UNHAPPY DEVELOPMENT
Dissatisfaction with life on the eve of the arab spring

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ABSTRACT

Despite progress in economic and social development in the 2000s, dissatisfaction with life increased in many developing Arab countries. At the end of the decade, these countries ranked among the least happy economies in the world—a situation that fits the so-called "unhappy development" paradox. The paradox is defined as declining levels of happiness at a time of moderate-to-rapid economic development. This paper empirically tests the strength of association of a range of objective and subjective factors with life evaluation in the Middle East and North Africa region in the years immediately preceding the Arab Spring uprisings (2009-10).

The findings suggest a significant, negative association between life satisfaction levels in the region during this period and each of the main perceived reasons for the 2011 uprisings —dissatisfaction with the standard of living, poor labor market conditions, and corruption.

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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 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, Mottaghi, and Devarajan, 2015). The Gini inequality indexes were moderate by international standards and did not worsen in most MENA economies (Ianchovichina, Mottaghi, and Devarajan, 2015).

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Importantly, the region 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 in terms of reducing hunger and child and maternal mortality, and increasing school enrollment (Iqbal and Kiendrebeogo, 2015).

Prior to the Arab Spring uprising, 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 observers, including political scientists (Gause, 2011), and some even considered Islam a stabilizing force (Bromley, 2014). Thus, the Arab Spring transitions of 2011 took most economists, political scientists, and policymakers by surprise (Gause, 2011; Goodwin, 2011; Bellin, 2012; Bromley, 2014).

Yet, the emergence of social discontent in the Arab countries could be detected using subjective data, which is increasingly perceived as a meaningful and consistent way of measuring people's welfare (Clark and 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, 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 figure 2 and appendix A1).[2] In Egypt, for instance, average life-evaluation levels plunged on a 0-10 scale[3] from 5.5 in 2007 to 4.4 in 2010—a deep drop in the context of improvements observed in socioeconomic statistics and growth in per capita incomes (see figure 1b and appendix A2).

Easterlin (1974) was the first to address the link between changes in income and happiness. In his seminar work, he argues that as countries's economies grow and nations get richer, they do not get happier.[4]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., 2015). Controlling for per capita incomes, several recent cross-country studies by Deaton (2008), Graham and Lora (2009), and Stevenson and Wolfers (2008) even 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 (2009) as the 'unhappy growth' paradox, highlights the importance of taking into account people's perceptions when attempting to understand a nation's well-being.

In this paper, we focus on the so-called 'unhappy development' paradox, defined here as declining levels of happiness at a time of moderate to rapid economic growth and social development. There could be many reasons for this paradox in developing Arab countries. There might have been 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). A widening gap between actual and expected welfare may have increased people's aversion to inequality and social injustice (Verme et al., 2014; Cammett and Diwan, 2013) and negatively affected their levels of happiness. Relative income differences may also matter and increasing inequality can 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 (2002), the 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 response, these drivers will – perhaps against the law – try to change lanes. 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 – 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 quality in the Arab world, such as the deterioration in the quality of public services, the ability to get good quality jobs, and institutional and environmental quality. Worsening of other subjective indicators, such as the ability to voice concerns and demand accountability and the incidence of corruption and cronyism, may have also contributed to the deterioration in well-being.

Motivated by the need to understand the 'unhappy development' paradox in developing MENA, this paper empirically tests which factors are associated with life dissatisfaction in MENA countries in the years immediately preceding the Arab Spring uprisings (2009-10), taking into account objective and perceptions data regarding different aspects of life and society. In addition, we compare the extent to which the factors associated with life dissatisfaction are also associated with the Arab Spring social upheaval in developing MENA.

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 explanations or hypotheses for the fall in life satisfaction in developing MENA countries, including dissatisfaction with: (1) the political system of autocracy and limited civil freedoms, (2)the standard of living, (3) the high unemployment and poor quality jobs, and (4) corruption and crony capitalism. 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 or perception domains for life satisfaction. In other words, this decomposition allows us to determine whether life satisfaction declined because a greater percentage of people became more dissatisfied with certain domain satisfactions or whether the relative importance of the domain satisfaction for subjective well-being increased. Third, we compare the factors related to unhappiness in developing MENA with the perceived reasons for the Arab Spring uprisings. We find that the main perceived reasons for the uprisings are 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 root causes of dissatisfaction with life in developing MENA countries on the eve of the Arab Spring (cf. Okulicz-Kozaryn, 2011; Jahedi and Méndez, 2014).

The remainder of this paper is organized as follows. Section 2 presents the potential root causes of dissatisfaction with life in developing MENA. Section 3 discusses 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 reasons for the Arab Spring uprisings, and a few caveats.

2. ROOT CAUSES OF DISSATISFACTION WITH LIFE 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 root causes of dissatisfaction with life 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 social context in these countries during this time period.

There is no consensus on the root causes for life dissatisfaction in the Arab world on the eve of the Arab Spring. Several explanations have been put forward: (1) limited freedom and voice in predominantly autocratic states; (2) dissatisfaction with standards of living; (3) unhappiness with persistent unemployment and lack of good jobs due to the growing informality of the private sector; and (4) dissatisfaction with corruption and cronyism, which limits opportunities for those who work hard. Each of these explanations is discussed in greater detail below.

2.1 Autocracy

On the eve of the Arab Spring, most Arab states were longstanding autocracies (Chekir and Diwan, 2012; Bromley, 2014; and Cammett and Diwan, 2013). 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 strong 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, energy, and food subsidies, and guarantees of public employment in exchange for political support (Bellin, 2004; Bromley, 2014; Cammett and Diwan, 2013).Cammett and Diwan (2013) refer to this social contract as an 'autocratic bargain,' in which the middle class was lured with 'material benefits' in exchange for 'political quiescence'. 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). Fereidouni, Najdi, and Amiri (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 living conditions rather than with the system responsible for their deterioration.

2.2 Dissatisfaction with Standards of Living

By the early 2000s, major cracks appeared in the social contract of redistribution without voice in developing MENA. After independence, natural resource rents enabled many Arab countries' 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.[5] 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 Zikina, 2011; Ianchovichina, Loening, and Wood, 2014)[6]. For the poor, the increase in food and energy prices meant deterioration in their ability to meet 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, this erosion in standards of living was felt not only by the poor, but also by other segments of the population, including the middle class. A gradual shift in government support to the elites became a particular concern (Cammett and Diwan, 2013). 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 that were mostly state-owned or privately owned companies (OECD, 2009).[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 (Ianchovichina, Mottaghi, and Devarajan, 2015).

2.3 Unemployment and Low Quality Jobs

Dissatisfaction with job market conditions was particularly strong in developing MENA 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 (Barro and Lee, 2010; Campante and Chor, 2012), were forced to queue for public sector jobs or take part-time or low-quality jobs in the informal sector (Chamlou, 2013).[9] Employment in the informal sector offered little protection at old age and limited access to quality healthcare and benefits, such as paid maternity and annual leave (Angel-Urdinolaand Kuddo, 2011; World Bank, 2014b).

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, Knabe, and Rätzel, 2010).

2.4 Crony Capitalism and 'Wasta'

At a time when public sector employment was contracting, private sector growth was sluggish and few people could find jobs in the formal private sector (Malik and Awadallah, 2013). Private sector growth was stifled by 'cronyism' and fears that a rise of the 'nouveau rich' class would challenge existing power relations.[10] 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).

Perceptions about corruption and crony capitalism also worsened on the eve of the Arab Spring (Cammett and Diwan, 2013), as 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 but most MENA countries scored below the worldwide average on various governance indicator rankings in the 2000s (for example, Kaufmann, Kraay, and Mastruzzi, 2011).

Corruption and cronyism flourished in developing MENA with detrimental effects not only on aggregate economic and private sector 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 reflected the perceptions of citizens that 'wasta' mattered more than credentials for getting good jobs.

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. The rest of the paper tests these hypotheses.

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. In this context, these terms refer to one ultimate good and do not distinguish differences between individuals and society. However, in the social sciences the word 'happiness' is also used in a more specific way, which refers to an individual's subjective appreciation of his or her own life. 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).This is also commonly referred to by terms such as 'subjective well-being' and 'life satisfaction'.

Thus defined, happiness is something on one's mind that can be measured using surveys. Common survey questions[11] 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.[12]

In evaluating life people typically summarize their rich experience in an overall appraisal. One way to achieve it and arrive at the so-called *affective component* of happiness is to estimate how a person feels most of the time. The other way, which determines the *cognitive component* of happiness, is to assess how well one's life-as-it-is meets one's standard of how-life-should-be[13] (Veenhoven, 2009). This latter component is captured by the above mentioned question in the Gallup World Poll on where one stands on the ladder between the worst possible and best possible life.

In the cognitive evaluation of life as a whole individuals integrate various appraisals of life domains. When human beings are asked how they feel about their work, their marriage, or their government, they mostly have an opinion. Likewise, most people form ideas about separate qualities of their life, for example, how challenging their life is and whether there is any meaning in it. Following bottom-up theories of happiness (Andrews and Withey, 1976; Michalos, 1985), the domain satisfactions determine overall happiness. Although life satisfaction is normally statistically correlated with satisfaction with the various domains of life, it has not been established that happiness is causally determined by these sub-evaluations. The observed correlation can also be due to top-down effects.[14] For instance, when assessing his job-satisfaction a person can reason "I am generally happy, so apparently I like my job" (see also Diener, 1984; Heady et al., 1991).Top-down theory assumes that satisfaction with life-domains reflects largely satisfaction with life as a whole and this perspective fits the theory that evaluations of life draw mainly on how well one feels most of the time. This is the hedonic level of affect believed to reflect gratification of innate needs (Veenhoven, 2009).

How happy people are depends on *objective conditions* and *subjective factors*, including perceptions and expectations. According to Layard (2006), 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 imperative to individual happiness. These domains of life reflect the most important 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.

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 2009and 2010 and a simple reduced-form life satisfaction model (see Di Tella, MacCulloch, and Oswald, 2003; Arampatzi, Burger, and Veenhoven, 2015):

$$\mathbf{LS}_{jit} = \Theta\mathbf{Individual\_Perceptions}_{jit} + \Sigma\mathbf{Personal\_Characteristics}_{jit} + \varepsilon_j + \lambda_t + \mu_{jit}. \quad (1)$$

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 vectorλ_t of month-year dummies[15] 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.[16]

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.[17]Despite the small anomalies in these few cases, the uniqueness of Gallup World Poll data for the developing 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 countries, including Algeria, Egypt, Iraq, Jordan, Lebanon, Morocco, Palestine, 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 3 shows the distribution of happiness scores in the developing MENA region in the 2009-10 period. The unhappiness in the region is evidenced by the fact that 61 percent of the developing MENA population scores 5 or lower on the Cantril Ladder, while only 10 percent gives his or her life a score of 8 or higher. Within developing MENA, the degree of life satisfaction ranges by country 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. 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 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 zero for

those who are satisfied and one for those who are dissatisfied with their freedom to make choices.[18]

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 reflect how people value monetary and nonmonetary factors. The latter pertain to the quality of living conditions, including those related to the environment, local institutions, political and economic stability, infrastructure, health and education services, and community safety and cohesion. Other nonmonetary factors are related to the quality of jobs, the variety of choices available to people living in a given area, and the cultural context. Finally, the answers to this question factor in people's expectations about the future, which may change over time, and people's own views on what their standard of living should be given the amount of effort they spend at work. The possible answers to this question are zero if satisfied and one if dissatisfied.

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, 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. 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?"*to which they could either reply with a zero if satisfied or one if dissatisfied. 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 can be zero if satisfied or one 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 zero, if the level of corruption within government is limited, or one, if government corruption is widespread. When information regarding corruption in government was not available, the question *"Is corruption widespread within business?"* was used (cf. Helliwell, Layard, and Sachs, 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 zero if satisfied and one if dissatisfied.

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 a correlation matrix are provided in appendixes B1, B2, and B3.

4 EMPIRICAL RESULTS

This section discusses the results, their sensitivity to changes in variable specifications and data aggregations, as well as endogeneity bias issues.

4.1 Baseline and Alternative Specifications: Ordinary Least Squares Results

Table 2 reports results from different specifications using the Cantril Ladder as a dependent variable. In the first specification, we have only control variables for personal characteristics. In specifications 2 to 6, we separately include each of the subjective domain satisfaction variables associated with dissatisfaction in developing MENA, along with related objective factors. In specification 7, all subjective and objective variables are included simultaneously. The final specification in table 2 (model 8) is a replication of model 7 using a reduced sample of countries that experienced uprisings related to the Arab Spring[19]. All the 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 structural features of the political and economic environment. The time dummies control for exogenous factors that changed over the period of interest, controlling for 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 the prevailing perception in the West, Arab women are on average happier than men. This finding is consistent with the discussion in Bromley (2014) who emphasizes the sources of unhappiness and frustration for men, including high unemployment rates that doom men to solitude and frustration.[20] Focusing on the main sources of discontent on the eve of the Arab Spring (models 2 to 7), the main findings can be summarized as follows. First, although dissatisfaction with freedom to choose what you do with your life has a negative and significant effect on life satisfaction (table 2, model 2), this effect disappears after controlling for other perceptions (table 2, model 7). This finding supports the view that the social contract has weakened the direct link between authoritarianism (for example, lack of freedom)and life satisfaction. People who obtain economic benefits in exchange for political support initially express dissatisfaction not with their limited freedom but with other domains, particularly their economic wellbeing. It is therefore not surprising that dissatisfaction with standards of living has the largest and strongly significant negative effect on life satisfaction (table 2, models 3 and 7). On average, in the fully specified model in table 2, model 7, 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.

Second, poor job market conditions are significantly and negatively related to dissatisfaction in developing MENA countries—a result that retains significance even when we include all other subjective variables (table 2, models 4 and 7). The unemployed report life satisfaction scores that are 0.34 points lower than people in paid employment. Lack of quality jobs is another reason for the discontent and remains a significant factor even after we control for employment status. On average, respondents who indicate dissatisfaction with the availability of high quality jobs report 0.15 point lower life satisfaction than those who are satisfied with job quality (table 2,model 7). 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, Robalino, Rutkowski, 2008). Unsurprisingly, such advantageous conditions terms are very attractive to workers.

Third, we find that dissatisfaction with the education system is associated with life dissatisfaction in developing MENA. Respondents who are dissatisfied with the educational system report 0.17 point lower satisfaction with life than those who are satisfied with the education system (table 2, models 4 and 7).

Fourth, perceptions of inequality of opportunities(or ‘wasta’), corruption, and crony capitalism are significantly and negatively associated with life satisfaction in developing MENA (table 2, model 5 to 7). Respondents who think that people cannot get ahead by working hard report, on average, a 0.22 point lower life satisfaction score than those who are satisfied with this dimension of life satisfaction. Respondents who believe that corruption is widespread in the government are on average 0.28 point less satisfied with life, although this effect is reduced

controlling for other perceptions (table 2 ,models 5 and 7). Thus, in MENA, the governance problem is perceived to affect life satisfaction not so much through corruption in government, but through practices 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, Freund, and Nucifora, (2014) and World Bank (2014a).

Our ordinary least squares (OLS) 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 OLS baseline regression (model 7), the coefficients for dissatisfaction with availability of high quality jobs and dissatisfaction with the educational system are reduced and become statistically insignificant.

Finally, model 8 replicates model 7 with a reduced sample of Arab Spring countries in which all coefficients behave similarly. Therefore, the conclusions based on the full specification for the whole sample of developing MENA countries (table 2, model 7) hold for the reduced sample of Arab Spring countries (table 2, model 8).

4.2 Dealing with Reverse Causality: Lewbel IV Estimator

Our analysis possibly suffers from endogeneity bias. Reverse causality may be a particular problem since life evaluation and domain satisfaction are often jointly determined. Although the usage of conventional instrumental variable (IV) methods would be preferred in a cross-section setting, finding credible instruments is difficult; thus we made use of the Lewbel IV estimator to account for reverse causality. Conventional IVs have to satisfy the following restrictions: the instrument has to be correlated with the independent variables and 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 resort to the implementation of an instrumental variable estimation using heteroskedasticity-based instruments for cross-sectional data, suggested by Lewbel (2012). 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 Z equal to X or a subset of X can be used to generate external instruments $[Z- E(Z)]\varepsilon$,[21] given that there is some heteroskedasticity in the standard errors ε, and

$$\mathbf{E(X\varepsilon)=0, \text{ and } cov(Z,\varepsilon)\neq 0.} \quad \mathbf{(2)}$$

The validity of these assumptions for our data can be questioned, so we first examine whether the Lewbel requirements are met for regression model (1). First, we test for the presence of heteroskedatisticity. Following Lewbel (2012), we performed a Breusch and 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), the vector of exogenous variables Z can be a set or 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 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 X had to satisfy two basic conditions: (i) it had to be uncorrelated with the dependent variable Y 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. After testing whether the conditions were satisfied,[22] we chose a set of instruments and estimated the model using generalized method of moments (GMM).

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. Second, in line with the OLS 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, and 16). 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 and 16). It is highly likely that these domains are jointly determined or are partly reflected by satisfaction 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 (models 15 and 16). This result supports our initial finding that people are predominantly by cronyism and 'wasta,' which make it difficult for people to succeed even when working hard.

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

Perceptions about living standards, job market conditions, and cronyism have had an important effect on life satisfaction in MENA. This section explores the degree to which each of these factors has contributed to the change in life satisfaction in the period 2009-10. We decompose the change in life satisfaction into the sum of all effects attributed to changes in the incidence of dissatisfaction with each of the domains included in model 15 and another sum of effects, reflecting the change in the importance of each of these domains for people's life satisfaction between 2009 and 2010.

$$\boldsymbol{\delta LS = \sum \widehat{\alpha_2}\,(X_2 - X_1) + \sum X_1\,(\widehat{\alpha}_2 - \widehat{\alpha}_1)} \quad \textbf{(3)}$$

The first sum reflects the contribution attributed to the changes in the percentage of people dissatisfied with domains X in period 2 relative to period 1. If $x_2 > x_1$, a higher share of the population has become dissatisfied with certain aspects of individual or social life. The other effect shows the part of the negative association attributed to changes in the size of the effect of the obtained coefficients, implying a change in the relative importance of that factor to life satisfaction (LS). In other words, this effect shows evidence that perceptions have changed, making individuals less tolerant of certain social conditions, for instance, cronyism and 'wasta.'

Table 4 shows the decomposition of change in LS into the contributions of the two effects of domain satisfactions between 2009 and 2010. A more detailed table of this decomposition of effects is provided in appendix D1. In appendix D2, we also provide the results estimated with ordinary least squares. In developing MENA, the largest negative contribution to dissatisfaction with life associated with a change in the percentage of people dissatisfied with the different domains is attributed to the increased share of individuals dissatisfied with their standard of living (-0.031) and decrease in reported income (-0.015). Similar findings are observed for the Arab Spring countries; in this case, the coefficients are -0.084 and -0.025,respectively.The size of the effects of corruption and limited freedom on life satisfaction rose in the second period, although the coefficients were found to be insignificant in those specifications. In the Arab Spring countries, the largest negative effect on life satisfaction comes from the increase in the size of the effect of the efforts of the government to increase the number

5. DISCUSSION AND CONCLUDING REMARKS

How is the declining dissatisfaction prior to the Arab Spring linked to the protests? Unfortunately, the Gallup World Poll does not have information on the reasons for the Arab Spring protests. Therefore, 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 main three reasons that led to the Arab Spring. It appears that the main reasons behind the outburst of social rage during the Arab Spring uprisings are domain satisfactions shaping the level of subjective well-being in developing MENA prior to the Arab Spring (figure 4).

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 (63.4 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 factors 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 reasons for the Arab Spring, and were not found to be an important determinant of dissatisfaction with life in developing MENA. Hence, perceptions about standards of living, labor market conditions, corruption and 'wasta'[23] are not only strongly associated with dissatisfaction with life prior to the Arab Spring, but also mentioned as the main reasons for the Arab Spring uprisings.

In sum

It can be concluded that the Arab Spring uprisings in developing MENA countries were preceded by a decline in life satisfaction from already low happiness levels, despite economic and human development progress in the prior two decades. In many developing MENA countries, the so-called "unhappy development" paradox was accompanied by social discontent driven by poor or worsening standards of living, labor market conditions, and crony capitalism. In this light, 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 educated people call for meritocracy rather than autocracy.

Dissatisfaction alone does not bring political action, which typically arises only in combination with perceived chances for change (Klandermans, 1997). This paper does not explore the question why some developing MENA countries experienced political violence and fall of regimes, whereas in other developing MENA countries the protests remained rather limited. This question should be addressed in future research.

NOTES

1 The Failed States Index measures stability based on economic, political, and military indicators

2 The incidence of depression was also observed to be high in MENA, according to Ferrari et al. (2013).

3 The two extreme ends of the range capture worst possible life (0) and best possible life (10).

4 For a critique on this viewpoint, see Veenhoven and Hagerty (2003) and Stevenson and Wolfers (2008). For a further discussion, see Clark et al. (2008).

5 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.

6 However, prices for these basic needs are typically not well covered by standard inflation and poverty measures, which would explain why the Arab Spring came as a surprise for many scholars and policy makers.

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

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

10 The ruling elites controlled large parts of the private sector and profited from monopoly rights and cheap access to land and other resources (Cammett and Diwan, 2013).

11 See Veenhoven (2012) for a discussion of the limitations of direct questioning.

12 This question captures the cognitive component of happiness.

13 The difference between these components and the overall evaluation of life is explained in more detail in Veenhoven(2009).

14 This problem of reverse causality will be addressed in the empirical section of this paper.

15 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.

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

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

18 People answering "don't know" or who refused to answer this and other questions were omitted from the sample.

19 These countries are Egypt, Arab. Rep, Syrian Arab Republic, Tunisia, and Yemen, Rep.

20 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 nurtures 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.

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

22 The following tests were used to establish that the conditions were satisfied: Underidentification test: Significant; Hansen J test (Overidentification test of all instruments): Insignificant; Stock-Yogo weak ID test critical values maximal IV relative bias at 10%: smaller than 10%.

23 Wasta is closely linked to corruption, particularly government corruption, as some firms with connections to top government officials are often given privileges by the government that puts unconnected firms at a disadvantage.

24 The Gallup positive experience index is based on the following five questions: (1) "Did you feel well-rested yesterday?" (2) "Were you treated with respect all day yesterday?" (3) "Did you smile or laugh a lot yesterday?" (4) Did you learn or do something interesting yesterday?" and (5) "Did you experience the following feelings during a lot of the day yesterday? How about enjoyment?"

25 The Gallup negative experience index is based on the following five feelings, which respondents had to reflect on based on the question: "Did you experience the following feelings during a lot of the day yesterday?: physical pain, worry, sadness, stress, and anger."

REFERENCES

Angel-Urdinola, D. F., and A.Kuddo. (2011)
Key Characteristics of Employment Regulations in the Middle East and North Africa ,
MNA Knowledge and Learning Fast Brief No. 84, World Bank,
Washington, DC.

Arampatzi, E., M. J. Burger, and R. Veenhoven. (2015)
Financial Distress and Happiness of Employees in Times of Economic Crisis,
Applied Economics Letters 22(3): 173–79.

Arezki, R., and M. Brückner. (2011)
Food Prices and Political Instability. IMF Working Paper,
International Monetary Fund, Washington, DC.

Barro, R. J., and J. W. Lee. (2010)
A New Data Set of Educational Attainment in the World, 1950-2010
NBER Working Paper No. *15902*,
National Bureau of Economic Research, Cambridge, MA.

Bellin, E. (2004)
The Robustness of Authoritarianism in the Middle East: Exceptionalism in Comparative Perspective
Comparative Politics 36: 139–57.

Bellin, E (2012)
Reconsidering the Robustness of Authoritarianism in the Middle East: Lessons from the Arab Spring
Comparative Politics 44: 127–49.

Bodor, A., D. Robalino, and M. Rutkowski. (2008)
How Mandatory Pensions Affect Labor Supply Decisions and Human Capital Accumulations: Options to Bridge the Gap between Economic Theory and Policy Analysis
World Bank, Washington, DC.

Bromley, R. (2014)
The 'Arab Spring'Stress Test: Diagnosing Reasons for the Revolt. Working Paper,
University of Wisconsin-Madison.

Brockmann, H., J. Delhey, C. Welzeland H. Yuan. (2009)
"The China puzzle: Falling Happiness in a Rising Economy"
Journal of Happiness Studies, 10: 387-405.

Bruni, L. (2004)
The '' Technology of Happiness'' and the Tradition of Economic Science,
Journal of the History of Economic Thought 26(1): 19–43.

Cammett, M. C., and I.Diwan. (2013).
The Political Economy of the Arab Uprisings.
Perseus Books Group.

Campante, F. R., and D.Chor. (2012)
Why Was the Arab World Poised for Revolution? Schooling, Economic Opportunities, and the Arab Spring ,
Journal of Economic Perspectives 26: 167–88.

Cantril, H. (1965)
Pattern of Human Concerns.
New Brunswick: Rutgers University.

Chamlou, N. (2013)
The Economics of Happiness and Anger in North Africa Working Paper
UNU-Merit.

Chekir, H., and I.Diwan. (2012)
Center for International Development
Cingranelli-Richards Human Rights Dataset, 2015."

Clark, A.E. (2003)
Inequality-Aversion and Income Mobility: A Direct Test
CNRS and DELTA-Fédération Jourdan.

Clark, A. E., P. Frijters, and M. A. Shields. (2008)
Relative Income, Happiness, and Utility: An Explanation for the EasterlinParadox and Other Puzzles,
Journal of Economic Literature 46: 95-144.

Clark, A., A. Knabe, and S. Rätzel. (2010)
Boon or Bane? Others' Unemployment, Well-Being and Job Insecurity,
Labour Economics 17: 52–61.

Clark, A. E., and A. J. Oswald. (1994)
Unhappiness and Unemployment,
The Economic Journal 104: 648–59.

Cojocaru, A..(2014)
Fairness and Inequality Tolerance: Evidence from the Life in Transition Survey,
Journal of Comparative Economics 42: 590–608.

Deaton, A. (2008)
Income, Health and Well-Being around the World: Evidence from the Gallup World Poll.
Journal of Economic Perspectives 22: 53–72.

Di Tella, R., R. J. MacCulloch, and A. J. Oswald. (2003)
The Macroeconomics of Happiness.
Review of Economics and Statistics 85: 809–27.

Diener, E. (1984)
Subjective Well-Being,
Psychological Bulletin 95(3): 542-75.

Dorn, D., J. A. Fischer, G. Kirchgässner, and A. Sousa-Poza. (2007)
Is It Culture or Democracy? The Impact of Democracy and Culture on Happiness,
Social Indicators Research 82(3): 505–26.

Easterlin, R.A.. (1974)
Does Economic Growth Improve the Human Lot? Some Empirical Evidence,
Nations and Households in Economic Gowth 89-125.

Easterlin, R.A., R. Morgan, M. Switekand F. Wang. (2012)
China's Life Satisfaction, 1990–2010,
. Proceedings of the National Academy of Sciences, 109(25), 9775-9780.

Fereidouni, H.G., Y. Najdi, and R. E. Amiri. (2012)
Do Governance Factors Matter for Happiness in the MENA Region?
International Journal of Social Economics 12: 1028–40.

Ferrari, A. J., F. J. Charlson, R. E. Norman, S. B. Patten, G. Freedman, C. J. Murray, et al. (2013)
Burden of Depressive Disorders by Country, Sex, Age, and Year: Findings from the Global Burden of Disease Study 2010,
PLoS Medicine 10(11): e1001547.

Ferrer-i-Carbonell, A., and P. Frijters. (2004)
How Important Is Methodology for the Estimates of the Determinants of Happiness?
The Economic Journal 114: 641–59.

Freedom House. (2008)
Freedom in the World Report: Methodology Section,
Freedom House,
Washington, DC.

Frey, B.S., and A.Stutzer. (2000)
Happiness Prospers in Democracy ,
Journal of Happiness Studies 1: 79–102.

Gallie, D., and H. Russell. (1998)
Unemployment and Life Satisfaction: A Cross-Cultural Comparison,
European Journal of Sociology 39: 248–80.

Gause III, G.F. (2011)
Why Middle East Studies Missed the Arab Spring,
Foreign Affairs 90:81–90.

Goodwin, J. (2011)
Why We Were Surprised (Again) by the Arab Spring,
Swiss Political Science Review 17: 452–56.

Graham, C., and A. Felton. (2006)
Inequality and Happiness: Insights from Latin America,
The Journal of Economic Inequality 4: 107–22.

Graham, C. and S. Pettinato. (2002)
Happiness and Hardship: Opportunity and Insecurity in New Market Economies,
Washington, D.C.: The Brookings Institution Press.

Graham, C., and E. Lora. (2009)
Happiness and Health Satisfaction across Countries.
In Paradox and Perception: Measuring Quality of Life in Latin America, edited by C. Graham and E. Lora, Brookings Institution Press.
Washington, DC.

Graham, C., S. Zhou, J. Zhang. (2015)
Happiness and Health in China: the Paradox of Progress,
Working Paper 89, Global Economy & Development at Brookings.

Hagerty, M. R. and R. Veenhoven. (2003)
Wealth and Happiness Revisited – Growing National Income Does Go with Greater Happiness,
Social Indicators Research 64: 1–27

Headey, B., R. Veenhoven, and A. Wearing. (1991)
Top-Down versus Bottom-Up Theories of Subjective Well-Being,
Social Indicators Research 24: 81–100.

Helliwell, J.F., R. Layard, and J. Sachs (eds.). (2015)
World Happiness Report 2015.
New York: United Nations.

Hirschman, A.O. , Michael Rothschild (1973)
The Changing Tolerance for Income Inequality in the Course of Economic Development, with a Mathematical Appendix by,
Quarterly Journal of Economics 87(4): 544–566.

Ianchovichina, E. I., J. L. Loening, and C. A. Wood. (2014)
How Vulnerable Are Arab Countries to Global Food Price Shocks?
The Journal of Development Studies 50 (9): 1302–19.

Ianchovichina, E., L. Mottaghi, and S. Devarajan. (2015)
Inequality, Uprisings, and Conflict in the Arab World.
World Bank, Washington, DC

Inglehart, R., R. Foa, C. Peterson, andC. Welzel. (2008)
"Development, Freedom, and Rising Happiness: A Global Perspective (1981-2007) "
Perspectives on Psychological Science 3: 264–85.

Iqbal, F., and Y. Kiendrebeogo. (2015)
"The Reduction of Child Mortality in the Middle East and North Africa: A Success Story."
Policy Research Working Paper No. 7127,
World Bank,
Washington, DC.

Jahedi, S., and F. Méndez. (2014)
"On the Advantages and Disadvantages of Subjective Measures."
Journal of Economic Behavior & Organization 98: 97–114.

Kaufmann, D., A. Kraay, andM. Mastruzzi. (2011)
The Worldwide Governance Indicators: Methodology and Analytical Issues
Hague Journal on the Rule of Law 3(02): 220–46.

Klandermans, B. (1997)
The Social Psychology of Political Protest.
Oxford, England: Blackwell.

Korotayev, A., and J. V.Zinkina. (2011)
Egyptian Revolution: A Demographic Structural Analysis,
Entelequia: revistainterdisciplinar (13): 139–69.

Lagi, M., K. Z. Bertrand, and Y. Bar-Yam. (2011)
The Food Crisis and Political Instability in North Africa and the Middle East.
New England Complex System Institute.

Layard, R. (2006)
Happiness: Lessons from a New Science,
Penguin.

Lewbel, A. (2012)
Using Heteroscedasticity to Identify and Estimate Mismeasured and Endogenous Regressor Models,
Journal of Business & Economic Statistics 30.

Malik, A., and B. Awadallah. (2013)
The Economics of the Arab Spring,
World Development 45: 296–313.

Maslow, A.H. (1943)
A Theory of Human Motivation,
Psychological Review 50: 370–96.

OECD (Organisation for Economic Co-operation and Development). (2009)
Ownership Structures in MENA Countries: List Companies, State-Owned, Family Enterprises and Some Policy Implications,
OECD, Paris.
http://www.oecd.org/mena/investment/35402110.pdf

Oishi, S., S. Kesebir, S. and E. Diener. (2011)
Income Inequality and Happiness,
Psychological Science, 22 1095-1100.

Okulicz-Kozaryn, A. (2011)
City Life: Rankings (Livability) versus Perceptions (Satisfaction) ,
Social Indicators Research 110: 433–51.

Ott, J.C. (2010)
Good Governance and Happiness in Nations: Technical Quality Precedes Democracy and Quality Beats Size,
Journal of Happiness Studies 11: 353–68.

Rijkers, B., C. Freund, and A. Nucifora. (2014)
All in the Family: State Capture in Tunisia.
Policy Research Working Paper 6810,
World Bank, Washington, DC.

Stevenson, B. and J. Wolfers. (2008)
Economic Growth and Subjective Well-Being: Reassessing the Easterlin Paradox.
Brookings Papers on Economic Activity 1–87.

Veenhoven, R. (1984)
Conditions of Happiness,
Dordrecht/Boston: Reidel.

Veenhoven, R. (1989)
National Wealth and Individual Happiness,
Springer Netherlands

Veenhoven, R. (2002)
Why Social Policy Needs Subjective Indicators,
Social Indicators Research 58: 33–46.

Veenhoven, R. (2012)
Happiness: Also Known As 'Life Satisfaction' and 'Subjective Well-Being,
In Handbook of Social Indicators and Quality of Life Research, edited by K. C. Land, a. C. Michalos, and M. J. Sirgy, 63–77.
Springer
Berlin.

Verme, P. (2009)
Happiness, Freedom and Control,
Journal of Economic Behavior & Organization 71: 146–61.

Verme, P., B. Milanovic, S. Al-Shawarby, S. El Tawila, M. Gadallah, and E. A. A. El-Majeed. 2014.
Inside Inequality in the Arab Republic of Egypt: Facts and Perceptions across People, Time, and Space,
World Bank, Washington, DC.

World Bank. 2014a. PovcalNet
World Bank, Washington, DC,
http://iresearch.worldbank.org/PovcalNet/

World Bank. 2014b
World Development Indicators,
World Bank, Washington, DC.

Zogby, J. (2005)
Attitudes of Arabs: An In-Depth Look at Social and Political Concerns of Arabs,
Arab American Institute.

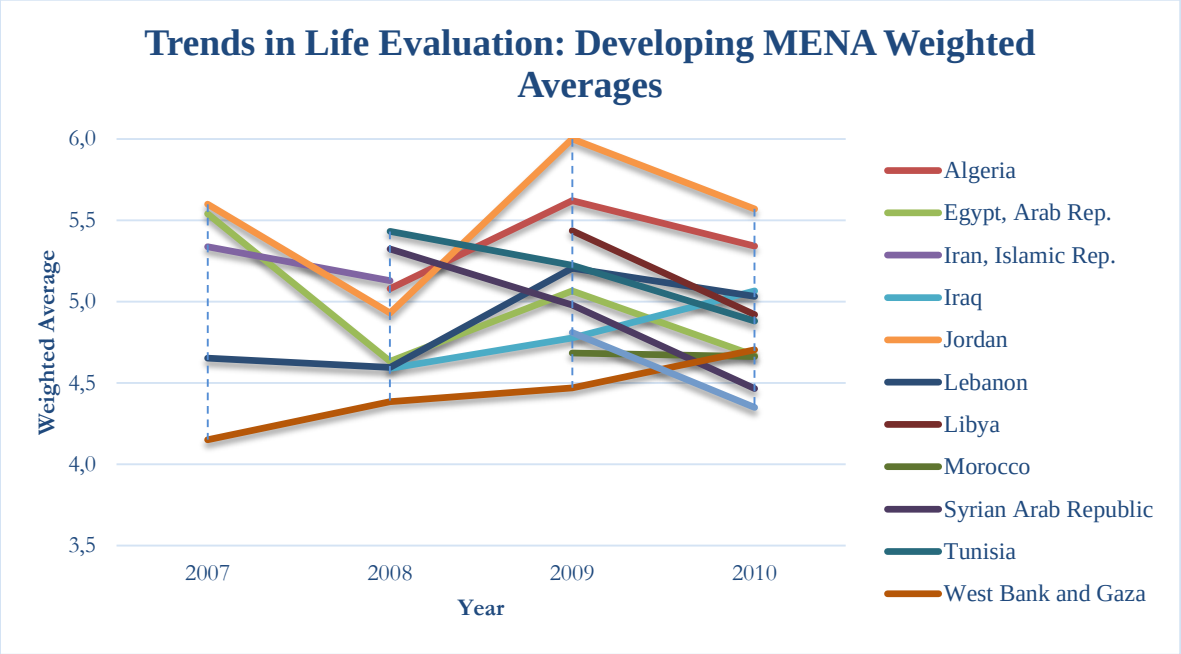
Appendixes

Appendix A1: Average Life Satisfaction (ALS) across Countries, 2006-12

Rank	Country	ALS	Rank	Country	ALS	Rank	Country	ALS
1	Denmark	7.80	54	Poland	5.79	107	China	4.84
2	Switzerland	7.59	55	Saint Maarten	5.79	108	Djibouti	4.84
3	Norway	7.58	56	El Salvador	5.78	109	Zambia	4.81
4	Netherlands	7.51	57	Bolivia	5.71	110	India	4.79
5	Finland	7.50	58	Croatia	5.65	111	Bangladesh	4.78
6	Canada	7.47	59	Kazakhstan	5.64	112	Iraq	4.78
7	Sweden	7.41	60	Lithuania	5.59	113	Mozambique	4.76
8	Iceland	7.36	61	Jordan	5.57	114	Mongolia	4.72
9	Australia	7.32	62	Belarus	5.55	115	Serbia	4.72
10	New Zealand	7.31	63	Ecuador	5.55	116	Angola	4.68
11	Austria	7.30	64	Paraguay	5.50	117	Azerbaijan	4.64
12	Costa Rica	7.25	65	Mauritius	5.48	118	Mauritania	4.58
13	Israel	7.22	66	Moldova	5.47	119	Palestine	4.58
14	United States	7.19	67	Hong Kong SAR, China	5.45	120	Tajikistan	4.55
15	Ireland	7.18	68	Uzbekistan	5.45	121	Egypt, Arab Rep.	4.53
16	Belgium	7.08	69	Vietnam	5.45	122	Macedonia, FYR	4.53
17	Luxembourg	7.04	70	Bahrain	5.43	123	Armenia	4.42
18	United Arab Emirates	7.04	71	Peru	5.43	124	Botswana	4.42
19	Panama	6.92	72	Algeria	5.42	125	Malawi	4.42
20	Mexico	6.91	73	Cuba	5.42	126	Nepal	4.42
21	United Kingdom	6.89	74	Estonia	5.37	127	Sudan	4.42
22	Venezuela, RB	6.89	75	Libya	5.37	128	Uganda	4.39
23	Oman	6.85	76	Albania	5.36	129	Congo, Dem. Rep.	4.38
24	Brazil	6.80	77	Kosovo	5.36	130	Cameroon	4.36
25	France	6.75	78	Russian Federation	5.35	131	Syrian Arab Republic	4.32
26	Germany	6.64	79	Honduras	5.34	132	Senegal	4.31
27	Spain	6.61	80	Turkey	5.26	133	Yemen, Rep.	4.27
28	Puerto Rico	6.59	81	Portugal	5.25	134	Kenya	4.26
29	Qatar	6.58	82	Indonesia	5.23	135	Sri Lanka	4.25
30	Saudi Arabia	6.58	83	Nicaragua	5.20	136	Côte d'Ivoire	4.20
31	Singapore	6.55	84	Montenegro	5.18	137	Madagascar	4.14
32	Kuwait	6.48	85	Romania	5.15	138	Mali	4.14
33	Cyprus	6.46	86	Pakistan	5.14	139	Niger	4.14
34	Belize	6.45	87	South Africa	5.09	140	Haiti	4.13
35	Argentina	6.35	88	Ukraine	5.08	141	Congo, Rep.	4.12
36	Czech Republic	6.35	89	Dominican Republic	5.05	142	Zimbabwe	4.12
37	Trinidad and Tobago	6.35	90	Nigeria	5.04	143	Gabon	4.11
38	Italy	6.33	91	Lao PDR	5.01	144	Afghanistan	4.09
39	Suriname	6.27	92	Lebanon	4.98	145	Burkina Faso	4.08
40	Colombia	6.26	93	Tunisia	4.98	146	Cambodia	4.07
41	Chile	6.25	94	Iran, Islamic Rep.	4.91	147	Liberia	4.04
42	Guatemala	6.14	95	Hungary	4.90	148	Rwanda	4.03
43	Uruguay	6.07	96	Kyrgyz Republic	4.90	149	Chad	4.00
44	Japan	6.06	97	Lesotho	4.90	150	Guinea	4.00
45	Malta	6.02	98	Ghana	4.89	151	Georgia	3.99
46	Thailand	6.02	99	Myanmar	4.89	152	Bulgaria	3.95
47	Guinea-Bissau	5.99	100	Namibia	4.89	153	Central African Rep	3.87
48	Slovak Republic	5.98	101	Philippines	4.89	154	Tanzania	3.87
49	Turkmenistan	5.94	102	Somalia	4.89	155	Sierra Leone	3.77
50	Korea, Rep.	5.89	103	Bosnia and Herzegovina	4.87	156	Comoros	3.74
51	Greece	5.83	104	Latvia	4.87	157	Burundi	3.69
52	Malaysia	5.83	105	Morocco	4.87	158	Benin	3.51
53	Jamaica	5.81	106	Swaziland	4.87	159	Togo	2.98

Source: Gallup World Poll. Note: Developing MENA countries are highlighted

Appendix A2: Average Life Satisfaction (ALS) across Countries, 2006-12



Appendix B1: Description of Variables

Category: Independent perception variables	Variable code	Exact question	Answer categories
Satisfaction with Standard of Living	Wp30	Are you satisfied or dissatisfied with your standard of living, all the things you can buy and do?	1 Yes 2 No
Satisfaction with Standard of Living (Index construction)	Wp40	Have there been times in the past twelve months when you did not have enough money to buy food that you or your family needed?	1 Yes 2 No
Satisfaction with Standard of Living (Index construction)	Wp43	Have there been times in the past twelve months when you did not have enough money to provide adequate shelter or housing for you and your family?	1 Yes 2 No
Satisfaction with Standard of Living (Alternative specification)	Index_fs	Construction of variable wp40 and wp43	Not applicable
Satisfaction with freedom TO CHOOSE LIFE	Wp134	Are you satisfied or dissatisfied with your freedom to choose what you do with your life?	1 Yes 2 No
Satisfaction with civil freedom (Alternative specification)	Wp143	Do you have confidence in the Quality and Integrity of the Media?	1 Yes 2 No
Perceptions about Corruption	Wp145	Is corruption widespread within business?	1 Yes 2 No
Perceptions about Corruption	Wp146	Is corruption widespread within government?	1 Yes 2 No
Perceptions about Corruption	Wp6267	Do you think the level of corruption in this country is lower, about the same or higher than it was 5years ago?	1 Same or lower 2 Higher
Cronyism	Wp128	Can people in this country get ahead by working hard or not?	1 Yes 2 No
Quality of jobs	Wp133	Are you satisfied or dissatisfied with efforts to increase the number of quality jobs?	1 Yes 2 No
Quality of jobs (Alternative specification)	Wp89	Thinking about the job situation in the city or area where you live today, would you say that it is now a good time or a bad time to find a job?	1 Good time 2 Bad time
Satisfaction with education	Wp93	In the city or area where you live, are you satisfied or dissatisfied with the education system or the schools?	1 Approve 2 Disapprove

Continued Appendix B1

Category: Other control variables	**Personal information**		
Gender	Wp1219		1 Male 2 Female
Age	Wp1220		Until 99
Marital children = Computed from marital status and number of children	Marital_children	Combination to Wp 1223 and Wp 1230	1 Married with children 2 Married without children 3 Single with children 4 Single without children 5 S/D/W with children 6 S/D/W without children
Marital status (Index construction)	Wp1223	What is your current marital status?	1 Single/never been married 2 Married 3 Separated/ divorced/ widowed
Number of children (Index construction)	Wp1230	How many children under 15 years of age are now living in your household?	
Religion	religion		1 Muslim 2 Non-Muslim/other religion
Migration status	Wp4657	Were you born in this country, or not?	1 Born in this country 2 Born in another country
Level of education	wp3117		1 Completed elementary education or less 2 Secondary - 3 year tertiary secondary 3 Completed four years of education beyond high school and/or received a 4-year college degree.
Employment status	emp_2010		1 Employed full time for an employer/ Employed part time/ do not want full time 2 Employed full time for self 3 Unemployed 4 Out of workforce 5 Underemployed 6 Other
Government employee	Wp1227	Are you a government worker or not?	1 Other 2 Yes 3 Undetermined
Household composition Adults	Wp12	Including yourself, how many people who are residents of age 15 or over currently live in this household?	1 One 2 Two 3 More than two
Household income (US$, thousands)	inc_001		Expressed in international dollars
Month and year of Interview	m_year		

Appendix B2: Descriptive Statistics

Variable	Observations	Mean	SD	Min.	Max.
Life evaluation	25,244	5.09	2.00	0	10
Dissatisfied with standard of living: Yes	25,244	0.37	0.48	0	1
People cannot get ahead by working hard: Yes	25,244	0.17	0.37	0	1
Dissatisfied with efforts to increase with high quality jobs: Yes	25,244	0.66	0.47	0	1
Dissatisfied with freedom to choose life: Yes	25,244	0.38	0.48	0	1
Dissatisfied with the educational system or the schools: Yes	25,244	0.37	0.48	0	1
Corruption widespread within government*: Yes	25,244	0.78	0.41	0	1
Self-employed	25,244	0.08	0.27	0	1
Unemployed	25,244	0.04	0.20	0	1
Out of workforce	25,244	0.31	0.46	0	1
Underemployed	25,244	0.03	0.18	0	1
Other**	25,244	0.25	0.43	0	1
Government worker	25,244	0.09	0.29	0	1
Undetermined	25,244	0.28	0.45	0	1
Not Muslim	25,244	0.07	0.26	0	1
Completed 9-15 years of education	25,244	0.48	0.49	0	1
Completed four years of education beyond high school and/or 4-year college degree	25,244	0.11	0.31	0	1
Migrant	25,244	0.02	0.15	0	1
Income (1,000s)	25,244	10.16	12.20	0	229.99
Female	25,244	0.48	0.49	0	1
Age	25,244	35.23	14.54	15	99
Age squared	25,244	1,453.04	1,210.98	15	99
Married without children	25,244	0.15	0.35	0	1
Single with children	25,244	0.20	0.40	0	1
Single without children	25,244	0.17	0.37	0	1
Separated/divorced/widow with children	25,244	0.03	0.17	0	1
Separated/divorced/widow without children	25,244	0.03	0.16	0	1
2 people older than 15 years in household	25,244	0.23	0.42	0	1
More than 2 people older than 15 years in household	25,244	0.73	0.45	0	1
Alternative Measures					
Index_fs	21,376	0.41	0.67	0	2
Bad time to find a job: Yes	23,592	0.71	0.46	0	1
Are levels of corruption higher: Yes	10,926	0.55	0.65	0	1
Index positive affect	12,582	64.11	29.09	0	100
Index negative affect	4,739	33.13	29.96	0	100
Dissatisfaction with health: Yes	11,016	0.16	0.36	0	1

*When information was not available we used "*Corruption widespread within business*". See alsoHelliwell, Layard, and Sachs (2015).

**Category "Other" derives from the combination of two variables andindicates employed individuals who do not respond specifically on their employment status (working full time, part-time, ore being underemployed).

Appendix B3: Correlation Matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Life evaluation	1.00													
Dissatisfaction with standard of living: Yes	-0.36	1.00												
People cannot get ahead by working hard: Yes	-0.09	0.16	1.00											
Dissatisfied with efforts to increase high quality jobs: Yes	-0.13	0.19	0.14	1.00										
Dissatisfied with freedom to choose life: Yes	-0.10	0.16	0.16	0.33	1.00									
Dissatisfied with educational system	-0.13	0.16	0.09	0.17	0.17	1.00								
Corruption widespread within government: Yes	-0.07	0.10	0.07	0.19	0.11	0.13	1.00							
Income(1,000's)	0.22	-0.16	-0.01	-0.07	-0.08	-0.09	0.00	1.00						
Self-employed	0.02	-0.02	0.00	0.00	-0.04	-0.01	0.03	0.11	1.00					
Unemployed	-0.08	0.10	0.05	0.05	0.04	0.04	0.01	-0.06	-0.10	1.00				
Out of workforce	0.00	-0.03	-0.02	0.00	0.02	-0.02	-0.02	-0.08	-0.37	-0.25	1.00			
Underemployed	-0.04	0.08	0.02	0.02	0.01	0.05	0.01	-0.04	-0.09	-0.06	-0.24	1.00		
Government employee	0.04	-0.04	-0.03	-0.03	-0.01	0.02	-0.03	0.01	-0.07	-0.09	-0.34	0.04	1.00	
Undetermined	0.05	-0.02	0.03	-0.04	0.00	-0.01	0.00	-0.04	-0.04	-0.08	-0.28	0.23	-0.20	1.00

Appendix C1: Robustness Analysis: Omitted Variable Bias

Our analysis possibly suffers from simultaneity and omitted variable biases. It is well known that in survey research happier respondents, or those who are in a better mood during an interview, have a tendency to report more positively about different aspects of their life. For example, the amount of negative feelings one experiences during the day could possibly predispose people to lower their life satisfaction rating. When evaluating their satisfaction, respondents can reason as follows: "I am generally dissatisfied with my life, so apparently I am dissatisfied with my government" or "I feel sad now, so apparently I am dissatisfied with my government" (see also Diener 1984; Headey, Veenhoven, and Wearing, 1991). Similarly, low (subjective) evaluation of personal health implies that individuals possibly have a health problem that affects everyday mood but also brings general dissatisfaction predisposing them to respond more negatively on the life evaluation question.

We use different strategies to cope with these problems in our baseline OLS analysis in model (7). First, we control for mood during the interview, by including (1) interview date dummies, assuming that turbulent time indicators of satisfaction can be subject to daily developments; (2) affect indices by Gallup related to very recent positive [24] and negative experiences [25] measured on a 0-100 scale. This way we are able to capture the daily mood of individuals, whichmay affect the responses related to satisfaction. Second, we control for (3) satisfaction with health measured on a 0-10 scale.

Table C1 shows the results of these additional robustness checks. The effects of dissatisfaction with the standard of living, income, and employment status remain significant and robust to controlling for interview dates, mood, and health satisfaction. Likewise, perceptions of wasta, corruption, and crony capitalism remain an important source of dissatisfaction in developing MENA. Dissatisfaction with not being able to get ahead by working hard and feelings about corruption in government are negative and statistically significant in most specifications. In general, the inclusion of interview dates (column 1), positive experience index (column 2), or satisfaction with health (column 4) does not affect the main conclusions drawn from the results presented in table 2. However, when we add a negative experience index to our baseline regression, the coefficient forunemployed is reduced and becomes statistically insignificant (column 3). To some extent, thisreflects the fact that when we include the experience index,the sample size reduces from 25,244 to 6,221 respondents.

Table C1: Determinants of Life Satisfaction in Developing MENA in Alternative Models (OLS)

VARIABLES	(1) +Interview Dates	(2) + Positive Experience Index	(3) + Negative Experience Index	(4) + Satisfaction with Health
Dissatisfied with freedom to choose life: Yes	-0.039	-0.019	-0.022	-0.046
	(0.030)	(0.036)	(0.044)	(0.048)
Dissatisfaction with standard of living: Yes	-1.242***	-1.103***	-1.124***	-1.055***
	(0.030)	(0.037)	(0.044)	(0.046)
Income (1,000's)	0.023***	0.020***	0.022***	0.019***
	(0.002)	(0.002)	(0.002)	(0.002)
Dissatisfied with efforts to increase high quality jobs: Yes	-0.155***	-0.101***	-0.089*	-0.108**
	(0.032)	(0.037)	(0.046)	(0.050)
Dissatisfied with the educational system or the schools: Yes	-0.169***	-0.115***	-0.099**	-0.142***
	(0.029)	(0.035)	(0.043)	(0.045)
Corruption widespread within government: Yes	-0.083**	-0.104**	-0.127**	-0.080
	(0.035)	(0.042)	(0.050)	(0.056)
People cannot get ahead by working hard: Yes	-0.238***	-0.228***	-0.199***	-0.340***
	(0.039)	(0.047)	(0.055)	(0.061)
Positive experience index		0.007***		
		(0.001)		
Negative experience index			-0.007***	
			(0.001)	
Dissatisfied with personal health: Yes				-0.369***
				(0.060)
Self-employed	0.054	0.113	-0.012	0.141*
	(0.061)	(0.079)	(0.117)	(0.081)
Unemployed	-0.352***	-0.234**	-0.112	-0.291***
	(0.078)	(0.103)	(0.137)	(0.105)
Out of workforce	-0.027	-0.005	-0.053	0.017
	(0.047)	(0.058)	(0.088)	(0.065)
Underemployed	-0.138*	-0.087	-0.141	-0.180*
	(0.080)	(0.097)	(0.166)	(0.101)
Individual characteristics	YES	YES	YES	YES
Country fixed effects	YES	YES[A]	YES[B]	YES[A]
Month and year of interview	NO	YES	YES	YES
Constant	5.839***	5.420***	6.221***	6.013***
	(0.198)	(0.207)	(0.250)	(0.246)
Observations	25,244	18,442	12,582	11,016
R-squared	0.230	0.201	0.198	0.191

*Note:*Robust standard errors are in parentheses. *** p<.01, ** p<.05, * p<.1.
[A] Morocco missing.
[B] Morocco and Tunisia missing.

Appendix C2: Robustness Analysis:Heterogeneity within Developing MENA

The developing MENA region encompasses a wide variety of Arab countries. Hence, the correlates of dissatisfaction with life might differ across countries. In our robustness analysis, we distinguish between (1) North Africa, (2) Middle East, (3) Levant (including and excluding Iraq), and (4) Iraq.

Table C2: Determinants of Life Satisfaction in Developing MENA by Subregion (OLS)

VARIABLES	(1) North Africa[A]	(2) Middle East[B]	(3) Levant Area 1[C]	(4) Levant Area 2[D]	(5) Iraq
Dissatisfied with freedom to choose life: Yes	0.017	-0.077*	-0.115**	-0.078*	-0.052
	(0.041)	(0.043)	(0.055)	(0.044)	(0.079)
Dissatisfaction with standard of living: Yes	-1.211***	-1.246***	-1.295***	-1.204***	-0.657***
	(0.042)	(0.040)	(0.052)	(0.043)	(0.081)
Income (1,000s)	0.023***	0.022***	0.018***	0.021***	0.064***
	(0.002)	(0.003)	(0.003)	(0.003)	(0.015)
Dissatisfied with efforts to increase with high quality jobs: Yes	-0.117***	-0.192***	-0.096	-0.190***	-0.334***
	(0.039)	(0.048)	(0.061)	(0.050)	(0.098)
Dissatisfied with the educational system or the schools: Yes	-0.218***	-0.144***	-0.148***	-0.181***	-0.285***
	(0.039)	(0.041)	(0.054)	(0.043)	(0.080)
Corruption widespread within government: Yes	-0.079*	-0.078	0.029	-0.082	-0.472***
	(0.044)	(0.052)	(0.062)	(0.052)	(0.114)
People cannot get ahead by working hard: Yes	-0.209***	-0.233***	-0.283***	-0.245***	-0.172**
	(0.060)	(0.048)	(0.061)	(0.049)	(0.084)
Self-employed	0.380***	-0.143*	-0.209*	-0.115	0.105
	(0.085)	(0.083)	(0.107)	(0.087)	(0.145)
Unemployed	-0.168	-0.437***	-0.576***	-0.368***	-0.220
	(0.106)	(0.111)	(0.156)	(0.114)	(0.184)
Out of workforce	-0.011	-0.048	0.017	-0.009	-0.193
	(0.061)	(0.071)	(0.087)	(0.073)	(0.154)
Underemployed	-0.098	-0.167	-0.185	-0.158	-0.148
	(0.131)	(0.102)	(0.148)	(0.116)	(0.175)
Other	0.170***	0.269***	0.226**	0.202**	0.114
	(0.065)	(0.088)	(0.103)	(0.081)	(0.181)
Individual characteristics	YES	YES	YES	YES	YES
Country fixed effects	YES	YES	YES	YES	YES
Month and year of interview	YES	YES	YES	YES	YES
Constant	6.142***	5.956***	6.226***	5.561***	5.291***
	(0.223)	(0.243)	(0.297)	(0.246)	(0.911)
Observations	10,444	14,800	9,184	13,244	2,432
R-squared	0.249	0.188	0.206	0.180	0.174

*Note:*Robust standard errors are in parentheses. ***p<.01; **p<.05; *p<.10.

[A] North Africa includes Morocco, Algeria, Tunisia, Libya, and Egypt.
[B] Middle East includes Syria, Palestine, Jordan, Lebanon, the Republic of Yemen, and Iraq.
[C] Levant 1 includes Syria, Palestine, Jordan, and Lebanon.
[D] Levant 2 includes Syria, Palestine, Jordan, Lebanon, Egypt, and Iraq.

Table C2 shows the results of the subsample analyses, where three findings stand out. First, the socioeconomic correlates of satisfaction with life are fairly consistent across different groupings of countries in the developing MENA region. Second, satisfaction with freedom to choose life is not equally important for determining life evaluation. In North Africa (column 1) and Iraq (column 5), the effect of freedom has no significant value, while the most significant effect of satisfaction with freedom can be found in the Levant area (column 3).Third, the association between widespread corruption and life satisfaction is very sensitive to the selection of countries. The effect of widespread corruption is only negative and statistically significant for North Africa and Iraq.

Appendix C3: Robustness Analysis:Alternative Variable Specifications

In addition, we performed several robustness controls to verify the significance of our findings. Table C3 shows five alternative specifications. In specification 1,satisfaction with the standard of living is measured by the Gallup Food and Shelter Index, which is based on the question whether individuals experienced a shortage of money to provide food and shelter for their family. In specification 2, dissatisfaction with efforts to increase the number of high quality jobs is replaced by job expectations measured based on answers to the question: "*Thinking about the job situation in the city or area where you live today, would you say that it is now a good time or a bad time to find a job?*" In specification 3, autocracy and lack of democracy are captured by a variable related to freedom and integrity of the media based on the question: "*Do you have confidence in the quality and integrity of the media?"* Corruption was alternatively measured in specification 4 by perceptions about changes in the levels of corruption over the past years ("*Do you think the level of corruption in this country is lower, about the same or higher than it was 5 years ago?"*).

Table C3 shows the results for the regressions using the alternative variable definitions. The results are not directly comparable with the results in table 2, since the alternative variables are not available for some countries and/or waves. Still, the results in table C3 show that our conclusions regarding dissatisfaction with the standard of living and job opportunities as important drivers of life dissatisfaction in developing MENA generally hold, while freedom is again not important for explaining life dissatisfaction in developing MENA. Although perceptions of increased corruption seem to be associated with life satisfaction in developing MENA, its effect is smaller than the effect the alternative measures reported in table C3. The effects of perceptions that one cannot get ahead by working hard and dissatisfaction with the education system remain statistically significant across all specifications.

Table C3: Determinants of Life Satisfaction in developing MENA: Alternative Variable Specifications (OLS)

VARIABLES	(1) Alternative standards of living	(2) Alternative job opportunities	(3) Alternative civil freedom	(4) Alternative widespread corruption
Food and Shelter Index	-0.976***			
	(0.059)			
Would you say that it is now a good time or a bad time to find a job: Bad time		-0.141***		
		(0.033)		
Do you have confidence in each of the following?How about thequality and integrity of the media: No			-0.029	
			(0.042)	
Level of corruption is higher				-0.081***
People cannot get ahead by working hard: Yes	-0.305***	-0.195***	-0.225***	-0.200***
	(0.042)	(0.040)	(0.057)	(0.039)
Dissatisfied with the educational system or the schools: Yes	-0.252***	-0.150***	-0.166***	-0.169***
	(0.034)	(0.031)	(0.043)	(0.030)
Individual characteristics	YES	YES	YES	YES
Country fixed effects	YES[A]	YES[B]	YES	YES
Month and year of interview	YES	YES	YES	YES
Constant	6.470***	5.865***	5.902***	5.676***
	(0.200)	(0.180)	(0.267)	(0.177)
Observations	21,376	23,592	10,926	24,012
R-squared	0.162	0.207	0.220	0.210

*Note :*Robust standard errors are in parentheses. ***p<.01; **p<.05; *p<.10.

[A] Morocco and Syria are missing.

[B] Morocco is missing.

Appendix D1: Changes in Averages and Decomposition of Effects, Lewbel Estimator

	Change in the obtained coefficient (2009-10) DEV MENA	Change in the obtained coefficient (2009-10) Arab Spring	Change in the averages(2009-10) DEV MENA	Change in the averages(2009-10) Arab Spring	Developing MENA $\sum\hat{\alpha}_2(X_2 - X_1)$	Developing MENA $\sum X_1(\hat{\alpha}_2 - \hat{\alpha}_1)$	Arab Spring countries $\sum\hat{\alpha}_2(X_2 - X_1)$	Arab Spring counties $\sum X_1(\hat{\alpha}_2 - \hat{\alpha}_1)$
Dissatisfaction with Standards of living	0.101	0.015	0.028	0.091	-0.031	0.037	-0.084	0.005
People cannot get ahead by working hard (Yes)	0.165	0.120	-0.012	0.004	0.006	0.029	-0.001	0.012
Dissatisfaction with efforts of the government to increase high quality jobs	0.033	-0.098	0.033	0.070	-0.012	0.021	-0.030	-0.060
Dissatisfaction with freedom to choose life	-0.199	-0.058	0.038	0.052	-0.014	-0.074	-0.015	-0.018
Dissatisfaction with educational system/schools	1.000	0.910	-0.015	0.076	-0.007	0.382	0.029	0.331
Corruption widespread within government/ business (Yes)	-0.113	-0.387	0.016	0.111	-0.008	-0.088	-0.040	-0.262
Unemployed	0.393	0.179	0.001	0.030	0.000	0.025	-0.012	0.004
Working for the government	0.339	0.481	0.038	0.034	0.013	0.022	0.020	0.043
Income(1,000's)	0.001	-0.009	-0.600	-1.306	-0.015	0.010	-0.025	-0.077

Appendix D2: Changes in Averages and Decomposition of Effects, OLS

	Change in the obtained coefficient (2009-10) DEV MENA	Change in the obtained coefficient (2009-10) Arab Spring	Change in the averages(2009-10) DEV MENA	Change in the averages(2009-10) Arab Spring	Developing MENAA $\sum\hat{\alpha}_2(X_2 - X_1)$	Developing MENA $\sum X_1(\hat{\alpha}_2 - \hat{\alpha}_1)$	Arab Spring countries $\sum\hat{\alpha}_2(X_2 - X_1)$	Arab Spring counties(4) $\sum X_1(\hat{\alpha}_2 - \hat{\alpha}_1)$
Dissatisfaction with Standards of living	0.064	0.072	0.028	0.091	-0.033	0.024	-0.106	0.023
People cannot get ahead by working hard (Yes)	-0.033	-0.027	-0.012	0.004	0.003	-0.006	-0.001	-0.003
Dissatisfaction with efforts of the government to increase high quality jobs	-0.010	-0.024	0.033	0.070	-0.005	-0.007	-0.011	-0.015
Dissatisfaction with freedom to choose life	0.050	0.265	0.038	0.052	-0.001	0.019	0.006	0.083
Dissatisfaction with Educational system/schools	-0.006	0.014	-0.015	0.076	0.002	-0.002	-0.012	0.005
Corruption widespread within government/business (Yes)	0.043	-0.317	0.016	0.111	-0.001	0.033	-0.027	-0.215
Unemployed	0.258	0.339	0.001	0.030	0.000	0.017	-0.009	0.008
Working for the government	0.298	0.542	0.038	0.034	0.013	0.019	0.020	0.049
Income(1,000's)	0.001	-0.011	-0.600	-1.306	-0.014	0.010	-0.025	-0.094

Table 1: Life Satisfaction in Developing MENA Countries in the Common Sample, (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	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 201

Table 2: Determinants of Life Satisfaction in MENA: Ordinary Least Squares Estimates

VARIABLES	(1) Model 1 DEV MENA	(2) Model 2 DEV MENA	(3) Model 3 DEV MENA	(4) Model 4 DEV MENA	(5) Model 5 DEV MENA	(6) Model 6 DEV MENA	(7) Model 7 DEV MENA	(8) Model 8 Arab Spring
Dissatisfied with freedom to choose life: Yes		-0.351***					-0.033	-0.019
		(0.030)					(0.031)	(0.053)
Dissatisfied with standard of living: Yes			-1.333***				-1.238***	-1.213***
			(0.029)				(0.030)	(0.053)
Income (1,000's)			0.023***	0.029***			0.023***	0.025***
			(0.002)	(0.002)			(0.002)	(0.003)
Dissatisfied with efforts to increase high quality jobs: Yes				-0.361***			-0.154***	-0.139***
				(0.031)			(0.032)	(0.053)
Dissatisfied with the educational system or the schools: Yes				-0.340***			-0.166***	-0.158***
				(0.030)			(0.029)	(0.051)
(Reference group: Full-time Employed)								
Self-employed				0.077			0.041	-0.024
				(0.064)			(0.061)	(0.100)
Unemployed				-0.534***			-0.335***	-0.475***
				(0.082)			(0.079)	(0.145)
Out of workforce				0.003			-0.019	-0.028
				(0.049)			(0.047)	(0.076)
Underemployed				-0.267***			-0.114	-0.242*
				(0.082)			(0.080)	(0.133)
(Reference group: Other)								
Working for the government				0.245***			0.190***	0.309***
				(0.055)			(0.052)	(0.084)
Undetermined				-0.011			-0.019	-0.280***
				(0.051)			(0.049)	(0.095)
Corruption widespread within government: Yes					-0.284***		-0.077**	-0.056
					(0.036)		(0.035)	(0.054)
People cannot get ahead by working hard: Yes						-0.496***	-0.223***	-0.210***
						(0.041)	(0.039)	(0.080)
(Reference group: Muslim)								
Not Muslim/Other religion	0.269***	0.237***	0.202***	0.168**	0.275***	0.239***	0.171**	0.176
	(0.075)	(0.075)	(0.069)	(0.074)	(0.075)	(0.074)	(0.068)	(0.152)

Continued: Table 2

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(Reference group: Completed elementary education or less)								
Completed 9-15 years of education	0.452***	0.438***	0.295***	0.356***	0.448***	0.447***	0.282***	0.393***
	(0.033)	(0.033)	(0.031)	(0.033)	(0.033)	(0.033)	(0.031)	(0.051)
Completed four years of education beyond high school and/or 4-year college degree.	0.917***	0.894***	0.544***	0.672***	0.918***	0.902***	0.538***	0.533***
	(0.053)	(0.053)	(0.050)	(0.054)	(0.053)	(0.052)	(0.051)	(0.093)
(Reference group: Not a migrant)								
Migrant	-0.145	-0.147	-0.264***	-0.208**	-0.142	-0.156	-0.257***	-0.729***
	(0.102)	(0.102)	(0.097)	(0.101)	(0.102)	(0.101)	(0.096)	(0.182)
Female	0.221***	0.224***	0.156***	0.203***	0.216***	0.209***	0.138***	0.236***
	(0.029)	(0.029)	(0.027)	(0.031)	(0.029)	(0.029)	(0.029)	(0.052)
Age	-0.040***	-0.038***	-0.029***	-0.038***	-0.039***	-0.039***	-0.028***	-0.022**
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.009)
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	0.092*	0.091*	0.037	0.081*	0.098**	0.088*	0.044	0.015
	(0.047)	(0.047)	(0.044)	(0.046)	(0.047)	(0.047)	(0.043)	(0.073)
Single with children	-0.140***	-0.122**	-0.101**	-0.088*	-0.136***	-0.145***	-0.075	0.053
	(0.050)	(0.050)	(0.047)	(0.049)	(0.050)	(0.050)	(0.047)	(0.079)
Single without children	-0.086*	-0.081	-0.102**	-0.067	-0.079	-0.088*	-0.077	-0.013
	(0.050)	(0.050)	(0.047)	(0.049)	(0.050)	(0.050)	(0.047)	(0.080)
Separated/Divorced/Widow with children	-0.125	-0.098	-0.028	-0.085	-0.124	-0.108	-0.003	0.120
	(0.083)	(0.082)	(0.077)	(0.081)	(0.083)	(0.082)	(0.076)	(0.119)
Separated/Divorced/Widow without children	-0.404***	-0.406***	-0.265***	-0.337***	-0.390***	-0.398***	-0.251***	-0.321**
	(0.099)	(0.099)	(0.091)	(0.095)	(0.099)	(0.098)	(0.090)	(0.148)
(Reference group: 1 person older than 15 in household)								
2 people older than 15 in household	0.018	0.007	0.005	0.008	0.022	0.021	0.010	-0.024
	(0.086)	(0.086)	(0.084)	(0.084)	(0.086)	(0.086)	(0.084)	(0.112)
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
	(0.081)	(0.082)	(0.080)	(0.080)	(0.081)	(0.081)	(0.079)	(0.107)
Country fixed effects	YES	YES	YES	YES	YES	YES	YES	YES
Month and Year of Interview	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***
	(0.172)	(0.173)	(0.163)	(0.178)	(0.173)	(0.172)	(0.173)	(0.260)
Observations	25,244	25,244	25,244	25,244	25,244	25,244	25,244	9,065
R-squared	0.071	0.078	0.197	0.121	0.074	0.079	0.206	0.192

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.Employment status includes an additional category (2009) which captures individuals other than employed.

Table 3: Determinants of Life Satisfaction in MENA: Lewbel Estimates

VARIABLES	(10) Model 10 DEV MENA	(11) Model 11 DEV MENA	(12) Model 12 DEV MENA	(13) Model 13 DEV MENA	(14) Model 14 DEV MENA	(15) Model 15 DEV MENA	(16) Model 16 Arab Spring
Dissatisfaction with freedom to choose life	-0.243					-0.011	0.069
	(0.340)					(0.789)	(0.923)
Dissatisfied with standard of living: Yes		-1.299***				-1.181***	-1.288***
		(0.100)				(0.126)	(0.186)
Income (1,000's)		0.024***	0.030***			0.023***	0.026***
		(0.002)	(0.002)			(0.002)	(0.003)
Dissatisfied with efforts to increase high quality			-0.353***			-0.085	-0.218
jobs: Yes			(0.092)			(0.262)	(0.333)
Dissatisfied with the educational system or the			-0.118			-0.076	0.515
schools: Yes			(0.245)			(0.245)	(0.524)
(Reference group: Full-time Employed)							
Self-employed			0.079			0.050	-0.037
			(0.064)			(0.061)	(0.105)
Unemployed			-0.539***			-0.353***	-0.504***
			(0.083)			(0.086)	(0.163)
Out of workforce			0.012			-0.021	-0.038
			(0.049)			(0.050)	(0.078)
Underemployed			-0.287***			-0.126	-0.251*
			(0.084)			(0.082)	(0.135)
(Reference group: Other)							
Working for the government			0.233***			0.187***	0.487***
			(0.055)			(0.054)	(0.134)
Corruption widespread within government: Yes				-0.367***		-0.188	-0.216
				(0.128)		(0.181)	(0.247)
People cannot get ahead by working hard: Yes					-0.589***	-0.324**	-0.512*
					(0.134)	(0.154)	(0.269)
(Reference group: Muslim)							
Not Muslim/Other religion	0.245***	0.180***	0.165**	0.277***	0.233***	0.175*	0.238
	(0.081)	(0.069)	(0.076)	(0.075)	(0.074)	(0.094)	(0.169)
(Reference group: Completed elementary education or less)							
Completed 9-15 years of education	0.443***	0.305***	0.360***	0.447***	0.445***	0.280***	0.368***
	(0.035)	(0.032)	(0.033)	(0.033)	(0.033)	(0.037)	(0.062)

Continued: Table 3

	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Completed four years of education beyond high	0.901***	0.569***	0.679***	0.918***	0.899***	0.539***	0.486***
school and/or 4-year college degree.	(0.057)	(0.050)	(0.054)	(0.053)	(0.053)	(0.068)	(0.136)
(Reference group: Not a migrant)							
Migrant	-0.141	-0.200**	-0.184*	-0.142	-0.155	-0.272***	-0.718***
	(0.102)	(0.098)	(0.102)	(0.102)	(0.101)	(0.096)	(0.188)
Female	0.223***	0.157***	0.203***	0.215***	0.206***	0.140***	0.226***
	(0.029)	(0.027)	(0.031)	(0.029)	(0.029)	(0.038)	(0.072)
Age	-0.039***	-0.029***	-0.038***	-0.039***	-0.038***	-0.029***	-0.022**
	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)	(0.009)
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)
(Reference group: Married with children)							
Married without children	0.091*	0.038	0.083*	0.100**	0.087*	0.047	0.036
	(0.047)	(0.044)	(0.046)	(0.047)	(0.047)	(0.044)	(0.076)
Single with children	-0.125**	-0.096**	-0.090*	-0.134***	-0.147***	-0.081	0.066
	(0.053)	(0.047)	(0.049)	(0.050)	(0.050)	(0.057)	(0.096)
Single without children	-0.081	-0.095**	-0.067	-0.076	-0.089*	-0.072	-0.015
	(0.050)	(0.047)	(0.049)	(0.050)	(0.050)	(0.047)	(0.082)
Separated/Divorced/Widow with children	-0.106	-0.032	-0.100	-0.123	-0.105	-0.011	0.111
	(0.086)	(0.076)	(0.082)	(0.083)	(0.082)	(0.089)	(0.124)
Separated/Divorced/Widow without children	-0.403***	-0.273***	-0.343***	-0.385***	-0.399***	-0.252***	-0.290*
	(0.099)	(0.091)	(0.095)	(0.099)	(0.098)	(0.093)	(0.153)
(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
	(0.087)	(0.084)	(0.085)	(0.086)	(0.086)	(0.089)	(0.125)
More than 2 people older than 15 in household	0.015	-0.022	-0.032	0.030	0.030	-0.032	-0.018
	(0.085)	(0.080)	(0.081)	(0.081)	(0.081)	(0.093)	(0.135)
Constant	5.159***	5.452***	5.471***	5.364***	5.116***	5.570***	5.446***
	(0.213)	(0.159)	(0.182)	(0.196)	(0.168)	(0.198)	(0.254)
Observations	25,244	25,244	25,244	25,244	25,244	25,244	9,065
R-squared	0.077	0.193	0.117	0.074	0.079	0.204	0.076
Statistics							
Underidentification test: P-value	83.04	1105.78	194.93	503.81	454.68	29.508	23.872
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.013)	(0.475)
Cragg-Donald Wald F statistic	42.14	563.35	31.23	729.53	425.07	1.826	1.533
Stock-Yogo VC 10%	10.27	10.27	10.89	19.53	10.83	NA	NA
Hansen statistic	4.25	4.63	5.13	0.133	0.924	8.327	7.516
	(0.234)	(0.200)	(0.953)	(0.715)	(0.921)	(0.871)	(0.873)

Table 4: Decomposition of the Change in Life Satisfaction between 2009 and 2010 (Based on Lewbel Estimates of Model (1)- Model (6))

	Developing MENA $\sum\hat{\alpha}_2(X_2 - X_1)$	Developing MENA $\sum X_1(\hat{\alpha}_2 - \hat{\alpha}_1)$	Arab Spring Countries $\sum\hat{\alpha}_2(X_2 - X_1)$	Arab Spring Counties $\sum X_1(\hat{\alpha}_2 - \hat{\alpha}_1)$
Dissatisfaction with standards of living	-0.031	0.037	-0.084	0.005
People cannot get ahead by working hard (Yes)	0.006	0.029	NS	NS
Dissatisfaction with efforts of the government to increase high quality jobs	-0.012	0.021	-0.030	-0.060
Dissatisfaction with freedom to choose life	-0.014	-0.074	NS	NS
Corruption widespread within government/business (Yes)	-0.008	-0.088	NS	NS
Unemployed	0.000	0.025	-0.012	0.004
Working for the government	NS	NS	0.020	0.043
Income(1,000's)	-0.015	0.010	-0.025	-0.077

Notes: (i) Developing MENA includes Algeria, Egypt, Iraq, Jordan (only available for 2009), Lebanon, Morocco, Palestine, Syria, Tunisia, and the Republic of Yemen. (ii) Arab Spring Countries include Egypt, Libya, Syria and the Republic of Yemen. (iii) We only present the coefficients that were significant at least for one out of two years. (iv) The coefficients that are not significant are marked as NS. (v) The full table with results can be found in the appendix.

Figure 1a: GDP per Capita and Satisfaction with Life, 2008-10

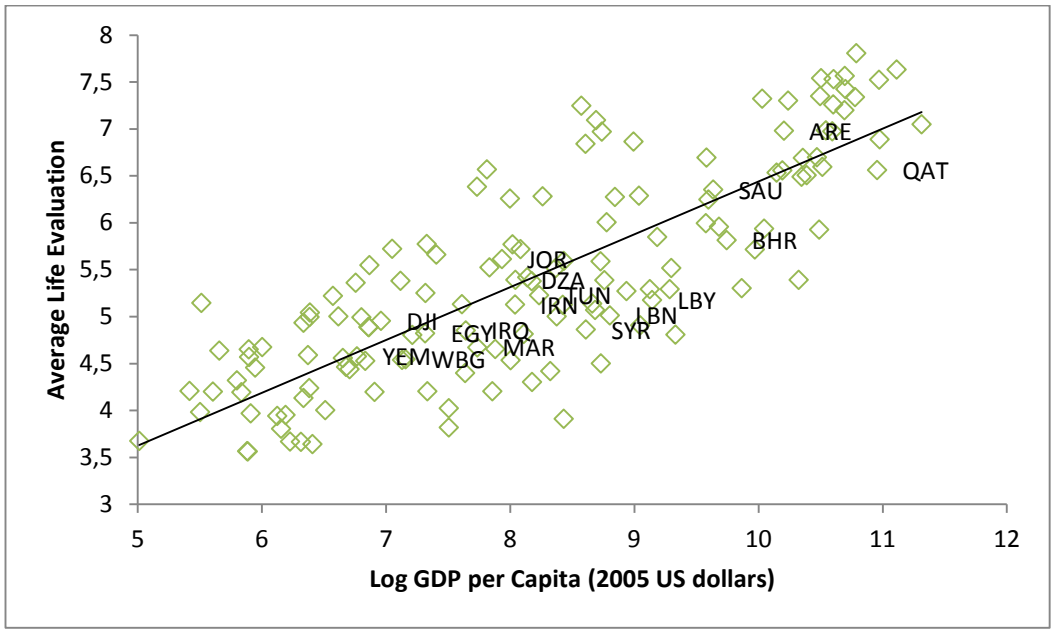


Figure 1b: Percentage Growth in GDP and Change in Satisfaction with Life (Weighted Averages) in 106 Countries, 2005-10

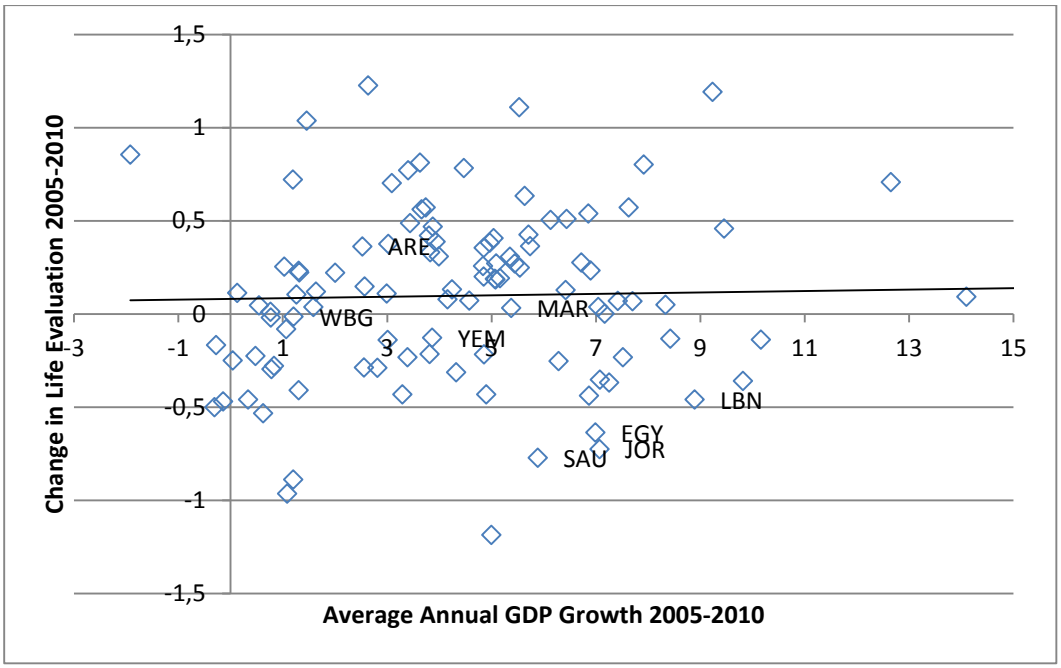
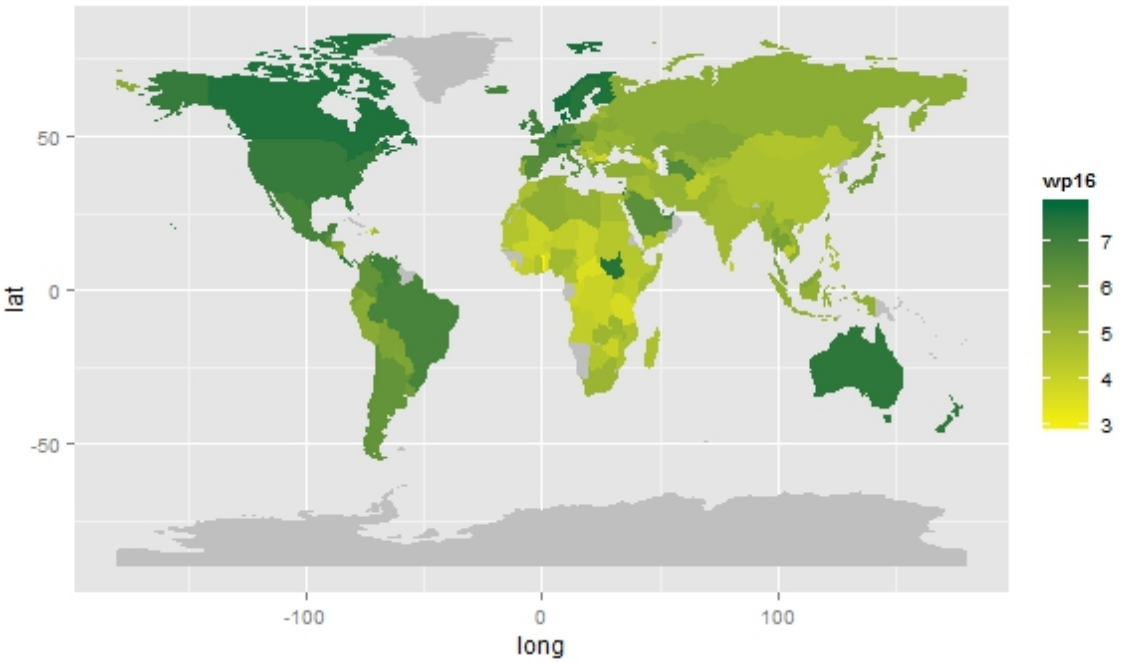
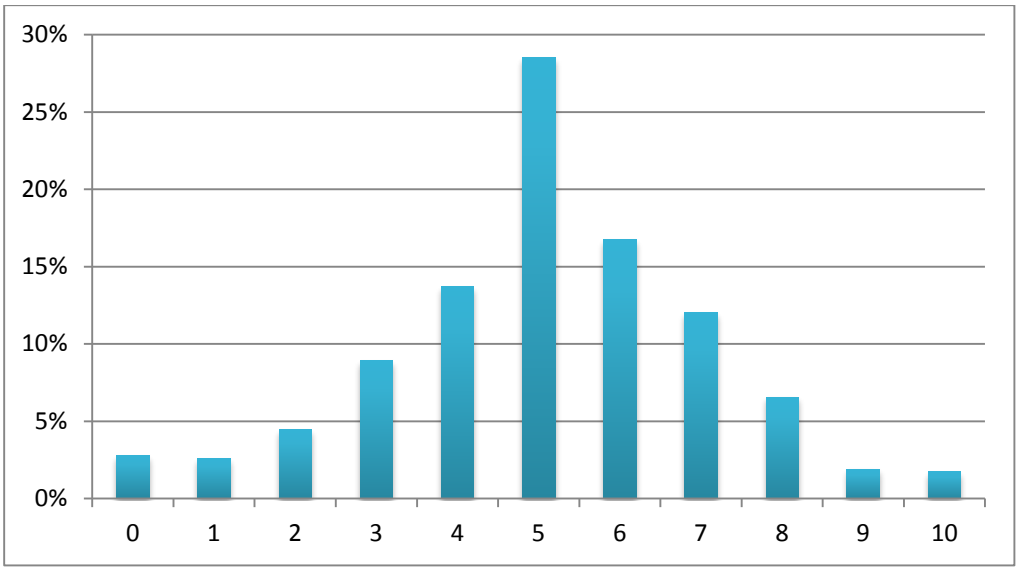


Figure 2: Average Life Satisfaction in the World, 2006-12



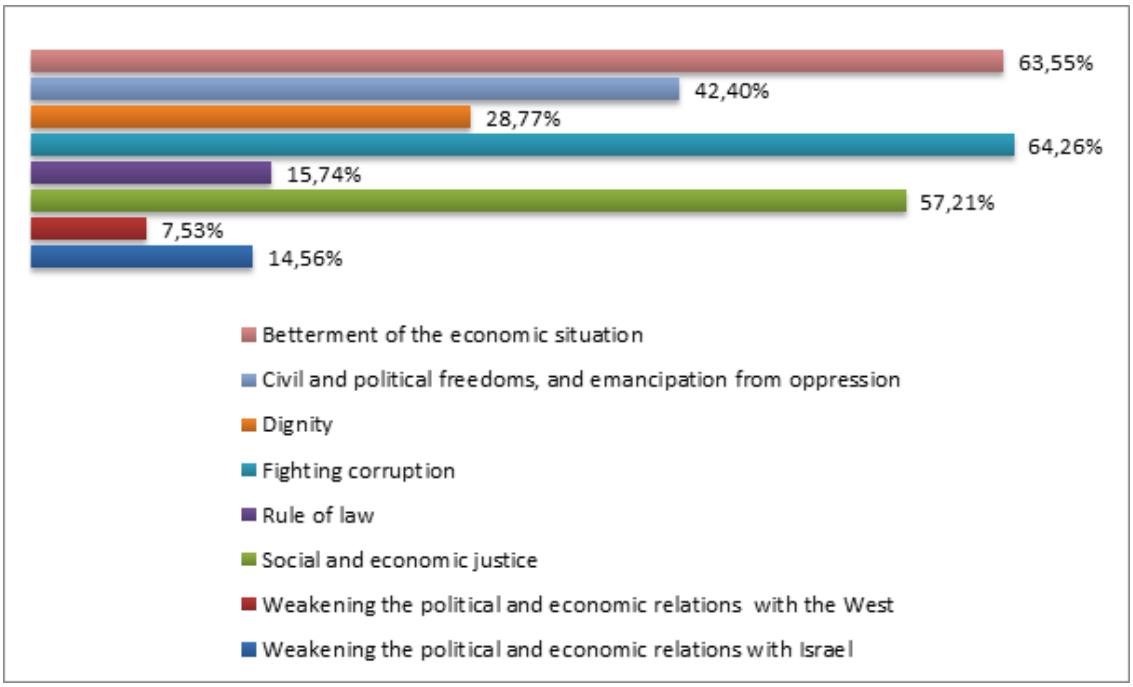
Source: Gallup World Polldata, based on the Question WP16: *Please imagine a ladder, with steps numbered from 0 at the bottom to 10 at the top. The top of the ladder represents the best possible life for you and the bottom of the ladder represents the worst possible life for you. On which step of the ladder would you say you personally feel you stand at this time?*

Figure 3: Distribution of Life Evaluation Scores in Developing MENA (percent by unit)



Source: Gallup World Poll 2013. Developing MENA includes: Algeria, Egypt, Iraq, Jordan, Lebanon, Morocco, Palestine, Syria, Tunisia, and the Republic of Yemen

Figure 4: Reasons for the Arab Spring according to the People in Developing MENA



Source: Arab Barometer 2012-2014.