higher characteristics, the inequality in these countries is mainly explained by the higher reward of these characteristics in capital cities. On the other hand, the findings for the other countries, in particular Syria and Tunisia, reveal that the regional welfare gap is primarily explained by the differences in households' endowments and that metropolitan households are better off than their counterparts in the other regions mainly because they are better endowed with demographic and human capital attributes. The gap between metropolitan and nonmetropolitan households in endowments seems to be widening over time in most countries except Egypt. The differences in returns are increasing over time for poor households in Egypt, Syria and Tunisia, primarily driven by an increase of differences in returns to human capital.

Two additional findings stand out. The first is the increase over time of the regional differences in returns to education and head experience at upper quantiles in Egypt and Tunisia. Both countries underwent liberalization and reforms aimed at reducing their labor market rigidities, the results suggest that well-off households in metropolitan locations were better able to take advantage of the reforms. Second, despite the important efforts to develop education, infrastructure, and to control family planning in rural and remote regions in Tunisia during the independence era, the successor government neglected these regions. This has led to a deterioration of human capital and household demographic characteristics especially of middle class families located in these regions, an aggravation of regional imbalances and a widening of welfare disparities.

Strategies to address the welfare inequalities in the Arab region can be divided into two groups, based on whether they enhance households' endowments or whether they improve returns to those endowments. Policy initiatives to improve rural and nonmetropolitan households' demographic and productive characteristics should focus on the improvement of families' demographic composition through family planning and awareness programs particularly for the poor. The policy interventions should also include initiatives to develop infrastructure for the provision of public services, education and skills development programs in rural areas and disenfranchised regions.

The urban–rural and regional disparities in returns to household characteristics, particularly returns to human capital, can be best addressed by enhanced education quality, higher flexibility of the labor market and public investments to support infrastructure, labor productivity and economic catch up.

It would be useful to explore in future research, the impact of publicly provided goods and of access to credit on households' endowments and living standards, and to examine how these may contribute to the economic welfare gaps.

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APPENDIX

TABLE A.1. COUNTRIES AND SURVEYS INCLUDED IN THE STUDY^a

COUNTRY	SURVEY NAME	LIVING STANDARD	SAMPLE SIZE
Djibouti	EDAM-IS 1996	Expenditure & income	2,380
	EDAM-IS 2002		16,323
Egypt	HIEC 1999/2000	Expenditure	23,975
	HIEC 2004/5		23,548
	HIEC 2008/9		23,428
Iraq	HIES 2007	Expenditure & income	17,822
Jordan	HEIS 2002	Expenditure & income	2,518
	HEIS 2006		2,897
	HEIS 2008		2,746
Lebanon	LCHBS 2004/5	Expenditure	7,431
Libya	HIES 2003	Expenditure & Income	11,111
Mauritania	EPCV 2000/01	Expenditure	5,964
	EPCV 2004		9,385
Palestine	PECS 1996	Expenditure	4,547
	PECS 1997		3,270
	PECS 1998		2,851
	PECS 2004		3,098
	PECS 2005		2,152
	PECS 2006		1,281
	PECS 2007		1,231
	PECS 2009		3,848
Syria	HBS 1997	Expenditure & income	28,790
	HBS 2004		29,800
Tunisia	HBCLS 2005	Expenditure	12,318
	HBCLS 2010		11,281
UAE	HIES 2008	Expenditure	13,992
Yemen	HBS 1998	Expenditure & income	13,608
	HBS 2006		13,136

EDAM-IS: Enquête Djiboutienne Auprès des Ménages-Indicateurs Sociaux

HIEC: Household Income, Expenditure and Consumption survey

HIES: Household Income and Expenditure Survey

HEIS: Household Expenditure and Income Survey

LCHBS: Living Conditions & Household Budget Survey

EPCV: Enquête Permanente sur les Conditions de Vie des Ménages

PECS: Palestine Expenditure & Consumption Survey

HBS: Household Budget Survey

HBCLS: Household Budget Consumption & Living Standard survey

a: More details on the surveys can be obtained from the author upon request.

Note: The sample sizes in the table are the sizes of the samples used in the analysis. They correspond to the full household surveys sizes except in Egypt and Palestine, where the samples represent around 50 percent randomly selected and representative samples of the full surveys, and in Jordan were only 25 percent randomly selected and representative sample was provided by the Statistical Office.

Table A.2. QUANTILE DECOMPOSITION OF URBAN-RURAL WELFARE

	Egypt 2000			Egypt 2005			Egypt 2009			Syria 1997			Syria 2004		
	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile
Observed Gap	0.295	0.458	0.760	0.231	0.344	0.644	0.253	0.356	0.645	0.142	0.098	0.119	0.247	0.266	0.356
	(0.009)	(0.008)	(0.014)	(0.009)	(0.007)	(0.016)	(0.009)	(0.007)	(0.015)	(0.011)	(0.009)	(0.014)	(0.009)	(0.008)	(0.014)
<i>Endowment effects attributable to</i>															
HH characteristics	0.130	0.102	0.036	0.072	0.071	0.042	0.102	0.080	0.077	0.025	0.030	0.042	0.079	0.111	0.146
	(0.007)	(0.006)	(0.012)	(0.008)	(0.006)	(0.014)	(0.006)	(0.005)	(0.011)	(0.004)	(0.004)	(0.007)	(0.005)	(0.005)	(0.008)
Head educ. & exp.	0.100	0.142	0.269	0.079	0.107	0.208	0.079	0.094	0.175	0.027	0.036	0.064	0.037	0.059	0.090
	(0.006)	(0.005)	(0.011)	(0.006)	(0.005)	(0.012)	(0.005)	(0.004)	(0.010)	(0.003)	(0.003)	(0.005)	(0.004)	(0.003)	(0.006)
Head other charact.	0.055	0.027	-0.008	0.021	0.022	0.013	-0.011	0.034	-0.005	0.017	-0.016	-0.054	0.006	0.024	0.040
	(0.012)	(0.010)	(0.021)	(0.013)	(0.010)	(0.024)	(0.010)	(0.008)	(0.018)	(0.013)	(0.009)	(0.017)	(0.009)	(0.008)	(0.015)
Geographic region	0.124	0.178	0.268	0.148	0.157	0.283	0.090	0.126	0.202	0.014	0.014	0.015	0.054	0.036	-0.010
	(0.008)	(0.006)	(0.014)	(0.009)	(0.007)	(0.017)	(0.009)	(0.007)	(0.016)	(0.003)	(0.002)	(0.004)	(0.016)	(0.014)	(0.025)
Total endowment	0.410	0.450	0.566	0.321	0.358	0.547	0.261	0.334	0.449	0.083	0.064	0.067	0.176	0.230	0.267
	(0.013)	(0.011)	(0.023)	(0.014)	(0.011)	(0.026)	(0.012)	(0.010)	(0.022)	(0.013)	(0.010)	(0.018)	(0.019)	(0.017)	(0.030)
<i>Returns effects attributable to</i>															
HH characteristics	-0.424	-0.102	0.269	-0.229	-0.195	-0.117	-0.254	-0.188	-0.113	0.040	0.020	-0.179	-0.238	-0.209	-0.331
	(0.050)	(0.041)	(0.082)	(0.036)	(0.026)	(0.061)	(0.032)	(0.024)	(0.054)	(0.041)	(0.030)	(0.048)	(0.036)	(0.030)	(0.054)
Head educ. & exp.	0.123	0.164	0.445	0.024	0.013	0.186	0.196	0.085	0.288	-0.048	0.144	0.531	0.248	0.279	0.630
	(0.058)	(0.047)	(0.091)	(0.060)	(0.043)	(0.095)	(0.058)	(0.041)	(0.089)	(0.092)	(0.067)	(0.107)	(0.071)	(0.059)	(0.103)
Head other charact.	-0.109	-0.048	-0.066	-0.072	-0.048	-0.151	-0.020	-0.043	-0.059	0.003	0.026	0.110	0.002	-0.020	-0.108
	(0.034)	(0.027)	(0.055)	(0.036)	(0.026)	(0.059)	(0.039)	(0.028)	(0.062)	(0.060)	(0.043)	(0.070)	(0.042)	(0.035)	(0.062)
Geographic charac.	-0.110	-0.218	-0.418	-0.371	-0.341	-0.486	-0.320	-0.336	-0.392	0.001	0.007	0.038	0.079	-0.015	0.056
	(0.013)	(0.011)	(0.023)	(0.016)	(0.012)	(0.028)	(0.015)	(0.011)	(0.027)	(0.016)	(0.011)	(0.019)	(0.024)	(0.021)	(0.037)
Constant	0.406	0.213	-0.035	0.558	0.558	0.666	0.390	0.504	0.472	0.063	-0.164	-0.448	-0.020	0.000	-0.158
	(0.081)	(0.065)	(0.127)	(0.070)	(0.050)	(0.111)	(0.073)	(0.052)	(0.114)	(0.118)	(0.086)	(0.138)	(0.085)	(0.072)	(0.125)
Total returns	-0.115	0.008	0.195	-0.090	-0.014	0.097	-0.008	0.022	0.196	0.059	0.033	0.052	0.072	0.035	0.089
	(0.015)	(0.012)	(0.026)	(0.016)	(0.012)	(0.028)	(0.014)	(0.011)	(0.024)	(0.017)	(0.012)	(0.022)	(0.020)	(0.018)	(0.032)

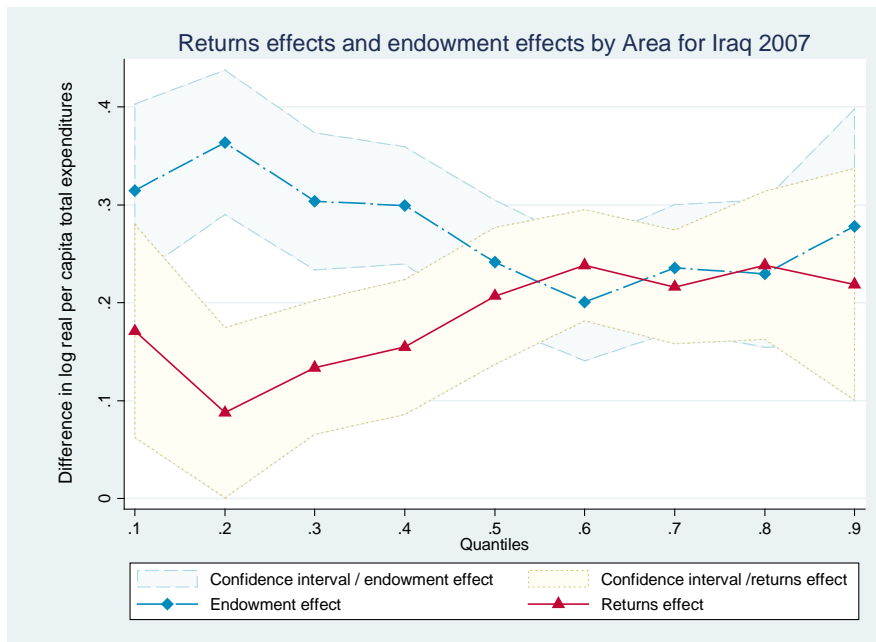
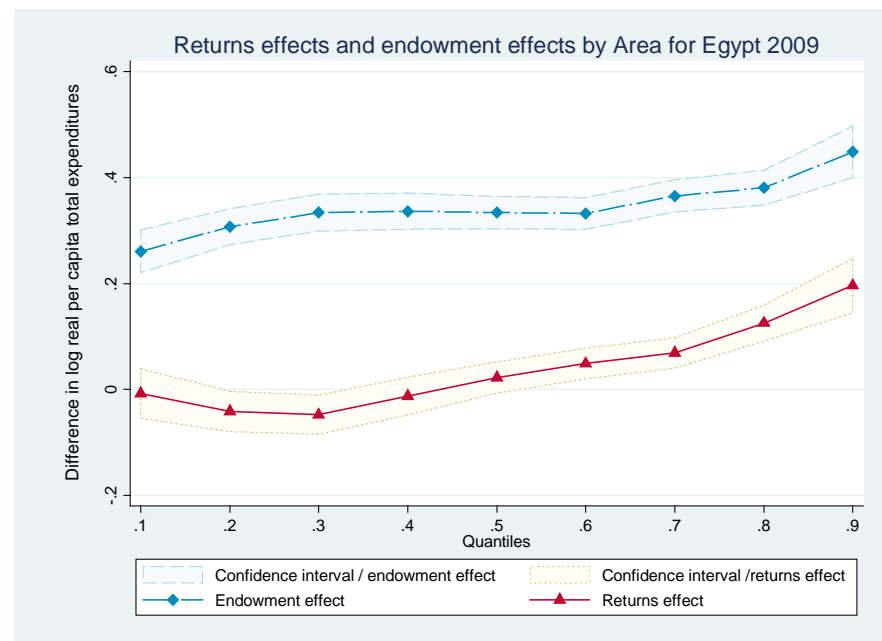
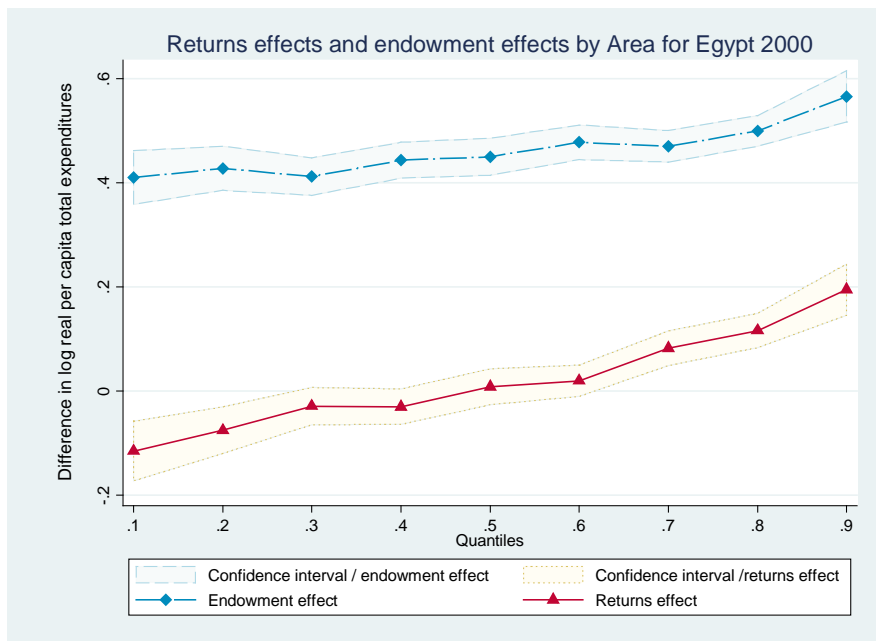
Table A.2. Continued

	Iraq 2007			Tunisia 2005			Tunisia 2010			Yemen 1998			Yemen 2006		
	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile
Observed Gap	0.486 (0.015)	0.448 (0.012)	0.497 (0.021)	0.564 (0.017)	0.553 (0.015)	0.660 (0.025)	0.660 (0.020)	0.576 (0.015)	0.676 (0.022)	0.312 (0.017)	0.342 (0.014)	0.679 (0.022)	0.489 (0.016)	0.502 (0.013)	0.733 (0.023)
<i>Endowment effects attributable to</i>															
HH characteristics	0.062 (0.006)	0.061 (0.006)	0.073 (0.011)	0.121 (0.009)	0.103 (0.007)	0.126 (0.011)	0.067 (0.007)	0.082 (0.007)	0.049 (0.009)	-0.041 (0.012)	-0.055 (0.011)	0.047 (0.019)	0.032 (0.004)	0.047 (0.005)	0.078 (0.009)
Head educ. & exp.	0.028 (0.003)	0.032 (0.003)	0.031 (0.006)	0.107 (0.010)	0.126 (0.007)	0.220 (0.015)	0.110 (0.010)	0.173 (0.009)	0.197 (0.014)	0.060 (0.008)	0.073 (0.007)	0.101 (0.013)	0.081 (0.007)	0.120 (0.006)	0.144 (0.011)
Head other charact.	0.069 (0.013)	0.043 (0.012)	0.058 (0.024)	0.058 (0.016)	0.044 (0.012)	0.026 (0.022)	0.078 (0.013)	0.074 (0.010)	0.045 (0.017)	-0.017 (0.009)	-0.022 (0.008)	-0.065 (0.014)	-0.005 (0.002)	-0.001 (0.002)	-0.009 (0.004)
Geographic charact.	0.155 (0.022)	0.106 (0.020)	0.116 (0.041)	0.110 (0.012)	0.059 (0.008)	0.057 (0.016)	0.148 (0.011)	0.101 (0.009)	0.120 (0.014)	0.059 (0.007)	0.133 (0.007)	0.190 (0.012)	0.077 (0.006)	0.076 (0.005)	0.113 (0.010)
Total endowment	0.315 (0.025)	0.241 (0.023)	0.278 (0.047)	0.395 (0.022)	0.332 (0.016)	0.430 (0.029)	0.403 (0.018)	0.431 (0.015)	0.411 (0.023)	0.060 (0.015)	0.129 (0.014)	0.273 (0.025)	0.186 (0.009)	0.243 (0.009)	0.327 (0.017)
<i>Returns effects attributable to</i>															
HH characteristics	0.270 (0.077)	0.025 (0.056)	-0.062 (0.102)	-0.312 (0.062)	-0.163 (0.048)	-0.265 (0.088)	0.125 (0.068)	-0.177 (0.049)	0.102 (0.078)	-0.033 (0.061)	-0.125 (0.048)	-0.594 (0.076)	-0.009 (0.051)	-0.067 (0.039)	-0.265 (0.070)
Head educ. & exp.	0.019 (0.096)	0.101 (0.070)	0.005 (0.125)	0.242 (0.147)	0.148 (0.117)	0.202 (0.211)	-0.373 (0.180)	0.215 (0.127)	0.412 (0.200)	0.097 (0.103)	-0.097 (0.079)	-0.560 (0.126)	0.017 (0.101)	0.154 (0.077)	0.211 (0.136)
Head other charact.	0.257 (0.108)	0.082 (0.078)	-0.065 (0.138)	0.114 (0.041)	-0.082 (0.032)	-0.139 (0.059)	-0.037 (0.069)	0.091 (0.049)	0.090 (0.077)	-0.106 (0.052)	-0.060 (0.040)	-0.103 (0.064)	-0.002 (0.014)	0.023 (0.011)	0.026 (0.020)
Geographic charact.	-0.171 (0.042)	-0.019 (0.033)	0.028 (0.062)	-0.062 (0.057)	0.072 (0.047)	-0.080 (0.084)	-0.018 (0.072)	0.139 (0.049)	-0.130 (0.077)	-0.243 (0.022)	-0.197 (0.018)	-0.122 (0.029)	0.113 (0.018)	0.030 (0.014)	-0.064 (0.026)
Constant	-0.203 (0.170)	0.018 (0.123)	0.314 (0.219)	0.187 (0.171)	0.245 (0.137)	0.513 (0.246)	0.560 (0.213)	-0.123 (0.149)	-0.209 (0.235)	0.537 (0.127)	0.693 (0.099)	1.785 (0.158)	0.184 (0.113)	0.119 (0.086)	0.498 (0.154)
Total returns	0.171 (0.029)	0.207 (0.025)	0.219 (0.050)	0.169 (0.026)	0.221 (0.019)	0.230 (0.036)	0.258 (0.025)	0.145 (0.019)	0.265 (0.030)	0.252 (0.022)	0.213 (0.019)	0.406 (0.031)	0.303 (0.018)	0.258 (0.014)	0.407 (0.027)

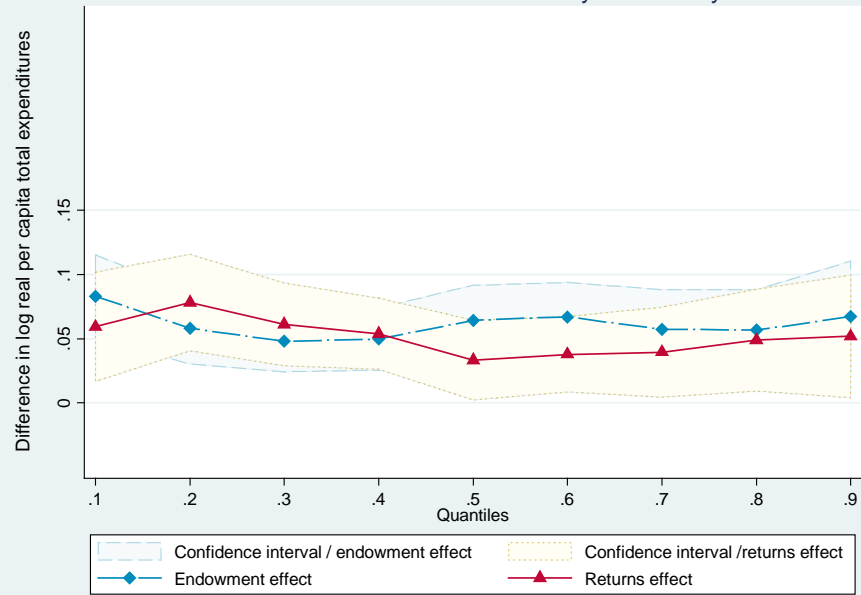
Note: we have also estimated the contribution of each covariate to the endowments and returns effects but due to space limitation we report only the contribution of groups of covariates effects.

Source: Author's calculation based on harmonized data from national household surveys.

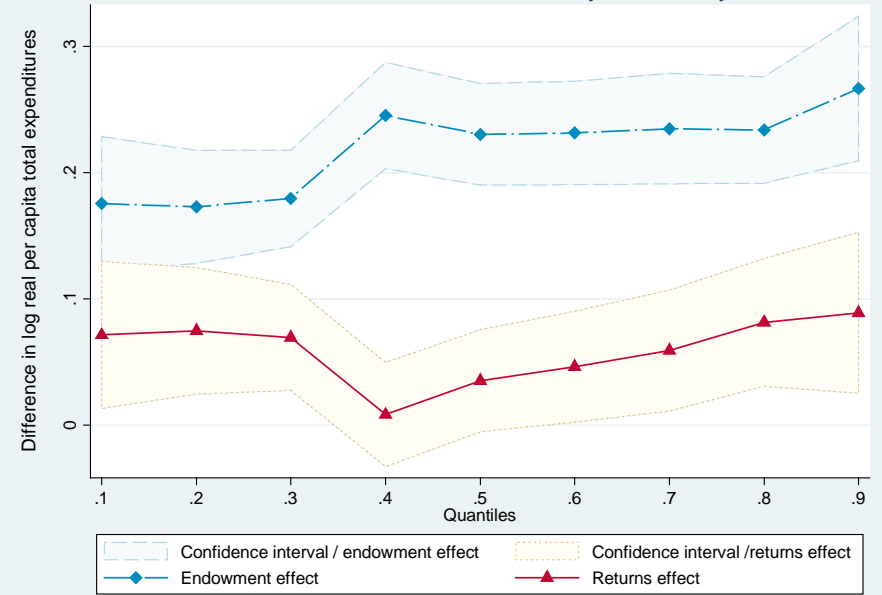
Figure A.1



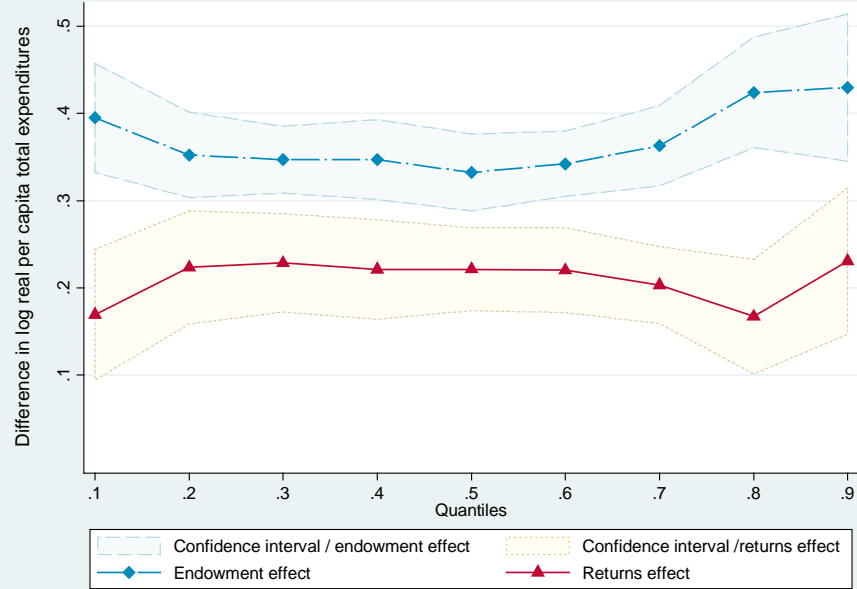
Returns effects and endowment effects by Area for Syria 1997



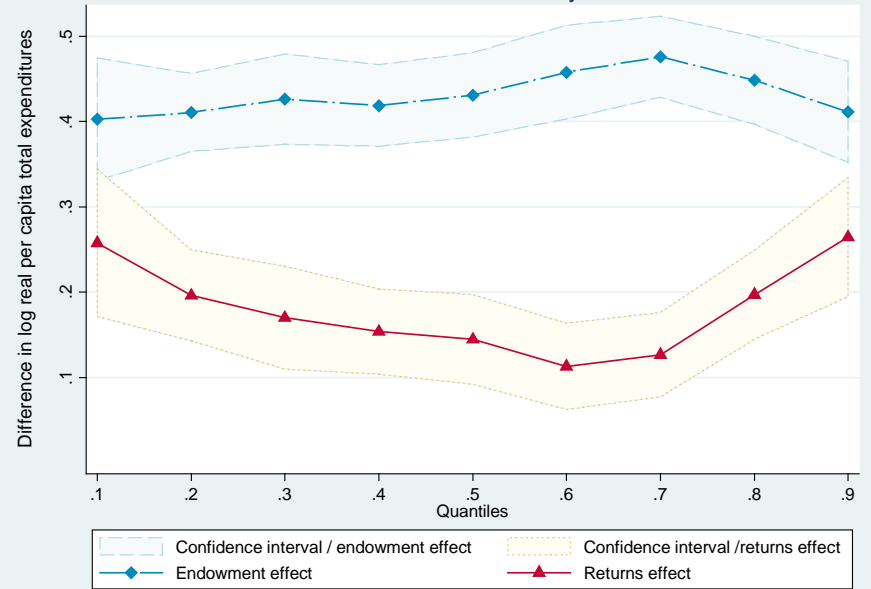
Returns effects and endowment effects by Area for Syria 2004



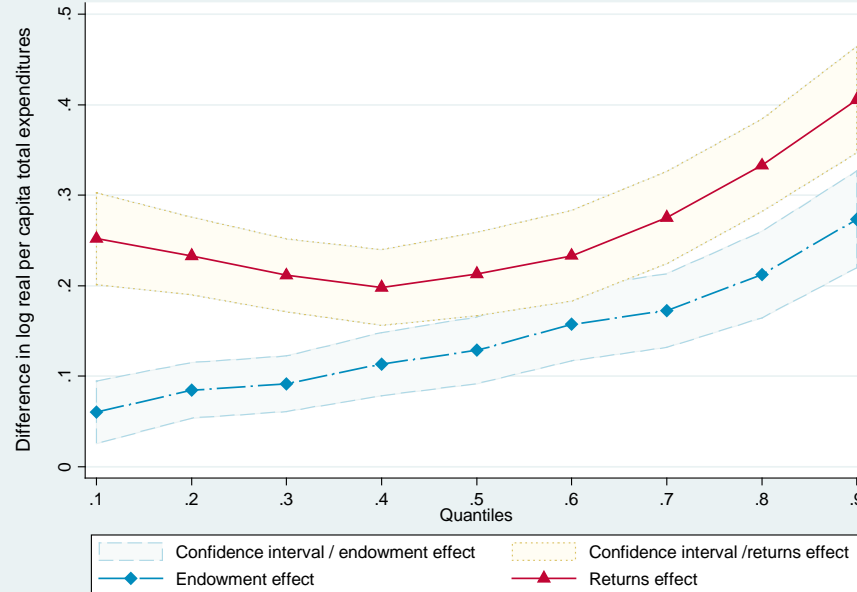
Returns effects and endowment effects by Area for Tunisia 2005



Returns effects and endowment effects by Area for Tunisia 2010



Returns effects and endowment effects by Area for Yemen 1998



Returns effects and endowment effects by Area for Yemen 2006

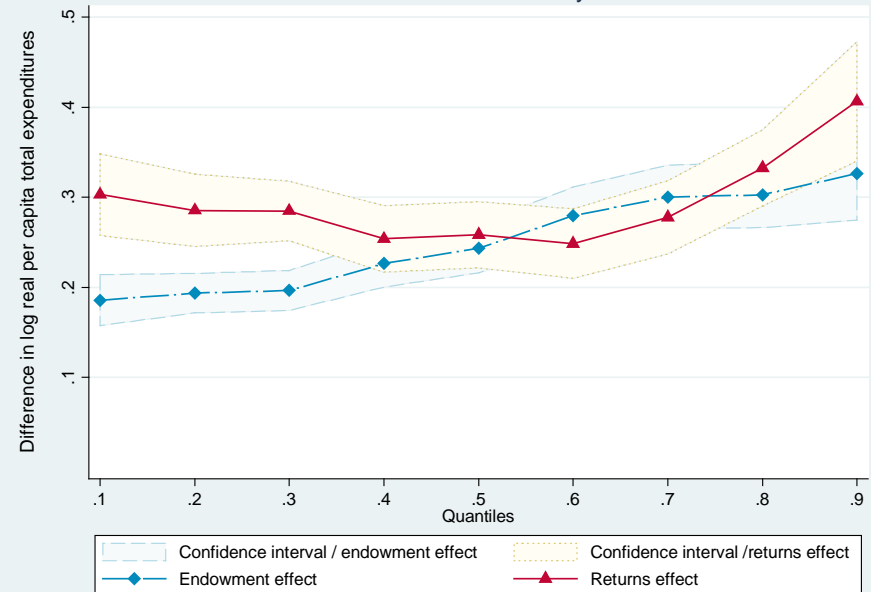


Table A.3. QUANTILE DECOMPOSITION OF METROPOLITAN-NONMETROPOLITAN WELFARE

	Egypt 2000			Egypt 2005			Egypt 2009			Iraq 2007			Jordan 2002			Jordan 2008		
	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile
Observed Gap	0.411 (0.010)	0.564 (0.009)	0.872 (0.018)	0.345 (0.010)	0.432 (0.009)	0.757 (0.020)	0.338 (0.011)	0.418 (0.008)	0.703 (0.020)	0.302 (0.024)	0.157 (0.016)	-0.074 (0.029)	0.311 (0.042)	0.376 (0.035)	0.479 (0.050)	0.202 (0.027)	0.288 (0.025)	0.607 (0.039)
<i>Endowment effects attributable to</i>																		
HH characteristics	0.131 (0.010)	0.105 (0.008)	0.011 (0.017)	0.088 (0.010)	0.083 (0.008)	0.060 (0.020)	0.133 (0.009)	0.087 (0.007)	0.080 (0.018)	0.070 (0.016)	0.031 (0.010)	0.045 (0.020)	0.109 (0.024)	0.087 (0.020)	0.144 (0.032)	0.070 (0.013)	0.102 (0.015)	0.128 (0.019)
Head educ. & exp.	0.133 (0.007)	0.154 (0.006)	0.270 (0.014)	0.075 (0.006)	0.103 (0.006)	0.182 (0.014)	0.089 (0.006)	0.084 (0.005)	0.154 (0.012)	0.030 (0.011)	0.019 (0.007)	0.013 (0.013)	0.027 (0.022)	0.063 (0.016)	0.119 (0.027)	0.009 (0.010)	0.058 (0.010)	0.040 (0.016)
Head other charac.	0.053 (0.023)	0.053 (0.018)	0.020 (0.040)	-0.029 (0.023)	-0.015 (0.019)	-0.007 (0.047)	-0.026 (0.021)	0.015 (0.015)	0.048 (0.041)	-0.010 (0.020)	-0.012 (0.013)	0.029 (0.024)	0.005 (0.022)	-0.008 (0.016)	0.026 (0.025)	0.039 (0.014)	0.034 (0.011)	0.062 (0.019)
Geographic charact.										0.030 (0.062)	0.034 (0.040)	0.035 (0.074)	0.010 (0.026)	0.034 (0.019)	-0.043 (0.029)	0.046 (0.018)	0.030 (0.015)	0.009 (0.023)
Total endowment	0.318 (0.023)	0.312 (0.018)	0.301 (0.040)	0.133 (0.023)	0.171 (0.019)	0.235 (0.046)	0.197 (0.021)	0.186 (0.015)	0.281 (0.041)	0.120 (0.061)	0.072 (0.039)	0.122 (0.073)	0.151 (0.039)	0.176 (0.032)	0.246 (0.048)	0.165 (0.024)	0.224 (0.023)	0.240 (0.033)
<i>Returns effects attributable to</i>																		
HH characteristics	-0.272 (0.061)	-0.060 (0.047)	0.222 (0.104)	-0.108 (0.041)	-0.158 (0.033)	-0.097 (0.079)	-0.306 (0.042)	-0.157 (0.029)	-0.180 (0.077)	0.098 (0.115)	0.188 (0.075)	-0.130 (0.140)	0.064 (0.140)	0.070 (0.104)	-0.134 (0.155)	-0.435 (0.093)	-0.347 (0.078)	-0.045 (0.129)
Head educ. & exp.	0.126 (0.065)	0.127 (0.050)	0.281 (0.108)	-0.031 (0.063)	0.050 (0.050)	0.279 (0.116)	0.167 (0.068)	0.008 (0.047)	0.396 (0.118)	-0.063 (0.143)	-0.081 (0.094)	0.059 (0.174)	-0.813 (0.330)	-0.506 (0.245)	0.733 (0.365)	-0.323 (0.199)	-0.115 (0.167)	-0.249 (0.276)
Head other charac.	-0.127 (0.043)	-0.107 (0.033)	-0.103 (0.073)	-0.014 (0.043)	0.006 (0.034)	-0.101 (0.081)	-0.071 (0.049)	-0.091 (0.034)	-0.110 (0.088)	0.103 (0.125)	0.084 (0.083)	-0.474 (0.154)	-0.514 (0.262)	-0.144 (0.198)	-0.020 (0.288)	-0.166 (0.142)	-0.218 (0.119)	-0.266 (0.199)
Geographic charact.	-0.007 (0.010)	0.053 (0.008)	0.162 (0.014)	-0.024 (0.009)	0.030 (0.007)	0.095 (0.012)	0.005 (0.010)	0.038 (0.007)	0.176 (0.012)	0.813 (0.088)	0.245 (0.057)	0.079 (0.106)	-0.039 (0.040)	-0.085 (0.029)	0.054 (0.044)	-0.045 (0.025)	-0.031 (0.021)	-0.036 (0.033)
Constant	0.373 (0.091)	0.238 (0.071)	0.009 (0.152)	0.389 (0.074)	0.333 (0.058)	0.346 (0.135)	0.346 (0.088)	0.436 (0.060)	0.140 (0.153)	-0.769 (0.229)	-0.351 (0.151)	0.270 (0.280)	1.461 (0.439)	0.865 (0.328)	-0.400 (0.485)	1.006 (0.248)	0.775 (0.209)	0.963 (0.346)
Total returns	0.093 (0.024)	0.252 (0.019)	0.571 (0.042)	0.212 (0.024)	0.261 (0.020)	0.521 (0.049)	0.142 (0.023)	0.233 (0.016)	0.422 (0.044)	0.182 (0.064)	0.085 (0.041)	-0.196 (0.076)	0.160 (0.052)	0.200 (0.038)	0.233 (0.058)	0.037 (0.033)	0.064 (0.027)	0.367 (0.044)

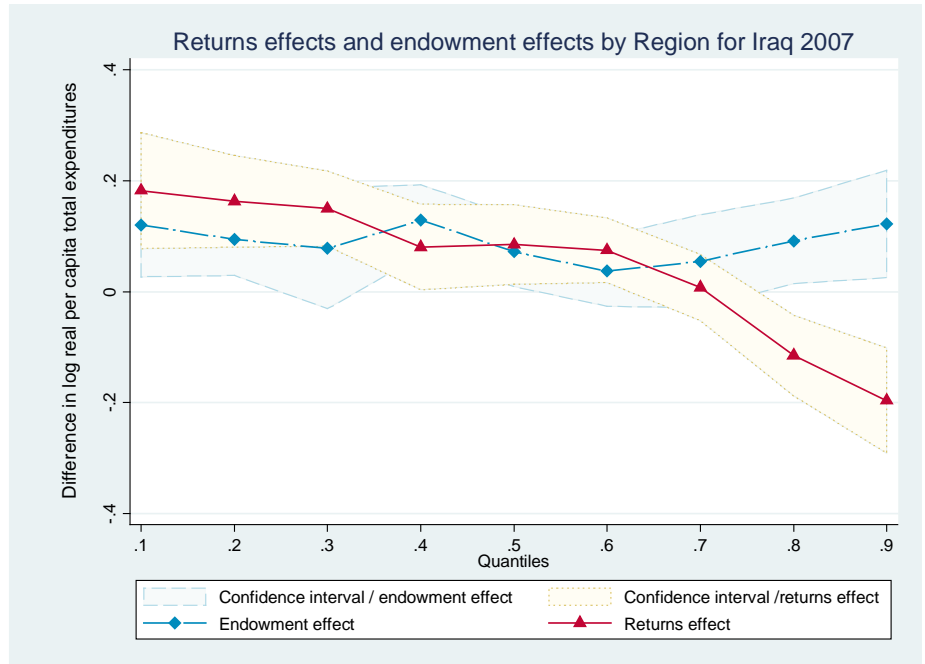
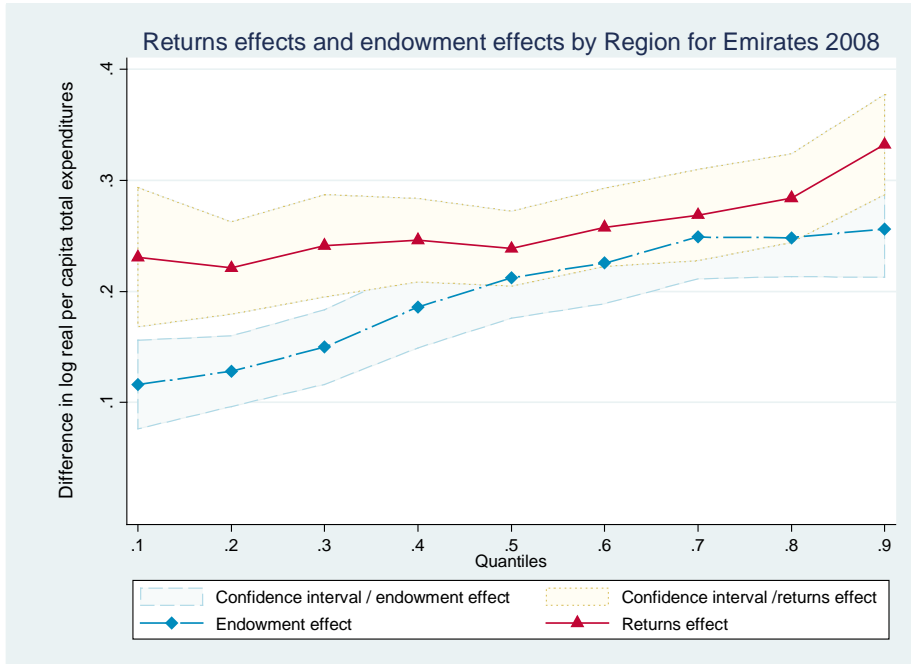
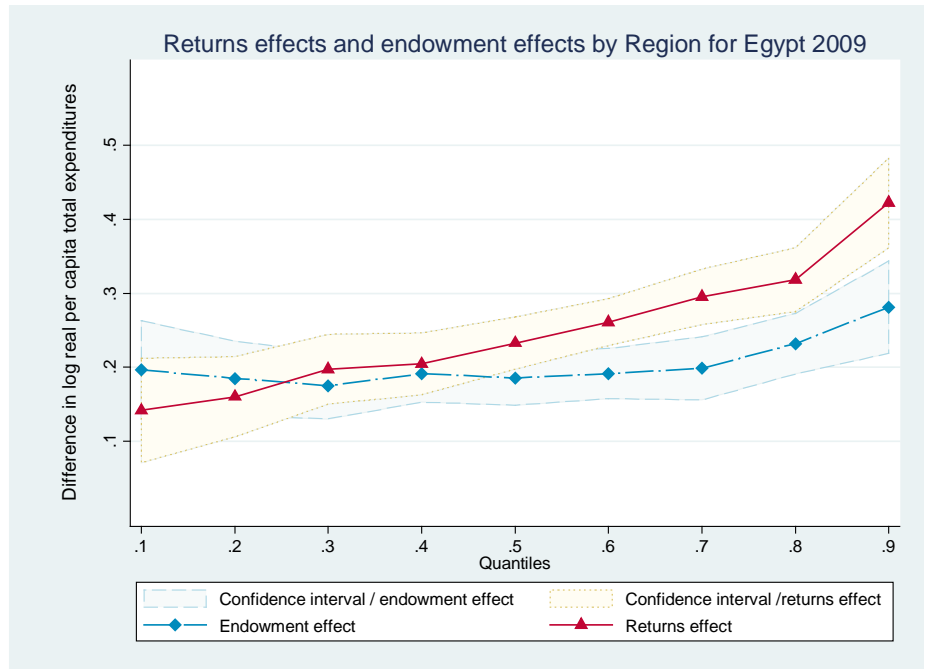
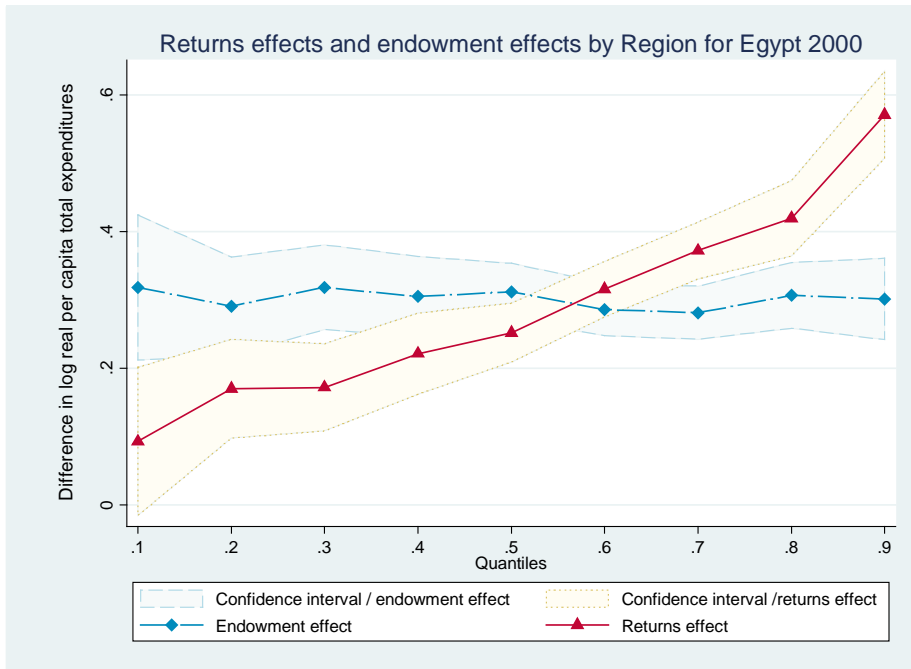
Table A.3. Continued

	Syria 1997			Syria 2004			UAE 2008			Tunisia 2005			Tunisia 2010			Yemen 1998			Yemen 2006		
	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile	10 th pctile	50 th pctile	90 th pctile
Observed Gap	0.085	0.087	0.128	0.386	0.263	0.168	0.347	0.451	0.589	0.411	0.316	0.408	0.482	0.333	0.404	0.544	0.694	1.000	0.261	0.477	0.665
	(0.014)	(0.010)	(0.017)	(0.010)	(0.009)	(0.017)	(0.017)	(0.015)	(0.021)	(0.023)	(0.018)	(0.032)	(0.023)	(0.022)	(0.028)	(0.026)	(0.022)	(0.035)	(0.039)	(0.021)	(0.033)
<i>Endowment effects attributable to</i>																					
HH charact.	0.047	0.050	0.087	0.079	0.115	0.174	0.000	0.008	0.025	0.115	0.100	0.070	0.087	0.120	0.074	-0.030	-0.002	0.084	0.034	0.019	0.009
	(0.007)	(0.005)	(0.009)	(0.006)	(0.006)	(0.011)	(0.005)	(0.006)	(0.007)	(0.012)	(0.010)	(0.017)	(0.011)	(0.011)	(0.015)	(0.023)	(0.020)	(0.031)	(0.012)	(0.007)	(0.011)
Head ed.& exp.	0.030	0.030	0.054	0.038	0.024	0.060	0.028	0.036	0.036	0.049	0.079	0.150	0.070	0.118	0.134	0.098	0.060	0.140	0.060	0.079	0.112
	(0.008)	(0.005)	(0.009)	(0.004)	(0.004)	(0.007)	(0.005)	(0.005)	(0.006)	(0.009)	(0.008)	(0.017)	(0.011)	(0.011)	(0.015)	(0.019)	(0.016)	(0.026)	(0.016)	(0.009)	(0.014)
Head oth. char.	-0.013	-0.033	-0.048	0.002	0.012	0.002	0.009	0.009	0.018	-0.016	0.032	0.048	0.084	0.048	-0.001	-0.067	-0.064	-0.066	0.008	-0.009	-0.011
	(0.015)	(0.009)	(0.017)	(0.005)	(0.005)	(0.009)	(0.009)	(0.007)	(0.008)	(0.018)	(0.013)	(0.026)	(0.019)	(0.017)	(0.023)	(0.022)	(0.019)	(0.029)	(0.009)	(0.004)	(0.005)
Geogr. charact.	0.000	-0.005	-0.013	0.094	0.053	-0.008	0.079	0.159	0.178	0.147	0.054	-0.001	0.036	0.067	0.007				0.422	0.149	0.143
	(0.009)	(0.005)	(0.010)	(0.010)	(0.009)	(0.017)	(0.011)	(0.009)	(0.013)	(0.024)	(0.017)	(0.034)	(0.024)	(0.021)	(0.029)				(0.035)	(0.017)	(0.027)
Total endow.	0.064	0.043	0.080	0.212	0.204	0.229	0.116	0.212	0.256	0.295	0.266	0.266	0.276	0.353	0.214	0.000	-0.006	0.158	0.524	0.238	0.252
	(0.016)	(0.011)	(0.020)	(0.011)	(0.010)	(0.019)	(0.014)	(0.012)	(0.017)	(0.029)	(0.022)	(0.042)	(0.029)	(0.028)	(0.036)	(0.031)	(0.026)	(0.042)	(0.037)	(0.019)	(0.029)
<i>Returns effects attributable to</i>																					
HH charact.	-0.231	-0.123	-0.201	-0.211	-0.252	-0.504	0.130	-0.093	0.066	-0.173	-0.250	-0.144	-0.041	-0.384	-0.105	-0.381	-0.522	-0.861	-0.156	-0.020	0.038
	(0.051)	(0.033)	(0.061)	(0.038)	(0.033)	(0.065)	(0.070)	(0.060)	(0.091)	(0.087)	(0.061)	(0.121)	(0.088)	(0.075)	(0.103)	(0.095)	(0.077)	(0.123)	(0.116)	(0.060)	(0.098)
Head ed.& exp.	0.152	0.121	0.260	0.379	0.086	0.234	0.097	0.155	-0.149	0.110	0.018	-0.059	0.194	0.252	0.541	0.339	-0.025	-0.573	0.096	0.228	0.288
	(0.101)	(0.066)	(0.120)	(0.072)	(0.062)	(0.120)	(0.110)	(0.093)	(0.141)	(0.187)	(0.131)	(0.255)	(0.196)	(0.164)	(0.228)	(0.148)	(0.120)	(0.191)	(0.220)	(0.114)	(0.187)
Head oth. char.	-0.076	0.006	0.063	0.014	-0.078	0.073	-0.076	-0.001	0.123	0.057	-0.067	-0.076	-0.014	0.127	-0.117	-0.119	-0.187	-0.134	-0.161	0.007	-0.004
	(0.063)	(0.041)	(0.075)	(0.040)	(0.035)	(0.067)	(0.052)	(0.043)	(0.066)	(0.055)	(0.039)	(0.076)	(0.073)	(0.061)	(0.085)	(0.078)	(0.063)	(0.101)	(0.035)	(0.018)	(0.029)
Geogr. charact.	0.070	0.061	0.065	-0.058	-0.035	0.114	-0.056	-0.011	0.155	-0.042	0.057	0.071	0.109	0.040	0.061	0.188	0.172	0.345	-0.644	-0.049	0.131
	(0.018)	(0.012)	(0.021)	(0.017)	(0.015)	(0.029)	(0.055)	(0.052)	(0.078)	(0.031)	(0.022)	(0.044)	(0.032)	(0.027)	(0.037)	(0.021)	(0.015)	(0.023)	(0.065)	(0.034)	(0.055)
Constant	0.106	-0.020	-0.139	0.050	0.338	0.022	0.136	0.188	0.137	0.164	0.293	0.351	-0.042	-0.054	-0.191	0.517	1.261	2.064	0.601	0.074	-0.041
	(0.132)	(0.086)	(0.158)	(0.085)	(0.074)	(0.142)	(0.163)	(0.139)	(0.211)	(0.205)	(0.144)	(0.280)	(0.220)	(0.183)	(0.255)	(0.186)	(0.151)	(0.240)	(0.261)	(0.135)	(0.221)
Total returns	0.021	0.044	0.047	0.174	0.059	-0.061	0.231	0.238	0.332	0.116	0.051	0.142	0.206	-0.020	0.190	0.543	0.700	0.841	-0.263	0.240	0.412
	(0.021)	(0.013)	(0.024)	(0.014)	(0.012)	(0.023)	(0.020)	(0.016)	(0.024)	(0.035)	(0.025)	(0.049)	(0.035)	(0.030)	(0.041)	(0.039)	(0.032)	(0.051)	(0.048)	(0.024)	(0.040)

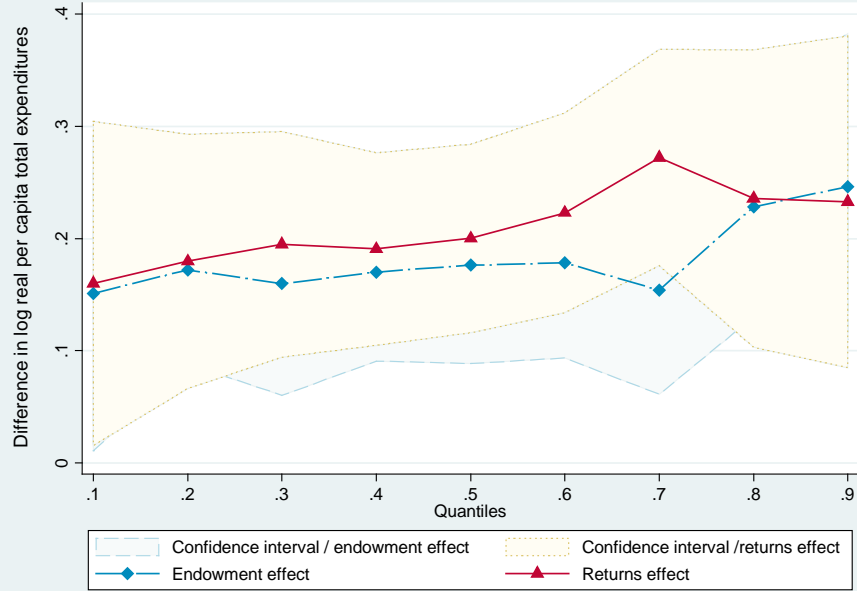
Note: we have also estimated the contribution of each covariate to the endowments and returns effects but due to space limitation we report only the contribution of groups of covariates effects.

Source: Author's calculation based on harmonized data from national household surveys.

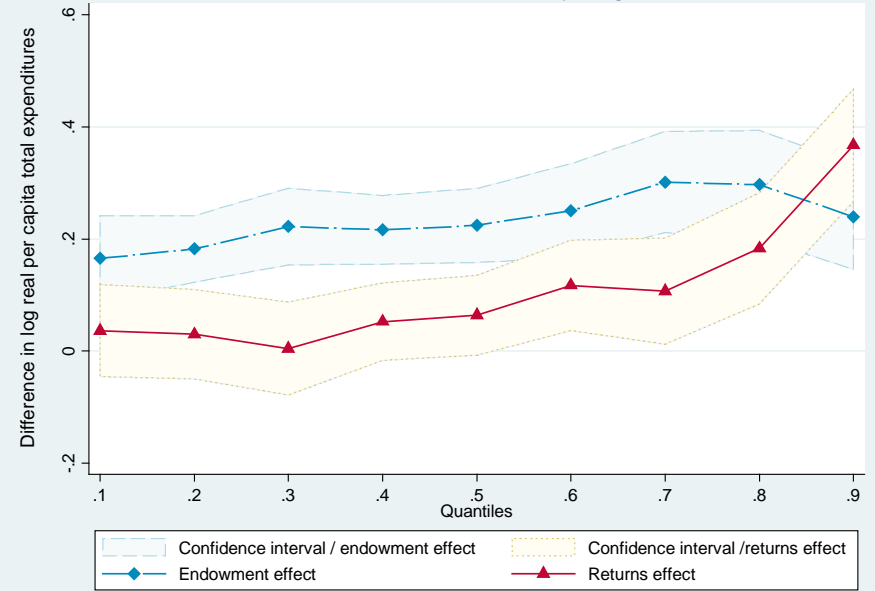
Figure A.2



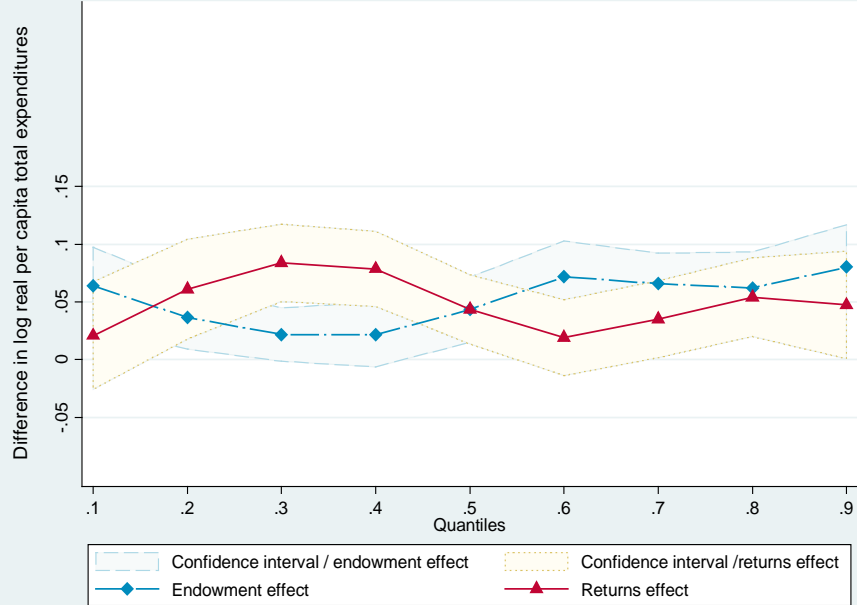
Returns effects and endowment effects by Region for Jordan 2002



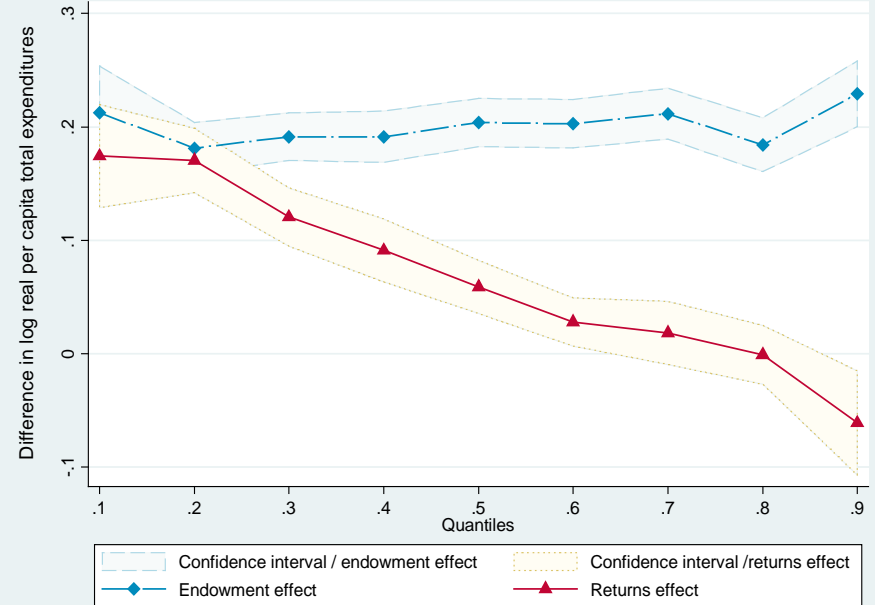
Returns effects and endowment effects by Region for Jordan 2008

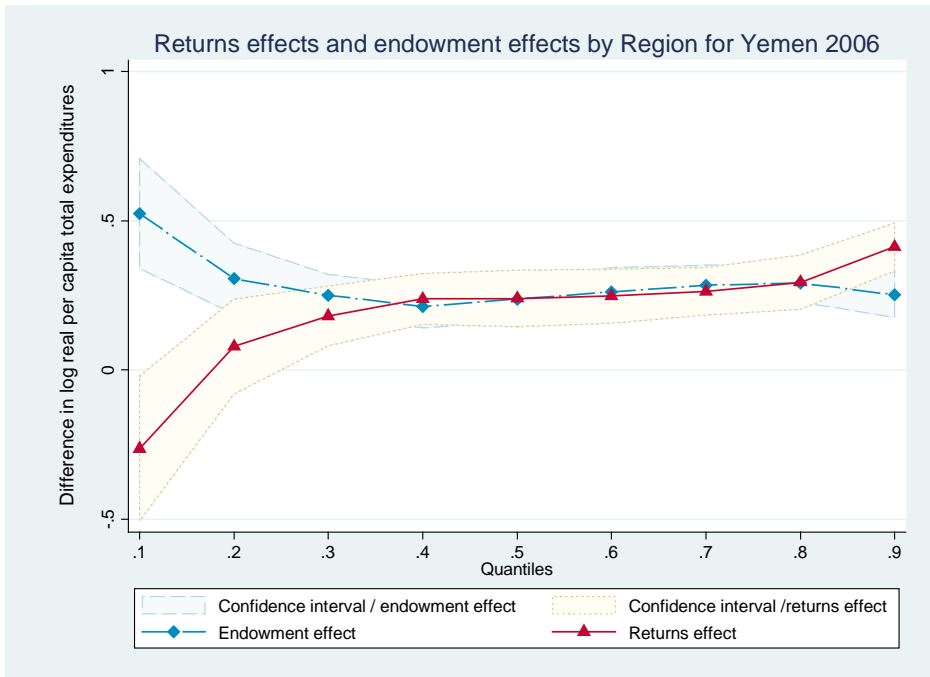
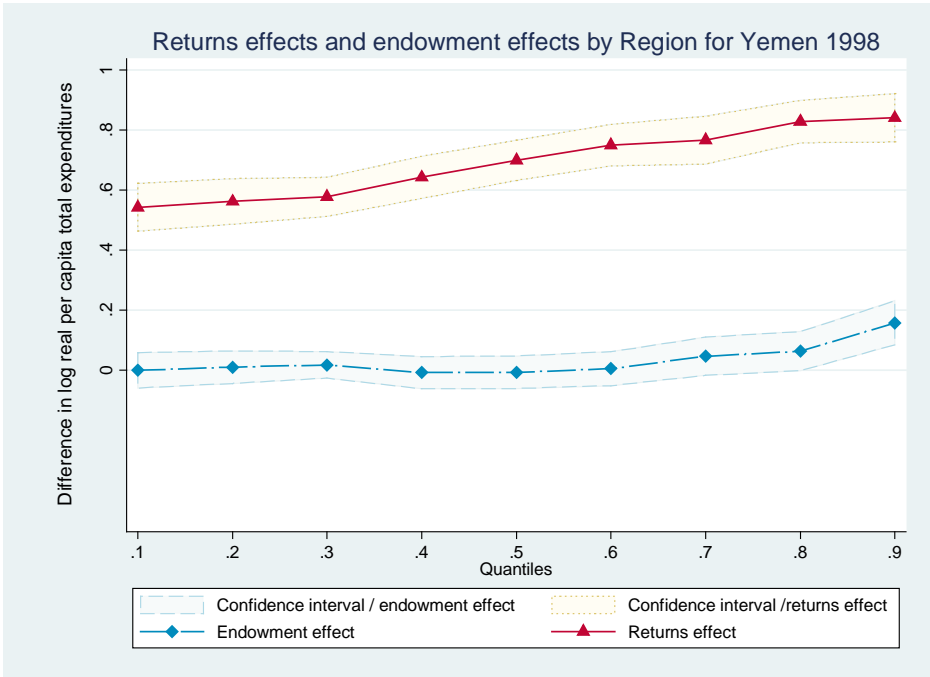
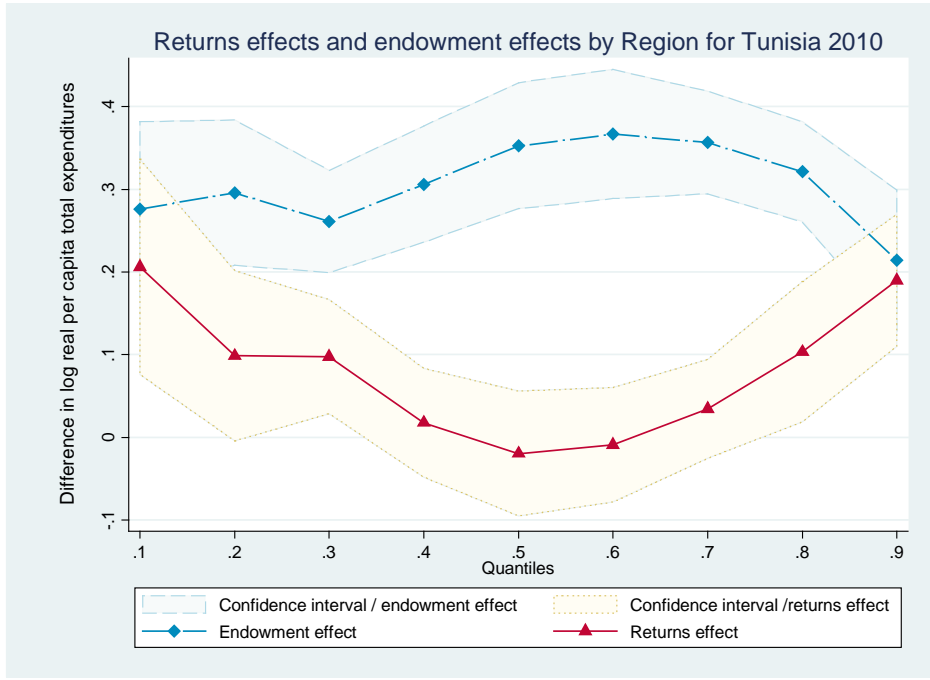
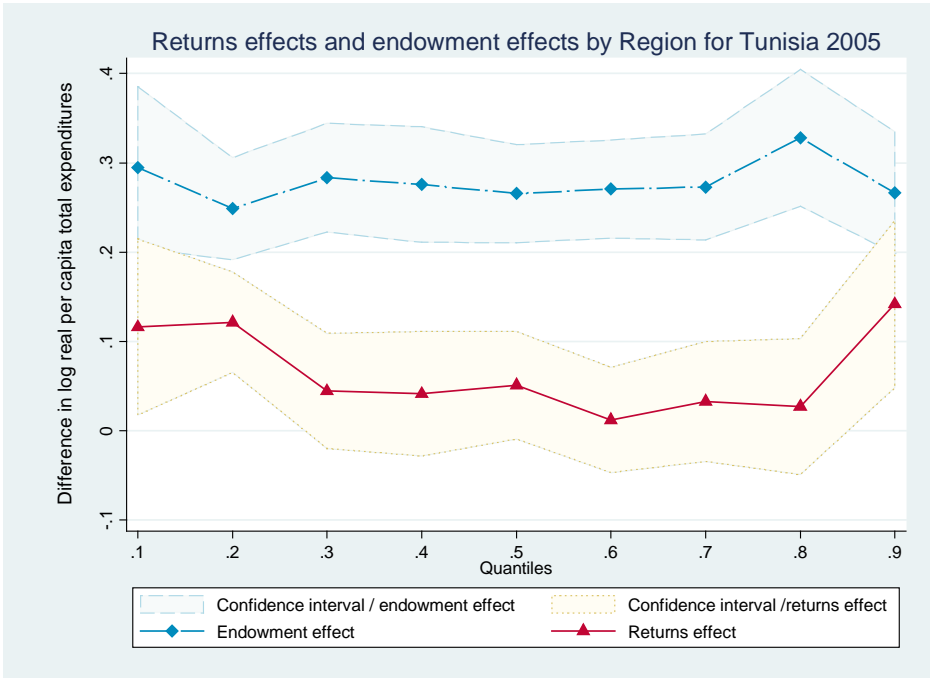


Returns effects and endowment effects by Region for Syria 1997



Returns effects and endowment effects by Region for Syria 2004





NOTES

¹ Averages calculated from the World Bank PovCal database: <http://iresearch.worldbank.org/PovcalNet/povcalSvy.html>, and World Development Indicators (2013).

² Several studies point to the importance of inequality in threatening democratic participation and promoting civil conflict (Stewart and Langer, 2007; Nel, 2008).

³ The study uses population-weighted averages of within-country income inequality for a group of 116 countries from Solt (2009) database.

⁴ Earlier to this, a review of the literature on global income inequality by Anand and Segal (2008) pointed to the difficulty of determining the direction of change in global interpersonal inequality.

⁵ Kanbur (2011) suggest that high growth processes do not necessarily lead to greater inequality and it is the nature of growth that matters the most.

⁶ Deininger and Squire (1996) also found that compared to other developing regions, MENA has fairly moderate levels of income inequality but the estimates may understate the true level of inequality as the coefficients are based on expenditures and not income.

⁷ We use decade averages, constant purchasing power parity (PPP) exchange rates and international poverty lines to facilitate the comparison of the figures, however differences between income-based and expenditure-based poverty and inequality indicators and variations in the number of economies included in the datasets by region adversely affect the comparability of poverty and inequality estimates. Countries in the Arab and MENA regions in particular are underrepresented with less than fifty percent of the countries covered especially during the 1990s. Thus changes in the regional averages of poverty and inequality indicators might be related to an expansion in the coverage of countries rather than to welfare changes.

⁸ The data harmonization process was based on best practices and experts recommendations from World Bank LSMS group, Luxembourg Income Study, OECD and National Statistical Offices in the Arab region.

⁹ We use as much as possible the education categories defined by the International Standard Classification of Education (ISCED) by UNESCO, the employment status categories by ILO, the occupational classification by ISCO, the consumption expenditures categories by COICOP etc.

¹⁰ A study by Beegle *et al.* (2012) shows that variations in the levels of reporting of consumption expenditures and in the length of the reporting period induce differences of around 19 percent in the GINI coefficients of around 39 percent in the poverty estimates.

¹¹ Fully addressing the comparability problems emanating from differences in surveys design requires the use of imputation methods such as the small area estimation-based prediction methods proposed by Christiaensen *et al.* (2012) and which induces different other types of problems.

¹² The imputed values are calculated following the methodology suggested by Deaton and Zaidi (2002). We estimate a regression of the reported rents by subsets of households on a set of housing characteristics and regional dummies to impute for missing rents. We estimate a use value of durable goods, when it is not provided by National Statistical Offices, on the basis of the current value and age of the item.

¹³ CPI are available by commodity groups for all the countries included in the analysis, however only Egypt, Iraq, Lebanon, Syria and Palestine report CPI by geographic regions. Thus adjustment for spatial variations in prices was made only in these countries.

¹⁴ Lanjouw and Lanjouw (2001) find analogous sensitivity of inequality estimates to the definition of consumption aggregates.

¹⁵ Deininger and Squire (1996) show that expenditure-based Gini coefficients are on average 6.6 lower than those based on gross income. Belhaj Hassine (2011) found that inequality in wage earnings in Egypt is almost twice as high as inequality in expenditures.

¹⁶ Analogous decompositions have been applied for the three consumption expenditure aggregates and the Theil GE(1) index. The results are available from the author on request.

¹⁷ The dynamic changes of rural-urban inequality in Palestine should be taken with caution as the rural-urban classification in Palestinian Occupied Territories was changing over time.

¹⁸ $RIF(y, Q_\theta) = Q_\theta + \frac{(\theta - I\{y \leq Q_\theta\})}{f_Y(Q_\theta)}$, f_Y is the marginal density function of y and I is an indicator

function. RIF can be estimated by replacing Q_θ by θ^{th} sample quantile and estimating f_Y by kernel density. For more details see Firpo, Fortin and Lemieux (2009).

¹⁹ See Nguyen *et al.* (2007) for relatively similar partition of the variables.

²⁰ To save space we do not report the estimation results, but they are available upon request. The same specification was used at all quantiles and all the variables, except some head attributes variables, were statistically significant. Nevertheless, every regressor was significant at some quantile.

²¹ The decomposition results may vary with the choice of the counterfactual distribution. For example, if the counterfactual used is the distribution that would have prevailed for group i if they have received group i' returns we would obtain different results. The choice of the counterfactual in this analysis is motivated by the aim of emphasising household groups living in disadvantaged areas.

²² Jordan and Libya exhibit a significant dominance of endowment effects while for Djibouti and Palestine the returns effects are found to dominate.

²³ Nguyen *et al.* (2007) found similar results for Vietnam.

²⁴ Metropolitan region in UAE includes Abu Dhabi and Dubai.

²⁵ The returns effects are found also to significantly dominate in Djibouti, Mauritania, Lebanon and Palestine.