UNHAPPY DEVELOPMENT: DISSATISFACTION WITH LIFE ON THE EVE OF THE ARAB SPRING

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Despite progress with economic and social development over several decades, life satisfaction was relatively low and declining in many developing Arab countries in the second half of the 2000s—a situation described in this paper as the "unhappy development" paradox. The paper empirically tests the direction and strength of association of a range of objective and subjective factors with subjective well-being in the Middle East and North Africa in the years immediately preceding the Arab Spring uprisings (2009–10). The findings suggest a significant, negative association between life satisfaction levels and each of the main perceived grievances voiced during the 2011 uprisings—dissatisfaction with the standard of living, poor labor market conditions, and corruption in the form of nepotism or cronyism. The increased prevalence of dissatisfaction with the standard of living contributed the most to the decline in subjective well-being during this period, followed by worsening labor market conditions manifested in increased unemployment and decline in self-reported earnings. In addition, perceptions about corruption became more important for people's life satisfaction, particularly in the Arab Spring countries where the uprisings were most intense.

1. THE 'UNHAPPY DEVELOPMENT' PARADOX IN DEVELOPING ARAB COUNTRIES

In the 2000s, many developing countries in the Middle East and North Africa (MENA) did well according to the regularly tracked poverty statistics and human development indicators. Absolute poverty, measured at $1.25 a day, declined in all
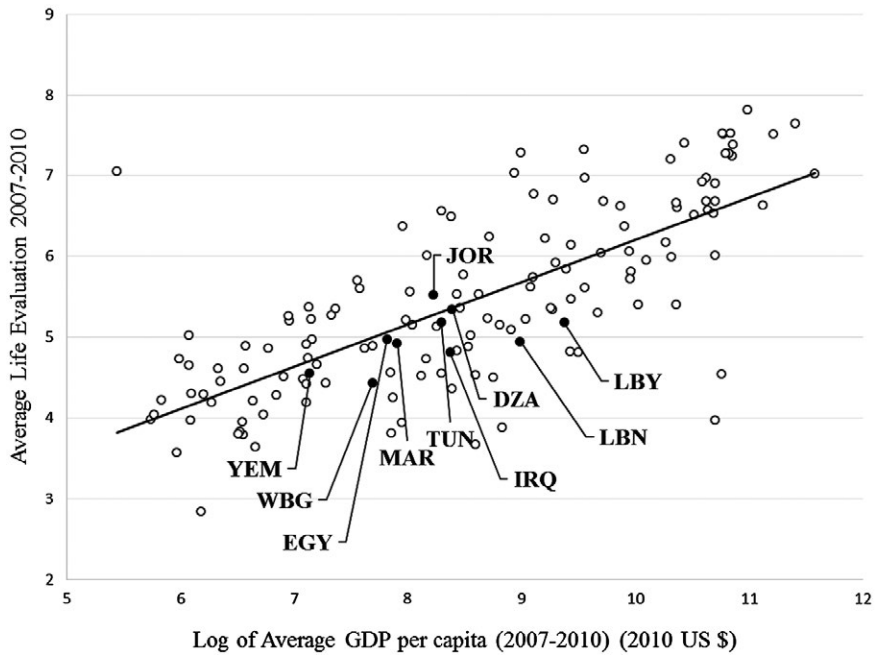
Figure 1a. Satisfaction with Life and GDP per Capita, 2007–10.

Note: Numbers are weighted averages for 145 countries. Abbreviations: EGY = Egypt; JOR = Jordan; LBN = Lebanon; MAR = Morocco; WBG = West Bank and Gaza; YEM = the Republic of Yemen, DZA = Algeria, IRQ = Iraq, TUN = Tunisia, LBY = Libya. GDP per capita for SYR = Syrian Arab Republic is missing.

Sources: Log of Average GDP per capita, PPP (constant 2011 international $): World Bank Development Indicators; Life Evaluation: Gallup World Poll, 2012.

economies, except the Republic of Yemen, and was low on average. The incomes of the bottom 40 percent, measured as 2005 PPP-adjusted per capita expenditure, grew at higher rates than average expenditures in many developing Arab countries for which information was available (Ianchovichina 2018). The Gini inequality indexes were moderate by international standards and did not worsen in most MENA economies (Ianchovichina 2018). Importantly, over the past decades the region had made notable strides in reaching not only the Millennium Development Goals related to poverty and access to infrastructure services (especially drinking water and sanitation and Internet connectivity), but also those related to reducing hunger and child and maternal mortality, and increasing school enrollment (Iqbal and Kiendrebeogo, 2016).

Prior to the Arab Spring uprisings, most developing MENA countries were seen as relatively stable places. Only two MENA countries—Iraq (7th) and the Republic of Yemen (15th) —made it to the top 25 of the 2010 Failed States Index[1] of Foreign Policy. Libya and Tunisia were ranked 111th and 118th of 177 countries, respectively, and so they appeared among the stronger and less fragile countries in the world (Goodwin, 2011). With autocratic rulers in power for many years, the cracks in these countries' models of government remained invisible to most

[1]The Failed States Index measures stability based on economic, political, and military indicators.
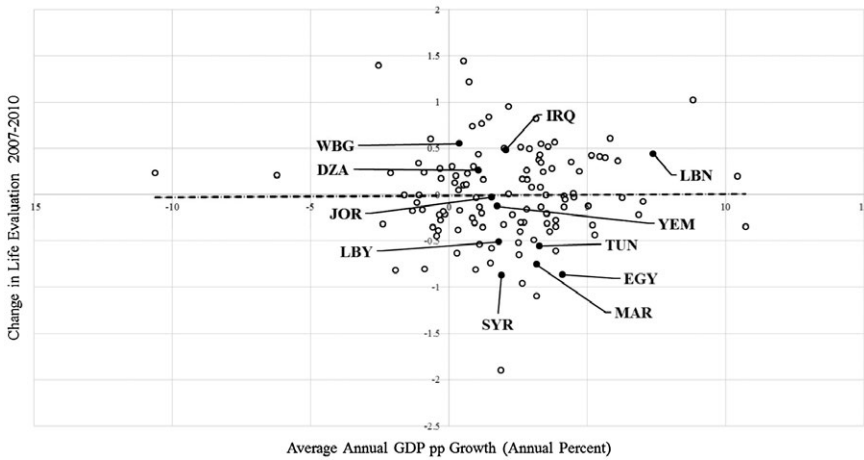
Figure 1b. Change in Satisfaction with Life and GDP Growth, 2007–10.

Note: Numbers are weighted averages for 124 countries. Abbreviations: EGY = Egypt; JOR = Jordan; LBN = Lebanon; MAR = Morocco; WBG = West Bank and Gaza; YEM = the Republic of Yemen, DZA = Algeria, DJI = Djibouti, TUN = Tunisia, LBY = Libya, SYR = Syrian Arab Republic.

Sources: GDP per capita growth (annual %), 2007–2010: World Bank Development Indicators; Life Evaluation: Gallup World Poll.

observers, including political scientists (Gause, 2011), while some considered Islam a stabilizing force (Bromley, 2015). Thus, the Arab Spring transitions of 2011 took most economists, political scientists, and policymakers by surprise (Gause, 2011; Goodwin, 2011; Bellin, 2012; Bromley, 2015).

Despite the region's consistent progress with poverty reduction, shared prosperity, and human development, life satisfaction in many MENA countries remained below the average expected for their level of development (Figure 1a) and it had dropped significantly in the years prior to the Arab Spring, especially in Tunisia, Egypt, Syria, Libya, and Yemen—the Arab Spring countries where the uprisings were most intense (Figure 1b). The phenomenon of declining levels of happiness during a time of moderate-to-rapid development represents an "unhappy development" paradox. This paradox is related to the Easterlin (1974) paradox of growth without a corresponding increase in reported happiness levels and to Graham's and Lora's (2010) "unhappy growth" paradox. In his seminar work, Easterlin (1974) argues that as economies grow and nations get richer, they do not get happier.[2] He also provides evidence that in the developed world, where the basic standard needs are satisfied, richer societies are not much happier than poorer ones. More recently, attention has shifted to a pattern observed in several transition countries, where high economic growth was accompanied by declining well-being levels within countries (e.g., Brockmann et al., 2009; Easterlin et al., 2012; Graham et al., 2017). Controlling for per capita incomes, several recent cross-country studies by Deaton (2008), Graham and Lora (2010), and Stevenson and Wolfers (2008) even

[2]For a critique on this viewpoint, see Hagerty and Veenhoven (2003) and Stevenson and Wolfers (2008). For further discussion, see Clark, Frijters and Shields (2008).

find that people living in fast-growing economies are on average less happy than those living in slow-growing economies. This phenomenon, referred to by Graham and Lora (2010) as the "unhappy growth" paradox, highlights the importance of taking into account people's perceptions when attempting to understand a nation's well-being. The concepts of unhappy growth and unhappy development are related, however they differ in that "unhappy development" captures broader aspects of progress than those associated with income growth alone, including factors related to inequality, employment conditions, and access to infrastructure, health and education services (World Bank and International Monetary Fund, 2015).

Why did development in MENA not translate into higher levels of subjective well-being? Objective measures—such as income, education, and longevity, can capture the objectively measurable part of people's standards of living, but they often fail to capture all its relevant components (Jahedi and Méndez, 2014). For example, household expenditures may rise as a result of an increase in food prices. Although this increase in expenditures could be considered an indication of an objective improvement in the quality of life in a country, in and of itself it does not signify progress as the decline in living standards remains obscured. In MENA, the social contract between the state and its citizens delivered progress visible in the improvement of some objective development measures. As part of this social contract, Arab governments subsidized food and fuel, provided free education, health, and other public services, and provided jobs in the public sector. These benefits were offered in exchange for political support and limited voice (Devarajan and Ianchovichina, forthcoming). However, over the years and especially in the 1990s and the 2000s, the social contracts became fiscally unsustainable as these states did not have the fiscal resources to finance the food and fuel subsidies, provide government jobs to new graduates entering the labor market, and improve the quality of public services (Devarajan and Ianchovichina, forthcoming). Reforms implemented in the 1990s delivered economic growth (World Bank, 2011), but this growth was not inclusive as the private sector did not create jobs fast enough to absorb the large number of young people entering the labor force. As a result, the MENA region's unemployment rate was highest in the developing world and the rate for youth and women was double the average. Better educated than their parents, young people expected to do better than the previous generation, but instead they struggled to find good quality jobs and to get ahead no matter how hard they worked. While public services were free, their quality was so poor that people ended up paying for services provided by the private sector. Teacher absenteeism was high (Brixi et al., 2015) and learning outcomes were disappointing (Devarajan and Ianchovichina, forthcoming).

The discontent and the quality-of-life issues generated by the broken social contract could not be easily detected in standard objective indicators used to measure poverty reduction, shared prosperity and welfare. However, they are captured in subjective well-being data (Veenhoven, 2012), which are increasingly perceived as a meaningful and consistent way of measuring people's welfare (Senik, 2011). Life satisfaction in many MENA countries was below the average for the group of countries at a similar level of development (Figure 1a) and had dropped significantly in the years prior to the Arab Spring events (Figure 1b). By the end of the 2000s, many people in the developing parts of MENA, especially in the Arab

Republic of Egypt, Iraq, the Syrian Arab Republic, Tunisia, and the Republic of Yemen, were among the least happy people in the world (see Appendix A1).[3] In Egypt, for instance, average life-evaluation levels plunged on a 0–10 scale[4] from 5.5 in 2007 to 4.6 in 2010 (see Appendix A2)—a deep drop in the context of improvements observed in socioeconomic statistics and growth in per capita incomes (see Figure 1b).

A rise in people's expectations and aspirations, particularly those of youth who had acquired better education than their parents and expected to find good jobs after graduation (Campante and Chor, 2012), may have widened the gap between actual and expected welfare. This in turn may have increased people's aversion to inequality and social injustice (Cammett and Diwan, 2013; Verme et al., 2014) and it may have negatively affected their levels of happiness. Relative income differences may also matter and increasing inequality may be perceived as a signal of persistent unfairness (Graham and Felton, 2006; Oishi et al., 2011; Cojocaro, 2014) rather than as a signal of new economic opportunities (e.g. Clark, 2003). According to Graham and Pettinato (2004), the economic growth in Arab countries may have been accompanied by the rise of a middle class consisting of "frustrated achievers". This reasoning is in line with the "tunnel effect," introduced by Hirschman (1973). This effect occurs in situations similar to a traffic congestion in a tunnel where one of the lanes starts moving while the other lanes are still jammed. The people who are still stuck initially feel hope as the end of the traffic jam seems to be in sight. After some time, though, if their lane remains blocked, hope will give way to envy and frustration. In the Arab world, the "tunnel effect" may have been felt by the middle class, in particular, as reforms implemented to boost economic growth benefited instead a happy few, especially those with connections to the regimes in power.

Yet, even in the absence of a shift in expectations or social injustice, people may have become more frustrated with difficult-to-measure factors related to the quality of life in the Arab world, such as the deterioration in the quality of public services, the ability to get good jobs, and institutional and environmental quality. For instance, although access to free public health and education improved dramatically over the years, teacher and doctor absenteeism became a severe problem hurting learning outcomes and forcing people to pay out of pocket for better quality private-sector services (Brixi et al., 2015; Devarajan and Ianchovichina, forthcoming). Worsening of other subjective indicators, such as the ability to voice concerns and demand accountability and perceptions of corruption and cronyism, may have also contributed to the deterioration in subjective well-being. Evidence from the World Happiness Report (2010, p. 16) shows that trust as measured by whether people have someone to count on declined in MENA and perceptions of corruption and the freedom to make life choices also deteriorated, in contrast to improvements in other regions (e.g. Latin America).

The purpose of this paper is to empirically test the direction and strength of the associations between the symptoms of the broken social contract and life

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[3]The incidence of depression was also observed to be high in MENA, according to Ferrari *et al.* (2013).
[4]The two extreme ends of the range capture worst possible life (0) and best possible life (10).

dissatisfaction in MENA countries in the years immediately preceding the Arab Spring uprisings (2009–10). We do so by employing both objective and perceptions data regarding different aspects of life and society. In addition, we compare the factors significantly associated with life dissatisfaction on the eve of the Arab Spring to the main grievances motivating people to participate in demonstrations during the Arab Spring, as reported by individuals included in Arab Barometer surveys.

The paper adds to the literature in three ways. To our knowledge, we are the first to examine empirically the relative importance of different explanations provided for the declining life satisfaction in developing MENA on the eve of the Arab Spring. In particular, we examine several hypotheses for the fall in life satisfaction in developing MENA countries that are linked to the symptoms of the broken social contract and include dissatisfaction with: (1) the political system of autocracy and limited civil freedoms, (2) the standard of living, (3) the high unemployment and poor quality of available jobs, and (4) corruption in the form of nepotism or cronyism. Second, we investigate systematically the factors behind the decline in life satisfaction by decomposing the decline into two components: an effect associated with changes in the prevalence of dissatisfied individuals and an effect associated with changes in the relative importance of these factors for life satisfaction. In other words, this decomposition allows us to determine whether life satisfaction declined because of an increase in the percentage of people dissatisfied with a certain aspect of life or whether this domain became relatively more important for subjective well-being. Third, we compare the factors related to unhappiness in developing MENA with the grievances of participants in the Arab Spring protests. We find that the main grievances that motivated people to join demonstrations are also the factors associated significantly and negatively with subjective well-being levels in developing MENA during this period. Our findings suggest that perceptions provide valuable information about public preferences and needs, which are typically not reflected in objective data (Veenhoven, 2002). In other words, we make the case that both objective and subjective (or perceptions) data matter for understanding the relative importance of grievances for the collective action observed during the Arab Spring (see Okulicz-Kozaryn, 2013; Jahedi and Méndez, 2014).

The remainder of this paper is organized as follows. Section 2 discusses the potential root causes of dissatisfaction with life in developing MENA. Section 3 presents the concepts, methodology, and data used in the empirical exploration. The results of this empirical analysis are presented in Section 4. Finally, Section 5 concludes with a summary of findings, a discussion of how these results link to the grievances voiced during the Arab Spring uprisings, and a few caveats.

2. Major Factors Behind Life Dissatisfaction in Developing MENA Countries

A look at the universal conditions for happiness, as presented in cross-country studies focusing on life satisfaction, provides limited understanding of the factors behind the low levels of life satisfaction in the Arab world. To understand the factors shaping the subjective well-being in the developing Arab countries prior to the Arab Spring, we must factor in explicitly the grievances associated with the

broken social contract as well as objective indicators such as income, life expectancy, and education and evaluate their relative importance for life satisfaction.

Several explanations have been put forward for the grievances that led to the rise in dissatisfaction rates on the eve of the Arab Spring. These include: (1) limited freedom and voice in predominantly autocratic states; (2) dissatisfaction with the standards of living; (3) unhappiness with persistently high unemployment and lack of high-quality jobs; and (4) dissatisfaction with corruption and cronyism, which have constrained the opportunities for economic growth of those who work hard. Shifts in expectations are not explored as a unique factor to explain dissatisfaction, because each of the other explanations entail possible shifts in expectations in the corresponding domain. Therefore, changes in dissatisfaction with any particular domain partly incorporates the mismatch between expectations and reality, which are captured indirectly. The remainder of this section discusses each of these explanations in detail.

2.1. *Autocracy*

On the eve of the Arab Spring, most Arab states were longstanding autocracies (Chekir and Diwan, 2012; Cammett and Diwan, 2013; Bromley, 2015). Power was concentrated in the hands of one person or a small group of elites, backed by the military, who made decisions subject to few legal restraints and mechanisms of popular control. At the same time, the public had few if any channels of safe expression of opinions and grievances and opportunities to develop diverse civil society. The longstanding regimes managed to stay in power through a combination of repressive practices and a social contract which extended benefits, such as free public education and health services, subsidized energy and food products, and guarantees of public employment, in exchange for political support (Bellin, 2004; Cammett and Diwan, 2013; Bromley, 2015).[5] Thus, despite human development and economic progress after independence, the developing MENA countries scored low in terms of economic and social freedoms and the Freedom House ranked the region as the most repressive in the world (Freedom House, 2008).

The extent to which people are free to make choices and voice opinions has a major impact on their happiness (Inglehart et al., 2008; Verme, 2009). Democracies are, on average, happier than autocracies (Frey and Stutzer, 2000), but the effect of democracy on happiness is stronger in countries with established democratic traditions (Dorn et al., 2007). Gholipour Fereidouni *et al.* (2013) obtained no significant relationship between voice and accountability and happiness in developing MENA countries. Ott (2010) also found that the correlation between happiness and democracy is relatively weak in the MENA region. The "autocratic bargain" may have weakened the direct link between happiness and limited freedom in developing MENA. Individuals who obtain "material benefits" in exchange for political support may initially express dissatisfaction with their standards of living rather than with the system responsible for their deterioration.

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[5]Cammett and Diwan (2013) refer to this social contract as an "autocratic bargain."

2.2. *Dissatisfaction with Standards of Living*

After independence, natural resource rents enabled many Arab governments to finance redistributive policies without imposing a heavy tax burden on citizens. But in the 1990s and 2000s, fiscal pressures increased, reflecting disappointing growth in the 1980s and growing recurrent expenditures, especially on public wages and subsidies. Governments responded by downsizing the public sector, removing the guarantees of secure public jobs, and initiating reforms of the food and energy subsidy programs.[6] During this period, unemployment increased and many households noted deterioration in their standard of living. High dependence on imported food and limited fiscal space meant that the global commodity price increases of the 2000s would transmit to domestic markets despite the presence of food subsidies (Korotayev and Zinkina, 2011; Ianchovichina et al., 2014). Inflation stemming from increases in food and energy prices put a strain on households as they spent more of their income on meeting basic needs.[7] The global economic crisis of 2008 put additional stress on the MENA economies. In Egypt, the crisis was associated with a steep decline in real earnings growth; in Tunisia, it reinforced the upward trend in unemployment; and in Jordan, it slowed employment growth. Dissatisfaction with basic public services such as healthcare, housing, schools, and infrastructure also grew in the developing MENA countries, according to Gallup World Poll data, reflecting the erosion in the quality of public services.

By the end of the 2000s, the erosion in standards of living was felt not only by the poor, but also by other segments of the population, including the middle class.[8] Reflecting diminishing marginal utility, the widespread system of subsidies could not compensate for the erosion of living standards; food and energy subsidies mattered less for the well-being of the middle class than they did for the well-being of the poor and vulnerable (World Bank, 2011; Ianchovichina *et al.*, 2015; Araar and Verme, 2016).[9]

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[6]Some governments were more successful than others in cutting subsidies and improving targeting. Most economies made only partial reforms to their subsidy systems and reversed the reforms in response to the Arab Spring events.

[7]According to Maslow (1943), in the hierarchy of individual demands, a person's physiological needs for basics such as food, water, and shelter dominate all other needs. In other words, if these basic needs are not supplied, all other human needs are pushed into the background and the individual only seeks to satisfy his or her hunger. Individual anxiety over rising costs of food or shelter can trigger unhappiness and, in some cases, riots (Lagi, Bertrand, and Bar-Yam, 2011). The risk of riots is particularly high in lower-income countries where the share of food and other necessities in household expenditure is high (Arezki and Brückner, 2011).

[8]See Dang and Ianchovichina (forthcoming) for a discussion of middle-class welfare dynamics in the developing MENA countries during this period.

[9]World Bank (2011) reports that in fiscal year 2008/09, the share of food subsidies in the total consumption of the poorest 20 percent of the Egyptian population was 15 percent, whereas the corresponding share for the richest 20 percent of Egyptians was just 7.4 percent. Araar and Verme (2016) show that in 2014 for all countries and all food products, as well as for liquefied petroleum gas and electricity, the household budget shares of expenditure on subsidized products was higher for poorer and progressively lower for richer households, and the decrease was very steep in general. This was not the case for gasoline and diesel. The richer households spent more on gasoline and diesel than the poorer households, but the expenditure shares of the rich on these two energy products were small, at close to or below 3 percent.

2.3. *Unemployment and Low Quality Jobs*

Dissatisfaction with job market conditions was particularly strong in the developing MENA countries on the eve of the Arab Spring. In the preceding decade, the MENA region's average, aggregate and youth unemployment rates were the highest in the world. Without guarantees of secure public jobs, young people, who entered the labor market better prepared than their parents in terms of educational qualifications (Campante and Chor, 2012; Barro and Lee, 2013), were forced to queue for public sector jobs or take part-time or low-quality jobs in the private sector (Chamlou, 2014)[10] which did not generate enough formal jobs (Ianchovichina, 2018). Employment in the informal private sector offered little protection at old age and limited access to quality healthcare and benefits, such as paid maternity and annual leave (Angel-Urdinola and Kuddo, 2010; World Bank, 2014a).

The mismatch between educational attainment and economic opportunities created a gap between reality and expectations, lowering youth's life satisfaction, amplifying perceptions of inequality and unfairness, and potentially contributing to social unrest (Campante and Chor, 2012). In the literature, the negative association between happiness and unemployment is well-established and can be explained by a combination of income loss and psychic costs related to psychological distress and loss of identity and self-respect (Veenhoven, 1989; Gallie and Russel, 1998). The deterring effect of unemployment on happiness is more severe for the long-term unemployed (Clark and Oswald, 1994), which is particularly high in the MENA region, and for people with limited job opportunities (Clark et al., 2010).

2.4. *Crony Capitalism and "Wasta"*

On the eve of the Arab Spring, many people were frustrated because they could not get ahead by working hard and share in the prosperity generated by the relatively few large and successful Arab firms; they were mostly state-owned or privately owned companies (OECD 2009).[11] At a time when public sector employment was contracting, private sector growth was sluggish, stifled by distortions, including policies that offered advantages to a few firms with political connections.[12] Reforms in the 1990s were implemented in an uneven way, benefiting mainly the elites (Chekir and Diwan, 2012; Rijkers *et al.*, 2014) who dominated a range of economic sectors (Malik and Awadallah, 2013).

Corruption and cronyism flourished in developing MENA with detrimental effects not only on aggregate economic growth, but also on people's subjective well-being (Ott, 2010). There was growing frustration with inequality of opportunity in labor markets and the increased importance of "wasta" or connections with the elites in getting good quality jobs. These feelings were broadly shared and

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[10]The informal sector consists of firms, workers, and activities that operate outside the legal and regulatory frameworks.

[11]According to OECD (2009), very few large Arab firms are publicly traded companies.

[12]There was fear that a rise of the nouveau rich would challenge existing power relations. The ruling elites controled large parts of the private sector and profited from monopoly rights and cheap access to land and other resources (Cammett and Diwan, 2013).

reflected the perceptions of citizens that "wasta" mattered more than credentials for getting good jobs. The worsening perceptions about corruption and crony capitalism were reflected in the retreat of MENA countries' rankings on the Corruption Perceptions Index of Transparency International between 2000 and 2010. Tunisia's score, for instance, declined from 5.2 in 2000 to 4.3 in 2010 (lower scores indicate highly corrupt countries). Similarly, Morocco's score decreased from 4.7 to 3.4 during the same period. In Syria, the index dropped from 3.4 in 2003 to 2.5 in 2010. In some countries, including Egypt, Jordan and Libya, the index was stable in the 2000s, but most MENA countries scored below the worldwide average on various governance indicator rankings (for example, Kaufmann et al., 2011).

In summary, it can be argued that the growing dissatisfaction on the eve of the Arab Spring was fueled by a mix of grievances related to the standards of living, unemployment and low quality jobs, and "wasta" or cronyism.[13] The rest of the paper tests these hypotheses, the relative importance of different grievances for life satisfaction and its decline during the period immediately preceding the Arab Spring.

3. Concepts, Methodology, and Data

The word "happiness" is used in various ways (Veenhoven, 2012). In the broadest sense it is an umbrella term for all that is good. Accordingly, "happiness" is often used interchangeably with "well-being" or "quality of life" and in this case denotes both individual and social welfare. However, in the social sciences the word "happiness" is also used in a more specific way, which refers to "subjective well-being", indicative of an individual's subjective appreciation of his or her own life or "life satisfaction". Accordingly, the concept of "happiness" has been defined as "*the degree to which an individual judges the overall quality of his/her own life-as-a-whole favorably*" (Veenhoven, 1984, Chapter 2).

Thus defined, happiness is something on one's mind that can be measured using surveys. Common survey questions[14] read: "*Taking all together, how happy would you say you are: very happy, quite happy, not very happy, not at all happy?*" (standard item in the World Value Studies) or "*Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time*" (standard item in the Gallup World Poll). Responses to this latter question are used in the empirical part of this paper.[15]

How happy people are depends on *objective conditions* and *subjective factors*, including perceptions and expectations. According to Layard (2011), objective factors such as gender, age, marital and education status, financial situation, and health determine to a large extent life satisfaction, but subjective factors associated with perceptions and expectations about family relationships, work, community and friends, personal freedom, institutional quality, and personal values are also

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[13]Grievances related to these domains possibly entail unmet expectations about standards of living, quality of jobs and cronyism.

[14]See Veenhoven (2012) for a discussion of the limitations of direct questioning.

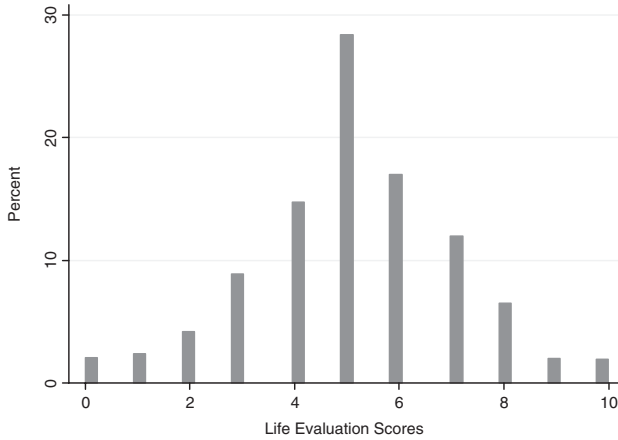[15]This question captures the cognitive component of happiness.

Figure 2a. Distribution of Life Satisfaction Scores in Developing MENA in 2009–10.
Note: *The Mean Life Satisfaction Score for developing MENA is 5.11.*
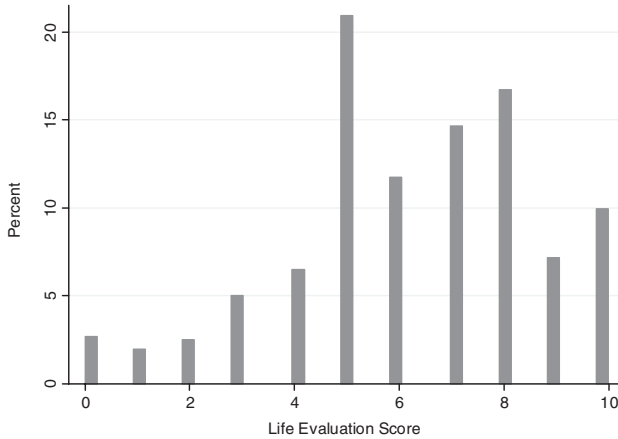
Figure 2b. Distribution of Life Satisfaction Scores in Latin America and the Caribbean in 2009–10.
Note: *The Mean Life Satisfaction Score for Latin America and the Caribbean is 6.24.*

imperative to individual happiness. These domains of life reflect the most import-ant human needs as identified by Maslow (1943). The relative importance of the objective and subjective determinants of life satisfaction vary over time and across individuals (Diener and Suh, 2000; Easterlin and Sawangfa, 2007).

To analyze the roots of dissatisfaction with life in developing MENA on the eve of the Arab Spring, we used cross-sectional data from the Gallup World Poll for the years 2009 and 2010 and a standard life satisfaction model (see Di Tella et al., 2003; Arampatzi et al., 2015):

(1) $LS_{jit} = \Theta\,\text{Individual\_Perceptions}_{jit} + \Sigma\text{Personal\_Characteristics}_{jit} + \varepsilon_j + \lambda_t + \mu_{jit}$
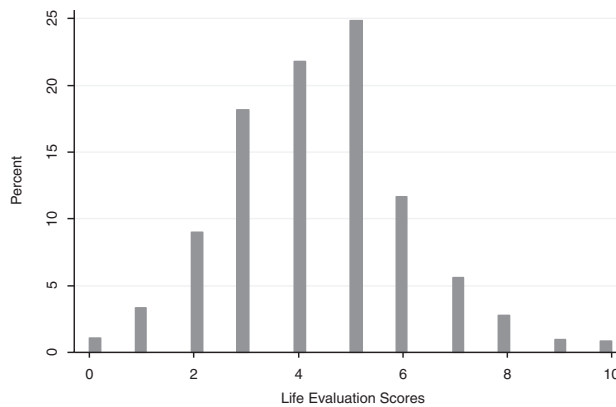
Figure 2c. Distribution of Life Satisfaction Scores in Sub-Saharan Africa in 2009–10.

Note: *The Mean Life Satisfaction Score for Sub-Saharan Africa is 4.35.*

Source: Gallup World Poll 2012. Developing MENA includes: Algeria, Egypt, Iraq, Jordan, Lebanon, Morocco, Palestine, Syria, Tunisia, and the Republic of Yemen. Latin America and the Caribbean includes: Venezuela, Brazil, Mexico, Costa Rica, Argentina, Bolivia, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Nicaragua, Panama, Paraguay and Peru Sub-Saharan Africa includes: Nigeria, Kenya, Tanzania, Ghana, Uganda, Malawi, South Africa, Botswana, Mali, Mauritania, Nigeria, Rwanda, Senegal, Zambia, Burkina Faso, Cameroon, Sierra Leone, Zimbabwe, Burundi, Central African Republic, Chad, Comoros, Ivory Coast, Liberia and Sudan. The Kolmogorov – Smirnov test of equality of distributions indicates that the three distributions are not equal.

In this model, LS, the overall life satisfaction of individual *j* in country *i* in year *t*, depends on a vector of Individual_Perceptions about social conditions and domain satisfactions of individual *j* in country *i* in year *t*, a vector of objective Personal_Characteristics of individual *j* in country *i* in year *t*, a vector ε_i of country dummies to control for time-invariant country-specific characteristics, a vector λ_t of month-year dummies[16] capturing time-related shocks common for all countries in the developing MENA region, and a residual error μ_{jit}. We estimate model (1) using weighted least squares regression (WLS) with robust standard errors and weighting observations using the sampling weights provided by the Gallup World Poll.[17]

The annual Gallup World Poll includes at least 1,000 randomly selected respondents (adult population of 15 years and older) per country and is representative at the national level. It covers entire countries including rural areas except for unsafe or inaccessible regions in few countries.[18] Despite the small anomalies in these few cases, the uniqueness of Gallup World Poll data for the developing

[16]The month-year of data collection for most countries are generally concentrated in two periods, the first quarters of 2009 and 2010 and the last quarters of 2009 and 2010.

[17]Following Ferrer-i-Carbonell and Frijters (2004), we treat the dependent variable as cardinal and not as ordinal variable.

[18]In Algeria, some sparsely populated areas of the south, home to 10 percent of the population, were excluded. In Jordan, excluded areas are home to 12 percent of the population. In Morocco, people in the southern provinces, representing 3 percent of the population, were not interviewed by Gallup World Poll. In Yemen, gender-matched sampling was used, while the sample for Palestinian territories includes people in East Jerusalem.

TABLE 1
SAMPLE STATISTICS ON LIFE SATISFACTION IN DEVELOPING MENA COUNTRIES (2009–10)

Variable	Observations	Mean	SD	Min.	Max.
Algeria	3,588	5.58	1.65	0	10
Egypt, Arab. Rep.	1,628	4.88	2.14	0	10
Jordan[a]	691	6.23	1.81	0	10
Iraq	2,432	5.07	1.72	0	10
Lebanon	3,382	5.29	2.29	0	10
Morocco	3,144	4.97	1.67	0	10
Palestine	2,942	4.83	2.14	0	10
Syrian Arab Republic	2,169	4.86	2.12	0	10
Tunisia	2,048	5.17	1.69	0	10
Yemen, Rep.	3,184	4.66	2.21	0	10

Source: Gallup World Poll 2012.
[a]The limited sample size for Jordan is due to non-response on some questions for 2010.

MENA region is indisputable. The Gallup World Poll constitutes an almost exclusive source of information supplied by individuals to inform on several aspects of their life, including how satisfied they are with their life as a whole and how satisfied they are with different domains of their life. The data source also allows for cross-country comparisons and region-based aggregation of micro-level information given the use of identical questions across countries and years. The common sample we use in this paper comprises in total 25,244 respondents from 10 developing MENA economies, including Algeria, Egypt, Iraq, Jordan, Lebanon, Morocco, Palestinian territories, Syria, Tunisia, and the Republic of Yemen.

Life satisfaction was measured using a single question, known as the "Cantril Ladder" or "Self-Anchoring Striving Scale" (Cantril, 1965). This question asks on which step of the ladder, with steps from 0 to 10, a person feels he or she stands at present. The higher the score on the ladder, the closer one's life is seen to his or her ideal life. Figure 2 shows the distribution of life evaluation scores in the developing MENA region (in panel a), Latin America and the Caribbean (in panel b), and Sub-Saharan Africa (in panel c) during the 2009–10 period. In developing MENA region 61 percent of the population has life satisfaction scores of 5 or lower, while only 10 percent gives his or her life a score of 8 or higher. The three distributions are distinctly different as indicated by the results from the Kolmogorov-Smirnov test for equality of distributions. The MENA distribution is different from the one for Latin America and the Caribbean and is closer to the one for Sub-Saharan Africa as seen on Figure 2, although the latter is shifted to the left of MENA's. This is expected, as the average per capita income in Sub-Saharan Africa is lower than that in developing MENA.

Within developing MENA, the mean life satisfaction scores vary by country, ranging from 4.66 in the Republic of Yemen to 6.23 in Jordan (Table 1). It is worth noting that when expectations do not meet reality, a person with high expectations is more likely to be dissatisfied with his life than a person with low expectations. Thus, the life satisfaction variable captures indirectly the effect of a gap between expected and actual welfare.

Our main variables of interest relate to the domain-specific characteristics thought to have a most profound influence on life satisfaction on the eve of the

Arab Spring, as discussed in section 2. All questions were originally coded as follows: (1) satisfied, (2) dissatisfied, (3) don't know, and (4) refuse. However, people answering "don't know" or who refused to answer this and other questions were omitted from the sample. In the restricted sample, 0.27 percent of the respondents did not respond to the life evaluation question, while a small percentage of the respondents were dropped from the sample because they did not respond to question on satisfaction with living standards (0.55 percent), satisfaction with efforts of the government to increase the number of available quality jobs (1.61 percent), cronyism (2.16 percent), freedom in life (1.79 percent), presence of corruption in government (9.10 percent)[19] and satisfaction with education questions (1.93 percent), respectively. Consequently, the explanatory variables related to subjective domain-specific characteristics are binary and are recoded as 0 if the respondent is satisfied and 1 if dissatisfied. The binary nature of the variables possibly limits the expressive capacity of respondents and consequently some variation is lost. For instance, respondents cannot indicate a neutral attitude. In that respect, binary coded measures adequately capture the direction of an attitude, although they perform less well in capturing the intensity of agreement or disagreement. The debate on the optimal numbers in scale response is longstanding. Evidence shows that at least in verbally labelled variables longer scales increase the internal consistency and reliability, but no large differences are found (Weng, 2004). However, obtaining internal consistency and reliability only happens when respondents actually use the whole range of available options (Diener, 2006).

The Gallup World Poll does not have a question on the degree to which people are satisfied with the political system in the MENA countries. Since in autocracies people's ability to make political choices is restricted, we instead turn to the question: "*Are you satisfied or dissatisfied with your freedom to choose what you do with your life?.*" We recognize, however, that this question also reflects how satisfied people are with their freedom to make individual choices about education, marriage, children, and employment. The answer to this question is recorded as zero for those who are satisfied and one for those who are dissatisfied with their freedom to make choices.

We control for objective measures of standards of living by including individual income (given in international dollars). We also include subjective evaluations of living standards based on the answers to the following question: "*Are you satisfied or dissatisfied with your standard of living, all the things you can buy and do?*" The answers to this question are coded as 0 if satisfied and 1 if dissatisfied and capture the effect of both monetary and non-monetary factors on people's experience with living conditions.

To examine the effects of unemployment, underemployment, and job market conditions, we include subjective and objective variables related to employment and the education system. With regard to employment status, we distinguish between individuals who are paid employees (reference category), self-employed, underemployed, unemployed, or out of the workforce. The underemployed are respondents who are employed part-time, but who would like to work full-time,

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[19]Non-respondents were further examined but were not found to have significant differences in life evaluation compared to respondents. Despite this finding, our results may underestimate the importance of the corruption domain relative to the other domains, especially given that part of the non-response might be due to fear from the government.

while the unemployed respondents are not employed at all and are looking for job opportunities. Respondents who are out of the workforce include homemakers, students, and retirees.[20] In addition, we control for whether people are employed in government positions or not (reference category is "Other"). To reflect on job market conditions and the availability of high-quality jobs, respondents were asked: "*Are you satisfied or dissatisfied with efforts to increase the number of quality jobs?*" and to this question they could either reply that they are satisfied, recorded as 0, or dissatisfied, coded as 1. The question: "*In the city or area where you live are you satisfied or dissatisfied with the education system or the schools?*" allows us to capture the effect on life satisfaction of service provision, in particular, education services, which determine employment opportunities later in life. The answer to this question is coded as 0 if satisfied or 1 if dissatisfied.

To explore the effect of corruption, cronyism, and "wasta" on life satisfaction, we focus on perceived government corruption as a proxy for perceptions of corruption. The answer to the question: "*Is corruption widespread within government?*" could be that the level of corruption within government is limited, recorded as 0, or widespread, recorded as 1. When information regarding corruption in government was not available, the question "*Is corruption widespread within business?*" was used (see Helliwell et al., 2015). In addition, we reflect the extent to which cronyism and inequities affect people's life satisfaction by incorporating people's opinions on whether working hard pays off. The answers to the question: "*Can people in this country get ahead by working hard or not?*" are coded as 0 if the response is positive and 1 if the response is negative.[21] Finally, we control for personal characteristics (demographic characteristics) that may confound the relationship between the designated factors and life satisfaction in developing MENA. These personal characteristics are related to gender, age, marital status and household composition, education level, migration status, and religion. An overview of all variables included in the analysis (including descriptive statistics) and variance inflation factor analysis are provided in Appendices B1, B2, and B3.

4. EMPIRICAL RESULTS

This section discusses the baseline results and the results from alternative specification, the sensitivity of the results to changes in variable specifications and data aggregations, as well as endogeneity bias issues. It also presents a decomposition of life satisfaction changes in order to understand the main drivers of change in well-being on the eve of the Arab Spring.

4.1. *Baseline and Alternative Specifications: Weighted Least Squares Results*

Table 2 reports results from different specifications of our life satisfaction model. In the first model specification (1), we have LS as a dependent variable

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[20]"Undetermined non-full-time employed" is an additional category, which is a result of older categorization of the employment status variable. Since this group is not clearly determined, it cannot be interpreted and it is therefore omitted from the analysis.

[21]Given the unfavourable responses to the cronyism question, reverse coding is used to record the answers, with 0 indicating a positive response and 1 indicating a negative one.

TABLE 2
DETERMINANTS OF LIFE SATISFACTION IN MENA: WEIGHTED LEAST SQUARES ESTIMATES

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
	DEV MENA	DEV MENA	DEV MENA	DEV MENA	DEV MENA	DEV MENA	DEV MENA	Arab Spring	Non-AS
Dissatisfied with freedom to choose life: Yes		−0.351*** (0.030)					−0.033 (0.031)	−0.019 (0.053)	−0.043 (0.037)
Dissatisfied with standard of living: Yes			−1.333*** (0.029)				−1.238*** (0.030)	−1.213*** (0.053)	−1.230*** (0.036)
Income (1,000's)			0.023*** (0.002)	0.029*** (0.002)			0.023*** (0.002)	0.025*** (0.003)	0.022*** (0.002)
Dissatisfied with efforts to increase high quality jobs: Yes				−0.361*** (0.031)			−0.154*** (0.032)	−0.139*** (0.053)	−0.145*** (0.039)
Dissatisfied with the educational system or the schools: Yes				−0.340*** (0.030)			−0.166*** (0.029)	−0.158*** (0.051)	−0.174*** (0.036)
(Reference group: Full-time Employed)									
Self-employed				0.077 (0.064)			0.041 (0.061)	−0.024 (0.100)	0.130* (0.077)
Unemployed				−0.534*** (0.082)			−0.335*** (0.079)	−0.475*** (0.145)	−0.229** (0.093)
Out of workforce				0.003 (0.049)			−0.019 (0.047)	−0.028 (0.076)	0.026 (0.060)
Underemployed				−0.267*** (0.082)			−0.114 (0.080)	−0.242* (0.133)	0.022 (0.100)
(Reference group: Other)									
Working for the government				0.245*** (0.055)			0.190*** (0.052)	0.309*** (0.084)	0.090 (0.068)
Undetermined				−0.011 (0.051)			−0.019 (0.049)	−0.280*** (0.095)	0.081 (0.058)
Corruption widespread within government: Yes					−0.284*** (0.036)		−0.079** (0.035)	−0.056 (0.054)	−0.083* (0.045)

Table 2 Continued

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
	DEV MENA	DEV MENA	DEV MENA	DEV MENA	DEV MENA	DEV MENA	DEV MENA	Arab Spring	Non-AS
People cannot get ahead by working hard: Yes						−0.496*** (0.041)	−0.223*** (0.039)	−0.210*** (0.080)	−0.214*** (0.044)
(Reference group: Muslim)									
Not Muslim/Other religion	0.269*** (0.075)	0.237*** (0.075)	0.202*** (0.069)	0.168** (0.074)	0.275*** (0.075)	0.239*** (0.074)	0.171** (0.068)	0.176 (0.152)	0.177** (0.076)
(Reference group: Completed elementary education or less)									
Completed 9–15 years of education	0.452*** (0.033)	0.438*** (0.033)	0.295*** (0.031)	0.356*** (0.033)	0.448*** (0.033)	0.447*** (0.033)	0.282*** (0.031)	0.393*** (0.051)	0.212*** (0.040)
Completed four years of education beyond high school and/or 4-year college degree.	0.917*** (0.053)	0.894*** (0.053)	0.544*** (0.050)	0.672*** (0.054)	0.918*** (0.053)	0.902*** (0.052)	0.538*** (0.051)	0.533*** (0.093)	0.514*** (0.062)
(Reference group: Not a migrant)									
Migrant	−0.145 (0.102)	−0.147 (0.102)	−0.264*** (0.097)	−0.208** (0.101)	−0.142 (0.102)	−0.156 (0.101)	−0.257*** (0.096)	−0.729*** (0.182)	−0.110 (0.111)
Female	0.221*** (0.029)	0.224*** (0.029)	0.156*** (0.027)	0.203*** (0.031)	0.216*** (0.029)	0.209*** (0.029)	0.138*** (0.029)	0.236*** (0.052)	0.106*** (0.035)
Age	−0.040*** (0.006)	−0.038*** (0.006)	−0.029*** (0.006)	−0.038*** (0.006)	−0.039*** (0.006)	−0.039*** (0.006)	−0.028*** (0.006)	−0.022** (0.009)	−0.035*** (0.007)
Age ^2	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000** (0.000)	0.000*** (0.000)
(Reference group: Married with children)									
Married without children	0.092* (0.047)	0.091* (0.047)	0.037 (0.044)	0.081* (0.046)	0.098** (0.047)	0.088* (0.047)	0.044 (0.043)	0.015 (0.073)	0.063 (0.054)
Single with children	−0.140*** (0.050)	−0.122** (0.050)	−0.101** (0.047)	−0.088* (0.049)	−0.136*** (0.050)	−0.145*** (0.050)	−0.075 (0.047)	0.053 (0.079)	−0.176*** (0.059)
Single without children	−0.086* (0.050)	−0.081 (0.050)	−0.102** (0.047)	−0.067 (0.049)	−0.079 (0.050)	−0.088* (0.050)	−0.077 (0.047)	−0.013 (0.080)	−0.136** (0.058)
Separated/Divorced/ Widow with children	−0.125 (0.083)	−0.098 (0.082)	−0.028 (0.077)	−0.085 (0.081)	−0.124 (0.083)	−0.108 (0.082)	−0.003 (0.076)	0.120 (0.119)	−0.091 (0.098)

Table 2 *Continued*

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9
	DEV MENA	DEV MENA	DEV MENA	DEV MENA	DEV MENA	DEV MENA	DEV MENA	Arab Spring	Non-AS
Separated/Divorced/ Widow without children (*Reference group: 1 person older than 15 in household*)	−0.404***	−0.406***	−0.265***	−0.337***	−0.390***	−0.398***	−0.251***	−0.321**	−0.254**
	(0.099)	(0.099)	(0.091)	(0.095)	(0.099)	(0.098)	(0.090)	(0.148)	(0.112)
2 people older than 15 in household	0.018	0.007	0.005	0.008	0.022	0.021	0.010	−0.024	−0.153
	(0.086)	(0.086)	(0.084)	(0.084)	(0.086)	(0.086)	(0.084)	(0.112)	(0.116)–
More than 2 people older than 15 in household	0.030	0.008	−0.033	−0.031	0.030	0.030	−0.030	0.003	0.237**
	(0.081)	(0.082)	(0.080)	(0.080)	(0.081)	(0.081)	(0.079)	(0.107)	(0.108)
Country fixed effects	YES	YES	YES	YES	YES	YES	YES	YES	YES
Month and year of interview	YES	YES	YES	YES	YES	YES	YES	YES	YES
Constant	5.560***	5.686***	5.708***	5.747***	5.768***	5.628***	5.824***	5.588***	6.161***
	(0.172)	(0.173)	(0.163)	(0.178)	(0.173)	(0.172)	(0.173)	(0.260)	(0.222)
Observations	25,244	25,244	25,244	25,244	25,244	25,244	25,244	9,065	16,179
R^2	0.071	0.078	0.197	0.121	0.074	0.079	0.206	0.192	0.221

Note. i. Robust standard errors in parentheses; ***$p < 0.01$; **$p < 0.05$; *$p < 0.10$; ii. Developing MENA includes Algeria, Egypt, Iraq, Jordan, Lebanon, Morocco, Palestine, Syria, Tunisia, and the Republic of Yemen; iii. Arab Spring countries include Tunisia, Egypt, Syria, and the Republic of Yemen. iv. Non-AS countries include Algeria, Iraq, Jordan, Lebanon, Morocco, Palestine. v. Employment status includes an additional category (2009) which captures individuals other than employed.

regressed only on control variables for personal characteristics. In models 2 through 6, we separately include each of the subjective domain satisfaction variables associated with dissatisfaction in developing MENA, along with related objective factors. In model specification 7, all subjective and objective variables are included simultaneously, as shown in the fully specified life-satisfaction model equation (1). Model 8 replicates model 7 using a reduced sample of Arab Spring countries where the uprisings were most intense.[22] Finally, model 9 replicates model 7 using a reduced sample of non-Arab-Spring (non-AS) developing MENA countries. All specifications include country and time dummies. The country dummies capture time-invariant, country-specific factors, such as the size of the country, culture, language, distance to markets and the structural features of the political and economic environment. The time dummies control for exogenous factors that changed over the period of interest, including contagion effects in the aftermath of the global financial crisis.

In line with the empirical literature on happiness, education and marriage are positively associated with life satisfaction in developing MENA. Against prevailing perceptions in the West, Arab women are on average happier than men. This finding is consistent with the discussion in Bromley (2015) who emphasizes the sources of unhappiness and frustration for men that doom men to solitude and frustration.[23]

The main findings related to the subjective factors, representing the main grievances on the eve of the Arab Spring, can be summarized as follows. First, although dissatisfaction with freedom to choose what one does with his or her life has a negative and significant effect on life satisfaction (model 2, Table 2), this effect disappears after controlling for other perceptions (model 7, Table 2). This finding is in line with the view that the "autocratic bargain" has weakened the direct link between authoritarianism (for example, lack of freedom) and life satisfaction. Suppressed citizens compromised their voice and freedom in exchange for material benefits provided by the state (Devarajan and Ianchovichina, 2017). The results suggest that disappointment with the economic aspects of the failed social contract dominates the effect of grievances associated with limited freedoms. Dissatisfaction with standards of living has the largest and strongly significant negative effect on life satisfaction among all other subjective domains (models 3 and 7, Table 2). On average, in the fully specified model 7 in Table 2, the life satisfaction score of dissatisfied respondents is 1.24 points lower than the life satisfaction score of respondents who are satisfied with their living standards.

Poor job market conditions are significantly and negatively related to life dissatisfaction in developing MENA countries—a result that remains significant even after including all other subjective domains (models 4 and 7, Table 2). The unemployed report life satisfaction scores that are 0.34 points lower than people in paid

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[22] These countries are Egypt, Arab. Rep, Syrian Arab Republic, Tunisia, and Yemen, Rep. Libya is an Arab Spring country but it is not in this sample due to missing data.

[23] These findings are also confirmed in the World Happiness Report, 2015. A possible explanation for this finding are the distinct gender roles within the Arab world. Women are mainly nurturers and caregivers, while men are providers and protectors of the family. Given current socio-economic conditions in many developing Arab nations, men have much more difficulties living up to these expectations than women, explaining the gender gap in happiness favouring women. Other research on gender differences in well-being finds that women report higher satisfaction scores than men, but more stress (Rusting and Nolen-Hoeksema, 1998).

employment. Lack of quality jobs is another reason for the discontent and remains a significant factor even after controlling for employment status. On average, respondents who indicate dissatisfaction with the availability of high quality jobs report 0.15 points lower life satisfaction than those who are satisfied with job quality (model 7, Table 2). Not surprisingly, people working for the government are, on average, significantly happier than people working in the private sector. Public sector jobs often offer higher wages and more job security than private sector jobs as well as generous social security coverage (Bodor et al., 2008). Such advantageous terms of employment are very attractive to workers. Dissatisfaction with the education system is associated with life dissatisfaction in developing MENA. Respondents who are dissatisfied with the educational system report 0.17 points lower satisfaction with life than those who are satisfied with the education system (models 4 and 7, Table 2).

Perceptions of inequality of opportunities (or "wasta") due to corruption and nepotism are significantly and negatively associated with life satisfaction in developing MENA (models 5, 6, and 7, Table 2). Respondents who think that people cannot get ahead by working hard report, on average, a 0.22 points lower life satisfaction score than those who are satisfied with this dimension of life satisfaction (model 7, Table 2). Respondents who believe that government corruption is widespread are on average 0.08 points less satisfied with life (model 7, Table 2). Thus, in MENA, the governance problem is perceived to affect life satisfaction not so much through corruption in government, but through practices of nepotism and elite capture that affect all aspects of life and prevent people and those working in the private sector, more generally, from succeeding even when they make great efforts to excel and do a good job. This result is consistent with the findings in Rijkers et al. (2014) and World Bank (2014a).

Finally, model 8 replicates model 7 with a reduced sample of Arab Spring countries where the uprisings were most intense. In this model all coefficients are similar to those in model 7. Therefore, the conclusions based on the full specification for the whole sample of developing MENA countries (model 7, Table 2) hold for the reduced sample of Arab Spring countries (model 8, Table 2). They also hold for the reduced sample of non-AS countries (model 9, Table 2). Our weighted least squares (WLS) results largely hold when controlling for interview dates, mood, health (Appendix C1), examining heterogeneity with the MENA region (Appendix C2), and using alternative variable specifications (Appendix C3). Only when we add mood to our WLS baseline regression model 7, the coefficients on dissatisfaction with the availability of high quality jobs and dissatisfaction with the educational system become smaller in size and statistically insignificant. We present the marginal effects of our estimates in Appendix C4. These marginal effects are in line with our findings. For instance a discrete change from 0 being satisfied with standards of living to 1 being dissatisfied decreases life evaluation by 0.26 points in developing MENA and by 0.27 points in the Arab Spring countries.

4.2. *Dealing with Reverse Causality: Lewbel IV Estimator*

Our analysis possibly suffers from endogeneity bias, although we have no indication that the variables are endogenous. The Durbin–Wu–Hausman tests

for endogeneity showed that the Weighted Least Square models perform relatively well.[24] However, reverse causality may be a problem since life evaluation Y_1 and domain satisfaction Y_2 are often jointly determined. The preferred model to be estimated would therefore be the following:

$$(2) \qquad\qquad Y_1 = X'\beta + Y_2\gamma + \varepsilon_1,$$

$$(3) \qquad\qquad Y_2 = X'\alpha + \varepsilon_2.$$

Although the usage of conventional instrumental variable (IV) methods would be preferred in a cross-section setting, finding credible instruments X which are present in Y_2 but not in Y_1 is difficult. Conventional IVs have to satisfy the following restrictions: the instrument X has to be correlated with the independent variables and it has to be uncorrelated with the dependent variable and the error term. In our case, a valid instrument should be correlated with the independent variables in our regression, the life domain perceptions, but not with life satisfaction. Given the general unavailability of good instruments with this property, we use the Lewbel IV estimator to address reverse causality. We resort to the implementation of an instrumental variable estimation using heteroskedasticity-based instruments for cross-sectional data. This method, suggested by Lewbel (2012), is based on the heteroskedasticity of the standard errors ε_2 in equation (2b). Identification is achieved in this context by having regressors that are uncorrelated with the product of heteroskedastic errors. The Lewbel IV estimator uses internally generated instruments comparable to difference Generalized Method of Moments (GMM) and system GMM in a panel data setting to isolate the effect of perceptions on life satisfaction. According to Lewbel (2012), in the absence of conventional IVs, a vector of exogenous variables X or a subset of X can be used to generate external instruments [Z- E(Z)]ɛ,[25] given that there is some heteroskedasticity in the standard errors ε, and

$$(4) \qquad E(X\varepsilon) = 0, \; \mathrm{cov}\left(Z, \varepsilon_1\varepsilon_2\right) = 0 \text{ and } \mathrm{cov}\left(Z, \varepsilon_2^2\right) \neq 0.$$

The generated instruments Z are constructed from the auxiliary equations' residuals, multiplied by each of the included exogenous variables X in mean-centered form:

$$(5) \qquad\qquad Z_j = (X_j - \bar{X}) * \hat{\varepsilon}_2,$$

where ε is the vector of residuals from the "first-stage regression" equation (2b) of each endogenous regressor on all exogenous regressors, including a constant vector.

The validity of these assumptions for our data can be questioned, so we examine whether the Lewbel requirements are met. First, we test for the presence of

[24]P-values of endogeneity tests of variables are insignificant at the 1 percent level indicating that they are not endogenous.

[25]A more detailed account on how the instruments are estimated can be found in the work of Lewbel (2012).

heteroskedasticity. Following Lewbel (2012), we performed a Breusch-Pagan Lagrange Multiplier Test to test for heteroskedasticity. The results show that the test statistic is significantly different from zero in all cases, indicating that there is enough variance in our data to avoid weak instruments. Second, before estimating the second stage of the regressions using the generated instruments, we carefully consider the choice of Z. As indicated by Lewbel (2012), Z can be equal to X or a subset of X and therefore the obtained estimates could be largely dependent on the specific choice of X's. Although in general the choice of Z can be random, subject to the conditions above, we opted to follow a different strategy to select our instruments. Our strategy for choosing Z is based on the correlation matrix of the generated instruments. The subset of instruments Z had to satisfy two basic conditions: (i) it had to be uncorrelated with the dependent variable Y_1 and (ii) it had to be statistically correlated with X in the first place. The generated instruments that did not meet these conditions were excluded from the second-stage regression. This procedure was followed to instrument separately and simultaneously all independent variables, shown in Table 3. After testing whether the conditions (i) and (ii) were satisfied, we chose a set of instruments Z that passed the conventional reliability and validity tests,[26] and estimated the model using generalized method of moments (GMM). The coefficients of Lewbel estimates are directly comparable to our WLS estimates.

Table 3 provides a replication of Table 2 using the Lewbel IV estimator. Several results stand out. First, dissatisfaction with freedom to choose life is not significant in model 10 or in the full specification in model 15, showing that freedom does not explain variation in life satisfaction in developing MENA on the eve of the Arab Spring. This is in line with our initial findings (Table 2, models 7,8). Second, in line with the WLS results, dissatisfaction with standards of living, income, and job status remain robust in sign and highly significant predictors across all specifications (models 11, 12, 15, 16, and 17). Third, perceived poor job conditions, reflected in dissatisfaction with the efforts of the government to improve the number of high quality jobs and the educational system, do not have a significant effect on life satisfaction (models 15, 16, and 17). It is highly likely that these domains are jointly determined or are partly reflected in dissatisfaction with standards of living. Fourth, the effect of cronyism and "wasta" on satisfaction with life remains significant, but the effect of widespread corruption is no longer significant in the full specification of the model (models 15 and 16). This result supports our initial finding that people are predominantly dissatisfied by corruption associated with cronyism and nepotism ("wasta"). Since these results are in line with the WLS estimates and do not present a problem with reverse causality, we consider them our main results on determinants of life satisfaction in the MENA region.

4.3. *Drivers of Life Satisfaction Changes on the Eve of the Arab Spring*

Perceptions about living standards, job market conditions, and cronyism have a considerable effect on life satisfaction in MENA. This section explores the

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[26]The following tests were used to establish that the conditions were satisfied: Underidentification test: Significant—instruments are relevant; Hansen J test (Overidentification test of all instruments): Insignificant; over-identifying restrictions are valid; Cragg-Donald F-test larger than Stock-Yogo weak threshold maximal IV relative bias at 10 percent: no weak instruments.

TABLE 3
DETERMINANTS OF LIFE SATISFACTION IN MENA: LEWBEL ESTIMATES

VARIABLES	Model 10 DEV MENA	Model 11 DEV MENA	Model 12 DEV MENA	Model 13 DEV MENA	Model 14 DEV MENA	Model 15 DEV MENA	Model 16 Arab Spring	Model 17 Model Non-AS
Dissatisfaction with freedom to choose life: Yes	−0.243 (0.340)					−0.011 (0.789)	0.069 (0.923)	0.060 (0.344)
Dissatisfied with standard of living: Yes		−1.299*** (0.100)				−1.181*** (0.126)	−1.288*** (0.186)	−1.135*** (0.140)
Income (1,000's)		0.024*** (0.002)	0.030*** (0.002)			0.023*** (0.002)	0.026*** (0.003)	0.023*** (0.002)
Dissatisfied with efforts to increase high quality jobs: Yes			−0.353*** (0.092)			−0.085 (0.262)	−0.218 (0.333)	−0.028 (0.148)
Dissatisfied with the educational system or the schools: Yes			−0.118 (0.245)			−0.076 (0.245)	0.515 (0.524)	−0.200 (0.243)
(Reference group: Full-time Employed)								
Self-employed			0.079 (0.064)			0.050 (0.061)	−0.037 (0.105)	0.154** (0.077)
Unemployed			−0.539*** (0.083)			−0.353*** (0.086)	−0.504*** (0.163)	−0.246** (0.100)
Out of workforce			0.012 (0.049)			−0.021 (0.050)	−0.038 (0.078)	0.023 (0.064)
Underemployed			−0.287*** (0.084)			−0.126 (0.082)	−0.251* (0.135)	−0.006 (0.102)
(Reference group: Other)								
Working for the government			0.233*** (0.055)			0.187*** (0.054)	0.487*** (0.134)	0.103 (0.072)
Corruption widespread within government: Yes				−0.367*** (0.128)		−0.188 (0.181)	−0.216 (0.247)	−0.173 (0.187)

Table 3 Continued

VARIABLES	Model 10 DEV MENA	Model 11 DEV MENA	Model 12 DEV MENA	Model 13 DEV MENA	Model 14 DEV MENA	Model 15 DEV MENA	Model 16 Arab Spring	Model 17 Model Non-AS
People cannot get ahead by working hard: Yes					-0.589*** (0.134)	-0.324** (0.154)	-0.512* (0.269)	-0.258 (0.158)
(Reference group: Muslim) Not Muslim/Other religion	0.245*** (0.081)	0.180*** (0.069)	0.165** (0.076)	0.277*** (0.075)	0.233*** (0.074)	0.175* (0.094)	0.238 (0.169)	0.181** (0.084)
(Reference group: Completed elementary education or less) Completed 9–15 years of education	0.443*** (0.035)	0.305*** (0.032)	0.360*** (0.033)	0.447*** (0.033)	0.445*** (0.033)	0.280*** (0.037)	0.368*** (0.062)	0.217*** (0.040)
Completed four years of education beyond high school and/or 4-year college degree.	0.901*** (0.057)	0.569*** (0.050)	0.679*** (0.054)	0.918*** (0.053)	0.899*** (0.053)	0.539*** (0.068)	0.486*** (0.136)	0.528*** (0.062)
(Reference group: Not a migrant) Migrant	-0.141 (0.102)	-0.200** (0.098)	-0.184* (0.102)	-0.142 (0.102)	-0.155 (0.101)	-0.272*** (0.096)	-0.718*** (0.188)	-0.125 (0.111)
Female	0.223*** (0.029)	0.157*** (0.027)	0.203*** (0.031)	0.215*** (0.029)	0.206*** (0.029)	0.140*** (0.038)	0.226*** (0.072)	0.107*** (0.036)
Age	-0.039*** (0.006)	-0.029*** (0.006)	-0.038*** (0.006)	-0.039*** (0.006)	-0.038*** (0.006)	-0.029*** (0.006)	-0.022** (0.009)	-0.037*** (0.007)
Age ^{2}	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)	0.000*** (0.000)
(Reference group: Married with children) Married without children	0.091* (0.047)	0.038 (0.044)	0.083* (0.046)	0.100** (0.047)	0.087* (0.047)	0.047 (0.044)	0.036 (0.076)	0.064 (0.054)
Single with children	-0.125** (0.053)	-0.096** (0.047)	-0.090* (0.049)	-0.134*** (0.050)	-0.147*** (0.050)	-0.081 (0.057)	0.066 (0.096)	-0.181*** (0.062)
Single without children	-0.081 (0.050)	-0.095** (0.047)	-0.067 (0.049)	-0.076 (0.050)	-0.089* (0.050)	-0.072 (0.047)	-0.015 (0.082)	-0.125** (0.059)

Table 3 *Continued*

VARIABLES	Model 10	Model 11	Model 12	Model 13	Model 14	Model 15	Model 16	Model 17
	DEV	DEV	DEV	DEV	DEV	DEV	Arab Spring	Model Non-AS
	MENA	MENA	MENA	MENA	MENA	MENA		
Separated/Divorced/Widow with children	−0.106	−0.032	−0.100	−0.123	−0.105	−0.011	0.111	−0.099
	(0.086)	(0.076)	(0.082)	(0.083)	(0.082)	(0.089)	(0.124)	(0.101)
Separated/Divorced/Widow without children	−0.403***	−0.273***	−0.343***	−0.385***	−0.399***	−0.252***	−0.290*	−0.267**
	(0.099)	(0.091)	(0.095)	(0.099)	(0.098)	(0.093)	(0.153)	(0.113)
(Reference group: 1 person older than 15 in household)								
2 people older than 15 in household	0.010	0.017	0.007	0.023	0.024	0.010	−0.037	−0.146
	(0.087)	(0.084)	(0.085)	(0.086)	(0.086)	(0.089)	(0.125)	(0.116)
More than 2 people older than 15 in household	0.015	−0.022	−0.032	0.030	0.030	−0.032	−0.018	−0.230**
	(0.085)	(0.080)	(0.081)	(0.081)	(0.081)	(0.093)	(0.135)	(0.110)
Constant	5.159***	5.452***	5.471***	5.364***	5.116***	5.570***	5.446***	6.539***
	(0.213)	(0.159)	(0.182)	(0.196)	(0.168)	(0.198)	(0.254)	(0.255)
Observations	25,244	25,244	25,244	25,244	25,244	25,244	9,065	16,179
R^2	0.077	0.193	0.117	0.074	0.079	0.204	0.076	0.219
Statistics								
Underidentification test:	83.04	1105.78	194.93	503.81	454.68	29.508	23.872	116.215
P-value	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.013)	(0.048)	(0.000)
Cragg-Donald Wald F statistic	42.14	563.35	31.23	729.53	425.07	1.826	1.533	6.036
Stock-Yogo VC 10%	10.27	10.27	10.89	19.53	10.83	NA	NA	NA
Hansen J statistic	4.25	4.63	5.13	0.133	0.924	8.327	7.516	15.890
	(0.234)	(0.200)	(0.953)	(0.715)	(0.921)	(0.871)	(0.873)	(0.600)

degree to which each of these factors has contributed to the change in life satisfaction in the period 2009-10, immediately preceding the Arab Spring, using a procedure known as the Oaxaca–Blinder decomposition (Blinder, 1973; Oaxaca, 1973). This decomposition analysis allows us to examine group differences in an outcome variable and has been more recently used in studies on subjective well-being (e.g. Becchetti *et al.*, 2010; Helliwell and Barrington-Leigh, 2010; Sarracino, 2013). For the purpose of the present article, the decomposition relates to a time-specified group comparison. The Oaxaca–Blinder decomposition divides the differential of an outcome, in our case the differences in life satisfaction between year A (2009) and year B (2010), into two parts as shown in equation (1). The explained part (Q)—or the "endowments effect"—shows how much of the overall differential in the average life satisfaction between 2009 and 2010 can be attributed to changes in the level of the explanatory variables (X) between 2009 and 2010. Hence, this "quantity effect" reflects the differences in the circumstances between the two years. The unexplained part (U) captures changes in estimated coefficients, estimated separately for 2009 and 2010. This effect shows the part of the unhappy development that can be attributed to changes in the size of the effects, based on the obtained coefficients, implying a change in the relative importance of each of the factors in the life satisfaction equation (LS) between the two years. The decomposition is represented by the following formula:

$$(6) \quad \Delta LS = \underbrace{[E(X_A) - E(X_B)]' \beta^*}_{\text{Explained } (Q)} + \underbrace{[E(X_A)'(\beta_A - \beta^*) + E(X_B)'(\beta^* - \beta_B)]}_{\text{Unexplained } (U)}$$

where ΔLS is the difference in average subjective well-being between 2009 and 2010, β_{2009} and β_{2010} are vectors of coefficients estimated using WLS (Columns 7 and 8 in Table 2),[27] and β^* is a nondiscriminatory vector of coefficients that is used to determine the contribution of each group of variables to the overall difference of means.[28]

Table 4 shows the Blinder-Oaxaca decomposition for developing MENA and Arab Spring countries, where the uprisings were most intense. In developing MENA, the life satisfaction differential between 2009 and 2010 is 0.275 points (on a 0 to 10 scale), while in the Arab Spring countries, as expected, the differential in mean life satisfaction between 2009 and 2010 is much larger at 0.555 points. The second part of Table 4 indicates that for both developing MENA and the Arab Spring countries over 60 percent of the life satisfaction between the two years is explained by deterioration in conditions or the change in circumstances (change in the explained component). The life satisfaction differential is only to a lesser extent (less than 40 percent) associated with changes in the relative importance of the factors (change in the unexplained component).

Figures 3–6 show a graphic representation of the decomposition of the differential between 2009 and 2010 for the developing MENA and the Arab Spring

[27]Please note that the Blinder-Oaxaca decomposition for the Lewbel estimates was not possible due to computational constraints.

[28] We use a pooled equation to estimate a set of "nondiscriminatory" coefficients β^* for use in the decomposition (Jann, 2008).
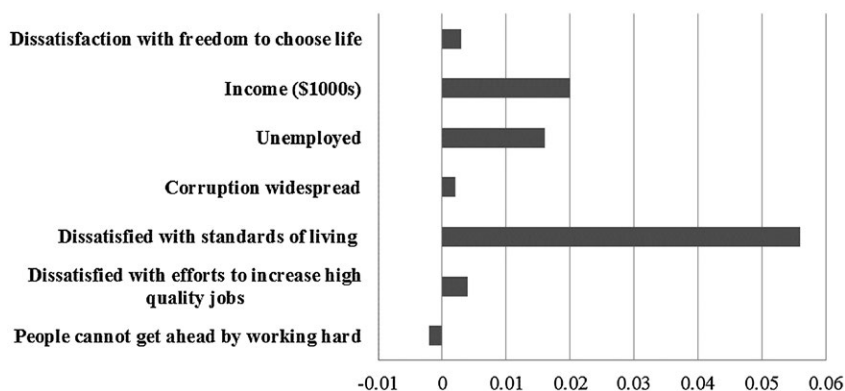
Figure 3. Decomposition of the Explained Part of ΔLS in Developing MENA.

Note: Only significant coefficients of independent variables are displayed. ΔLS is life satisfaction in 2009 minus life satisfaction in 2010.

countries[29] (see Table 4). In developing MENA (Figure 3), growing dissatisfaction (i.e. average life satisfaction in 2009 minus average life satisfaction in 2010) can be related to decline in perceived standards of living, losses in income and growth of the percentage of unemployed individuals.[30] Changes in satisfaction with efforts to increase the quality of jobs, cronyism and corruption have a less prevalent but significant effects. Differences in coefficients between 2009 and 2010 also play a role (see Figure 4 and Appendix D). Most interestingly working for the government was less positively correlated with life satisfaction in 2010 compared to 2009, herewith increasing the difference in life satisfaction between 2009 and 2010. Hence, for developing MENA it can be concluded that worsening conditions and perceptions led to a decline in life satisfaction in the period 2009-2010 and changes in the importance of these domains (their weights in the life satisfaction equation) was not the main reason for this decline.

The decomposition for Arab Spring countries where the uprisings were most intense shows a similar pattern with regard to the explained part (Figure 5). The life satisfaction gap in Arab Spring countries between 2009 and 2010 can largely be explained by the deterioration in satisfaction with living standards, followed by losses in income and the increase in the percentage of unemployed individuals. A smaller (but significant) part of the decrease in life satisfaction can be attributed to an increase in the dissatisfaction with the education system and government efforts to increase the quality of jobs.[31] However, in the Arab Spring countries dissatisfaction emerged not only because a higher percentage of population became poorer, unemployed and dissatisfied, but also because some areas of concern became more important in people's life satisfaction function (Figure 6). In particular, corruption

[29] The detailed Blinder-Oaxaca decomposition can be found in Appendix D. The coefficient and their respective confidence intervals are available in Appendix D, Table D2.

[30] However, changes in coefficients for some of the control variables contributed to the difference in life satisfaction between 2009 and 2010. These results are available in Appendix D.

[31] In addition, differences in the values of some control variables explain the difference in life satisfaction in Arab Spring countries between 2009 and 2010. These are solely related to occupational status and education level of respondents.
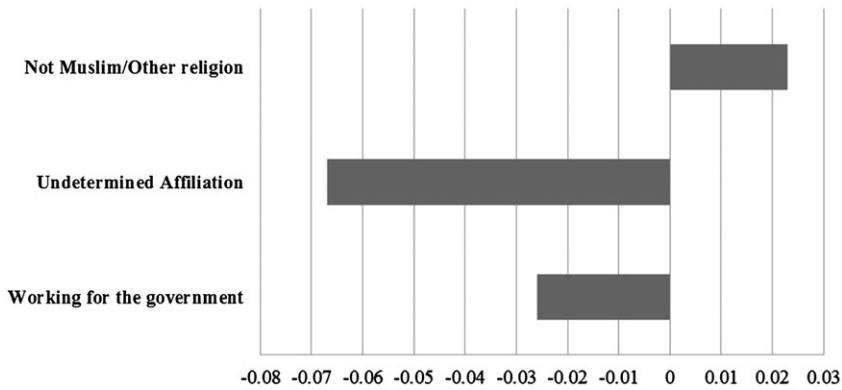
Figure 4. Decomposition of the Unexplained Part of *ΔLS* in Developing MENA Countries.

Note: Only significant coefficients of independent variables are displayed. ΔLS is life satisfaction in 2009 minus life satisfaction in 2010.
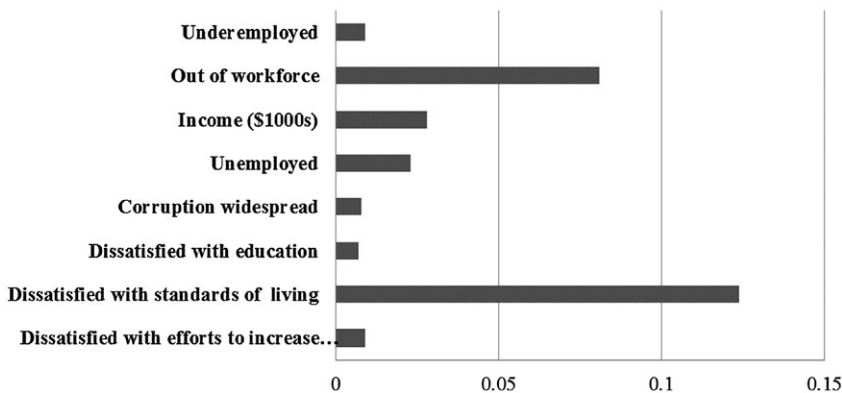

Figure 5. Decomposition of the Explained Part of *ΔLS* in Arab Spring Countries.

Note: Only significant coefficients of independent variables are displayed. ΔLS is life satisfaction in 2009 minus life satisfaction in 2010.

gained a stronger weight in the life satisfaction function of people in the Arab Spring countries. The decrease in life satisfaction was further caused by a weakening of the relationship between income and life satisfaction in Arab Spring countries. In sum, for the Arab Spring countries it can also be concluded that worsening conditions and perceptions led to a decline in life satisfaction in the period 2009-2010, as well as changes in the importance of corruption and income.

5. Concluding Remarks

How is the declining dissatisfaction before the Arab Spring linked to the grievances voiced by protestors during the Arab Spring demonstrations? Unfortunately, the Gallup World Poll does not have information on the reasons
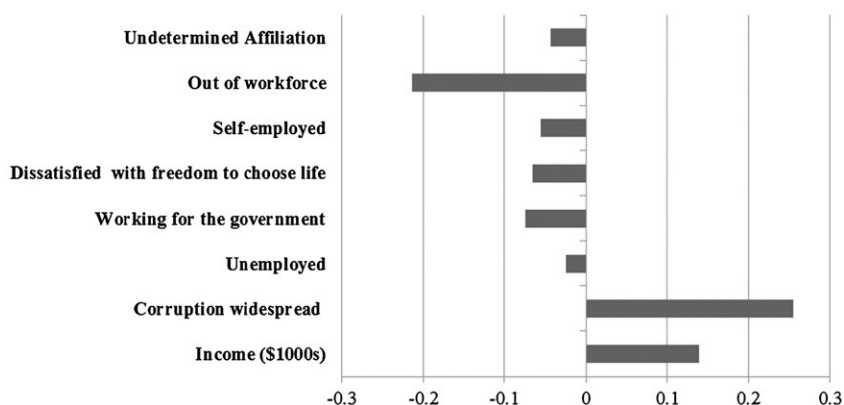
Figure 6. Decomposition of the Unexplained Part of ΔLS in Arab Spring Countries.

Note: Only significant coefficients of independent variables are displayed. ΔLS is life satisfaction in 2009 minus life satisfaction in 2010.

TABLE 5

REASONS FOR THE ARAB SPRING ACCORDING TO THE PEOPLE IN DEVELOPING MENA

Reason	% of the Respondents Choosing this Reason
Betterment of the economic situation	63.6
Civil and political freedoms, and emancipation from oppression	42.4
Dignity	28.8
Fighting corruption	64.3
Rule of law	15.7
Social and economic justice	57.2
Weakening economic and political relations with the West	7.5
Weakening economic and political relations with Israel	14.6

Source: Arab Barometer 2012–2014. Based on the following question: 'Which of the following were the main three reason that led to the Arab Spring?' Please note that inhabitants of Iraq and Lebanon were not able to choose the answer 'Weakening the political and economic relations with Israel'.

for these protests. Therefore, to answer this question we turn to information from the third wave of the Arab Barometer, in which respondents in developing MENA countries (Algeria, Egypt, Iraq, Lebanon, Morocco, Palestine, Syria, Tunisia, and the Republic of Yemen) were asked to mention the three main reasons that led to the Arab Spring. The responses indicate that the main grievances behind the outburst of social discontent during the Arab Spring uprisings are closely linked to the domain satisfactions shaping the level of subjective well-being in developing MENA prior to the Arab Spring (Table 5).

Fighting corruption was mentioned as the most important reason for the Arab Spring by 64.3 percent of respondents, followed by betterment of the economic situation (63.6 percent) and social and economic justice (57.2 percent). These findings are in line with a poll by Zogby in 2005, in which respondents in developing MENA countries indicated that the lack of employment opportunities, corruption,

healthcare, and schooling were seen as the most pertinent problems in developing MENA countries (Zogby, 2005). Strikingly, civil and political freedom (42.4 percent) only comes in fourth place and is, hence, neither found associated with dissatisfaction in developing MENA nor regarded as one of the most important grievances related to the uprisings. Likewise, relations with the West (7.5 percent) and Israel (14.6 percent) as well as rule of law (15.7 percent) and dignity (28.8 percent) were less often mentioned as important issues related to the Arab Spring, and were not found to be an important determinant of dissatisfaction with life in developing MENA. Hence, perceptions about worsening standards of living, labor market conditions, corruption and "wasta" are not only strongly associated with dissatisfaction with life and decline of subjective well-being levels before the Arab Spring, but are also viewed as the main grievances associated with the Arab Spring protests.

In sum, despite economic and human development progress in the prior two decades, a decline in life satisfaction from already relatively low happiness levels preceded the Arab Spring uprisings—a situation described as "unhappy development" paradox. The decline in life satisfaction on the eve of the Arab spring was associated primarily by an increase in the percentage of people dissatisfied with worsening standards of living, labor market conditions, and elite capture. In addition, perceptions about corruption became more important for people's subjective well-being in the Arab Spring countries where the uprisings were most intense. In this context, our study highlights that not only objective conditions count, but also the subjective awareness of shortcomings in these objective conditions. The rising awareness of social ills is partly due to the modernization process in which society is seen to be less of a moral order given by God, and in which an increasing number of people call for improvements in social conditions. Finally, dissatisfaction alone does not bring political action, which typically arises only in combination with perceived chances for change (Klandermans, 1996; Witte et al., 2018). This paper does not explore the question why some developing MENA countries experienced political violence and regime change, whereas in others the protests remained peaceful and limited in scope. This question should be addressed in future research.

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SUPPORTING INFORMATION

Additional supporting information may be found in the online version of this article at the publisher's web site.

Appendix

Appendix C4: Marginal Effects

Table C4: Determinants of Life Satisfaction in MENA: Marginal Effects of Weighted Least Squares Estimates

Appendix D: Decomposition of Effects

Table D1: Blinder-Oaxaca Decompositions based on Life Satisfaction in 2009 minus Life Satisfaction in 2010

Table D2: Oaxaca-Binder decomposition: Coefficients and Confidence Intervals (Figure 3 – Figure 6)