WHO *IS* DEPRIVED? WHO *FEELS* DEPRIVED? LABOR DEPRIVATION, YOUTH, AND GENDER IN MOROCCO

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The paper provides a method to better understand how objective conditions of deprivation are translated into subjective feelings of deprivation using a strand of the recent literature on relative deprivation, and applies this method to labor deprivation in Morocco. We postulate that gender norms are associated with identity and the reference group that people compare themselves with. We find that the reference group plays a pivotal role in understanding how feelings of labor deprivation are generated and this can explain the apparent mismatch between objective conditions of deprivation and subjective feelings of deprivation related to joblessness among young men and women. It can also potentially help governments design public policies that address objective conditions of deprivation, such as unemployment, with a better understanding of subjective implications.

1. INTRODUCTION

Very few people could have predicted the Arab spring and the revolutions that are still unfolding in the Arab world. But for those who travelled through Arab countries in recent years, the sense of malaise felt by the general public, in particular the youth, was evident and visible in phenomena such as the emigration of the skilled and the unskilled, explained by the lack of work opportunities at home, and by the degree of marginalization from economic activities of the youth who did not emigrate abroad, especially young women. In spite of improved economic conditions and growth, the Arab populace enjoyed little gains in employment or labor force participation. The labor force participation of women in the Middle-East and North-Africa region is the lowest across all the regions of the world. In some countries as many as half of the youth aged 15–29 are out of school and out of work.

Participating in the labor market is important to people beyond the economic rewards that they may derive from employment. It provides a sense of purpose and the feeling of contributing to society that has a meaning in itself. Conversely, lack of employment can provide a sense of emptiness and exclusion that can lead to

anxiety and depression. The social psychology and labor economics literature largely agree on this point and it is not surprising that employment features among the top policy priorities of any government (see, e.g., Clark and Oswald, 1994). Yet, individuals are not identical in how they may perceive a condition of joblessness and it is not uncommon to see very large differences in attitudes toward employment across social groups. For example, urban residents are typically louder in voicing their labor market complaints than rural residents despite the lower living conditions in rural areas, and in many societies labor market expectations across genders are different, resulting in different emotional attitudes toward employment.

This paper uses the concept of relative deprivation to better understand how objective conditions of labor deprivation can be transformed into subjective feelings of labor deprivation for different social groups. Our contribution is both methodological and empirical. We first devise a measure of relative labor deprivation following a two-step model initially suggested by Verme (2010). This method builds on a recent literature that gives more emphasis to the question of the reference group and its role in determining feelings of deprivation. In particular, the method allows for integrating a mechanism for the selection of the reference group in measures of relative deprivation and making different assumptions on how individuals select the reference group. We then apply this measure to the case of youth and gender in Morocco using a unique household and youth survey administered in 2010. This particular survey allows us to measure relative labor deprivation with the measure proposed and also to validate this same measure by using subjective questions administered to respondents.

The concept of relative deprivation is not new. Both Adam Smith in the "Wealth of Nations" (Smith, 1976) and Karl Marx in "Wage, Labour and Capital" (Marx, 1847) delved extensively into the idea that people compare themselves with their peers and neighbors rather than with the whole society. In the last century, Stouffer et al. (1949) and Runciman (1966) contributed to formalizing the concept of relative deprivation by introducing the notion of reference groups and by discussing the importance of the reference group in generating feelings of deprivation. Economics has approached the question of relative deprivation and reference groups in more recent times with the introduction of the first quantitative measure of relative deprivation developed by Yitzhaki (1979), and today there are a range of measures of relative deprivation that can be readily used for analyses (Hey and Lambert, 1980; Chakravarty et al., 1995; Bossert and D'Ambrosio, 2006; Chakravarty, 1997). In particular, recent research has shown how quantitative measures of relative deprivation can be adapted to incorporate self-selection mechanisms of the reference groups (Verme and Izem, 2008; Silber and Verme, 2012), an issue particularly relevant if we want to better understand how feelings of deprivation can be generated among marginalized groups in society.

The concept of relative deprivation also calls for the identification of the reference group, the group of peers that individuals use to compare and assess their own status. In this paper, we are particularly interested in how the reference group is defined along gender lines in a labor market context. The literature on job satisfaction and gender in the U.S. and the U.K. has shown that women are paid less than men but that women are more satisfied with their jobs than men (Clark

and Oswald, 1996; Sloane and Williams, 2000; Sousa-Poza and Sousa-Poza, 2007). This seems explained by a combination of factors such as lower expectations of women and the higher importance they place on non-income related job characteristics. This same literature also suggests that female satisfaction increases if the female share of co-workers increases, indicating that the reference group in the workplace matters in determining job satisfaction. There is also evidence that gender discrepancies in job satisfaction tend to disappear in countries with equal female–male participation and with the modernization of the labor market (Kaiser, 2007).

The reference group is a key element in understanding individual identity and self-assessment. In their seminal paper on economics and identity, Akerlof and Kranton (2000) show how identity—"a person's sense of self"—can be used to explain human behavior that would otherwise conflict with standard utility theory. As stated by the authors, "Identity can account for many phenomena that current economics cannot well explain. It can comfortably resolve, for example, why some women oppose 'women's rights,' as seen in microcosm when Betty Friedan was ostracized by fellow suburban housewives for writing *The Feminine Mystique*. Other problems such as ethnic and racial conflict, discrimination, intractable labor disputes, and separatist politics all invite an identity-based analysis" (p. 715). In this framework, identity is based on social categories, and in turn, social categories can be defined along personal characteristics such as gender, age, wealth, ethnicity, or location. Individuals belong to sets of social categories that delineate their own identity and these categories imply standard "prescriptions" or behavioral norms. Therefore, identity is defined by the reference group—the group of people that individuals feel they belong to—and the reference group influences the expected behavior.

Akerlof and Kranton (2000) note how important this aspect is in understanding gender differences in labor force participation, the main focus of this paper. If society views a woman's role as "housewife" and a man's role as "breadwinner," women would be hesitant to join the labor force in greater numbers as that could "evoke anxiety and discomfort in oneself," while males would see female participation in the labor force as a "threat" to their own male identity. To the degree that these factors influence women's participation decisions, they can help to explain why female labor force participation rates remain so low, and at the same time, why many women may not feel as distressed by this outcome: "Similarly women's assumed lower desire for labor force participation (as in Mincer and Polachek (1974), Bulow and Summers (1986), and Lazear and Rosen (1990)) can be understood as the result of their identity as homemakers" (Akerlof and Kranton, 2000, p. 732). Claudia Goldin, a leading authority on female participation rates in the U.S., described the post-1968 growth in female participation in the U.S. as a "revolution" (Goldin, 2006)[1] and pinpointed two major factors behind this revolution: "expanded horizons," with women's expectations increasing quickly and influencing a shift in educational choices; and "altered identities," with women behaving more independently from their partners. Changes in the reference

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[1]See also Goldin (1990).

group are closely intertwined with changes in expectations and identity and these are important factors to consider for the measurement of relative deprivation.

The findings in this paper largely support the hypothesis that feelings of labor deprivation and the reference group are constructed along gender lines and that this phenomenon can explain the apparent inconsistency between facts and perceptions of labor deprivation. We find that the measure of relative deprivation proposed can provide very different results depending on whether the reference group is gender specific or not. When we assume that women and men compare themselves with both genders, we find women to be more relatively deprived than men, which is what measures of objective deprivation (such as unemployment or labor force participation) would suggest. If, instead, women and men limit their own reference group to their own gender, we find that men are more relatively deprived than women. This last result conforms to the general observation that women tend to complain less than men about their labor market status despite higher objective deprivation levels. This result is also strongly supported by recent evidence from a qualitative study in Morocco (World Bank, 2012) that found both genders arguing that men suffer much more than women from labor deprivation.

Furthermore, we find our measure of relative labor deprivation to be strongly associated with subjective responses to questions about social status and emigration. For example, the satisfaction levels reported by youth regarding their opportunities to improve their social status in the future are inversely related to the paper's estimated levels of relative labor deprivation. And, for men, relative labor deprivation is positively associated with the wish to emigrate abroad when the reference group is constituted by other men. These findings underline the importance of the reference group in transforming objective conditions of deprivation into subjective feelings of deprivation; they are relevant for other countries in the region and call for further research in this area.

The paper is organized as follows. In Section 2, we provide an overview of youth and gender in the Moroccan labor market. In Section 3, we present the relative deprivation framework that we intend to apply in the paper, while Section 4 describes the data we use. Section 5 illustrates the results and Section 6 concludes.

2. Youth and Gender in the Moroccan Labor Market

During the last decade, Morocco enjoyed sustained economic growth with an average annual growth rate of about 5 percent, almost twice its average growth rate during the 1990s. Growth has been associated with positive developments in a wide range of areas. The poverty rate, for example, declined from 16.3 percent in 1999 to 8.9 percent in 2007 (Douidich and Ezzrari, 2010), a rather remarkable achievement in such a short period of time. Substantial gains have been achieved in education, with broad access to basic education and improvements in the number of people receiving higher levels of education. And health indicators such as infant and maternal mortality show consistent positive trends over the past 30 years. As a result, the Human Development Index (HDI) for Morocco increased from 0.507 to 0.582, although the country retains a low rank in the global HDI classification.

Yet, comparable positive trends are not visible in labor market indicators. Recent economic growth has not been sufficient to accommodate the growing working age population. According to the official estimates of the Haut Commissariat au Plan (HCP, 2012), in 2010 slightly less than half of the population (49.6 percent of those aged 15 and over) participated in the labor market, which constitutes one of the lowest activity rates in the region. In fact, during the decade following 1999, labor force participation rates fell by about 5 percentage points. While inactivity in the labor market is high, unemployment is also high at 9.1 percent, despite a five percentage point decline between 1999 and 2010. In essence, the encouraging gains in unemployment may be mostly explained by the losses in labor force participation with people migrating from the pool of the unemployed to the pool of the economically inactive.

The labor market situation is particularly grim for the youth and women. Young people aged 15–29 years represent almost a third of the population, and among the very young (ages 15–24), unemployment is almost three and a half times as high as compared to the labor force as a whole. Among those who are employed, a majority face exclusion from the formal labor market and many are underemployed. Women—older women as well as the young—face particularly strong economic exclusion. The labor force participation rate of women in 2009 was a third of that of men (25.8 percent as compared to 75.3 percent, HCP 2009), one of the lowest female participation rates in the world. These two marginalized groups constitute the majority of the Moroccan population.

The increased exclusion of youth and women during the growth period of the last decade is puzzling and disquieting. It is puzzling because economic growth was expected to pull some of the inactive into the labor force. It is disquieting because the 2011 Arab spring in countries such as Tunisia and Egypt has been largely fuelled by young people, men and women alike, and many commentators associated these events with persistent lack of labor market opportunities for the youth.

While improvements in growth and labor demand remain compelling prerequisites for improving labor force participation overall, changes in perceptions and expectations can play an important role in terms of female labor force participation. A recent World Bank (2012) study conducted focus group interviews with young people of diverse backgrounds across Morocco and found that an overwhelming majority of both female and male interviewees believed men to be relatively more disadvantaged than women in the domestic labor market. This can appear somewhat counterintuitive since women participate in far lower numbers than men to the labor market and, among those who do participate in the labor force, unemployment levels among women tend to be higher. However, focus group participants held the view that for men employment was an economic and social imperative, while for women it was more of a choice. Hence, the self-esteem of males was tied more closely to their employment status than that of females. The World Bank (2012) study summarizes focus group participants' viewpoints as follows: "Young men are thus seen as suffering most from adverse labor market conditions, not because the objective situation is more adverse for them, but rather, because it is much more socially detrimental for men to be excluded from the labor market. Although it may be highly desirable for women to work, it was

not a social requirement: a woman without work would still be respectable and able to find satisfaction in life, primarily in marriage and children" (p. 41).

Quantitative data are also indicative of strong gender norms. For example, the time use module in the Morocco Household and Youth Survey (MHYS) 2009–10 suggests that young women on average do far more of the housework than men do. In fact, employed women spend much more time on household chores than non-employed men, as shown in Table A1 in the Appendix. Akerlof and Kranton (2000) argue that such patterns, seen in wealthier developed countries as well, results not from women's comparative advantage in home production but rather from the importance of gender identity.

Quantitative evidence from the MHYS further indicates that most young men and women hold the belief ("prescription") that women should perform more household tasks than men, as documented in Table A2 in the Appendix. Women presently do more work inside the home and less work outside as compared to men. Interestingly, the "how would you like it to be" scenario is not much different across men and women. Further, while men are open to women working more outside the house, they also want them to continue their housework routines. Women also reveal that they would like to engage in more of home production than men do, while simultaneously aspiring to work outside the home. These responses reveal strong gender norms related to the labor market participation on the part of both men and women. Such gender norms are not unique to the Arab world and have been documented for other countries, including the U.S. and Europe (Mincer and Polachek, 1974; Bulow and Summers, 1986; Lazear and Rosen, 1990; Akerlof and Kranton, 2000).

These findings provide a strong rationale for considering reference groups across gender lines when it comes to evaluating one's relative status in the labor space. If women and men derive their level of deprivation from the comparison within gender rather than between genders, feelings of deprivation would depend on such comparison.

3. From Income Inequality to Labor Deprivation

In economics, the concepts of inequality and relative deprivation are very close, both conceptually and mathematically. In this section, we show how one can navigate between these two concepts, and construct a measure of relative labor deprivation that can effectively be used to better understand feelings of deprivation as opposed to the objective condition of deprivation and gain some useful insights for the design of public policies that target specifically marginalized groups.

Let y be a measure of welfare and i or j denote individuals with $i, j = 1, 2 \ldots n$ and $n \in N$. Let also Y be a distribution of welfare values with $Y = (y_1, y_2, \ldots, y_n)$ and $Y \in R^n$. Then, one of the possible formulations of the Gini index is

$$(1) \qquad G = \frac{1}{\mu n^2} \sum_{i=1}^{n} \sum_{j>i} (y_j - y_i),$$

with $\mu = \frac{1}{n} \Sigma_{i=1}^{n} y_i$ and income sorted in descending order of magnitude. In this particular formulation of the Gini index, inequality is seen as the sum of the sums

of the welfare distances between each individual in the population and all richer individuals.

The concept of relative deprivation can be expressed in very similar terms. In his theory of social justice, Runciman (1966) was the first to propose a definition and a methodology to measure relative deprivation, defined as a sentiment that emerges from inter-personal comparisons. More specifically, a person who is relatively deprived is a person who: (1) does not have X; (2) sees some other person or persons as having X; (3) wants X; and (4) sees it as feasible to have X. Based on this notion, Yitzhaki (1979) and Hey and Lambert (1980) proposed to measure individual relative deprivation (RD_i) by taking the average distances between each individual income and the income of all richer individuals so that

$$(2) \qquad RD_i = \frac{1}{n} \sum_{j>i} (y_j - y_i).$$

In this context, the individual feeling of relative deprivation is measured in terms of average welfare distances so that the further the individual's welfare is from all richer individuals, the more deprived this individual will feel. Relative deprivation for a society, RD, is then simply the aggregation of the individual relative deprivation scores across the population:

$$(3) \qquad RD = \frac{1}{n^2} \sum_{i=1}^{n} \sum_{j>i} (y_j - y_i),$$

which Yitzhaki (1979) noted as being equal to the absolute Gini index (the Gini multiplied by the mean). This measure is scale variant, but it can be easily made scale invariant by dividing it by the mean so that we return to the Gini index formulated in (1). Therefore, if we use the formulation of the Gini index proposed in (1), relative deprivation and the Gini inequality measure are the same, both at the individual and at the societal levels. The difference is simply the interpretation of these measures. Relative deprivation at the individual level has a clear interpretation—being the individual sense of deprivation—while individual inequality is a meaningless concept.

The Yitzhaki measure of relative deprivation was the first relative deprivation measure introduced in economics and paved the way for a rich literature that explored various aspects of the concept of relative deprivation as well as various forms of indexes (Hey and Lambert, 1980; Berrebi and Silber, 1985; Chakravarty et al., 1995; Chakravarty, 1997; Bossert et al., 2007). As in the Yitzhaki seminal paper, this literature considered the entire population or the population of richer individuals as the reference group for individuals. In other words, the underlying assumption is that individuals are able to observe all other individuals in society, compare all these other individuals with themselves, and derive from this comparison a sense of relative deprivation.

In recent years, the question of reference group or the question of which other people matter when individuals compare themselves with others has attracted substantial attention. As already noted by Smith, Marx, Stouffer, and Runciman, it is recognized that people cannot observe all other individuals in any given society

and that inter-personal comparisons are built around specific reference groups. We tend to compare ourselves with a restricted number of people who belong to the same self-constructed and imaginary group we think we belong to. For example, we may not feel deprived comparing our income with that of Bill Gates but we may feel very deprived if a colleague at work earns marginally more than we do. Therefore, the question of the selection of the reference group is an important one when it comes to measuring relative deprivation (e.g., Clark and Senik, 2010).

A more recent literature on relative deprivation has attempted to include mechanisms of self-selection of the reference group into measures of relative deprivation. Verme and Izem (2008), for example, have argued that people compare themselves with their likes and tend to self-select the reference group on the basis of personal characteristics such as age, gender, education, language, or ethnic group. In such a framework, relative deprivation can be measured by simply taking the difference between the Yitzhaki measure calculated on incomes and the same measure calculated on expected incomes where expected incomes are estimated based on a set of personal characteristics thought to be used by most people for selecting the reference group.

Similarly, Silber and Verme (2010) have proposed a relative deprivation measure that exploits expected incomes and breaks relative deprivation into two components. The first component is called *structural mobility* and measures the difference between the inequality (Gini index) of the distribution of the actual incomes and that of the expected incomes. The second component is called *exchange mobility* and measures the amount of re-ranking that takes place when one compares the position of the individuals in the distribution of the actual and predicted incomes. Total deprivation in the population is therefore a function of these two elements. The concept of relative deprivation is no longer a measure of welfare distances between different people but becomes a measure of distances between one's own income status and the income status that one would expect given one's own personal characteristics.

More generally, one can construct an index of Relative Income Deprivation (RID) following a two-step procedure. In the first step, predicted incomes are estimated based on a set of characteristics thought to be used by individuals to compare their incomes with the incomes of others. In the second step, the residuals (the difference between actual and predicted incomes) are used in equations (2) and (3) in place of actual income to measure relative income deprivation at the individual and societal level. The advantage of this procedure as compared to the Yitzhaki index in equations (2) and (3) is that the two-step procedure allows for including a mechanism for the selection of the reference group into the Relative Deprivation index (see also Silber and Verme, 2010).

This last concept of relative deprivation has recently been extended to the labor market by Verme (2010), who proposed an index of Relative Labor Deprivation (RLD). Joblessness or lack of labor, can naturally be seen as a condition of labor deprivation. However, the joblessness status cannot be considered as a measure of the "feeling" of labor deprivation for at least two reasons. First, joblessness can be a consequence of different situations. A person could be jobless by choice (technically belonging to the economically inactive), because of lack of the necessary skills (labor market mismatch) or because of other causes such as

discrimination. Each of these situations would potentially imply different degrees of feelings of deprivation, and a measure that aims at capturing individual deprivation should be able to discriminate between these different conditions. And second, measuring relative deprivation implies quantifying feelings of deprivation for each individual on a continuum scale, but joblessness or unemployment status is a binary 0–1 variable that cannot serve this purpose.

These two issues can be overcome by following the two-step approach already described for the RID measure in the labor space. Expected joblessness or expected unemployment is first estimated with a probit or logit model based on a number of personal characteristics believed to be used by people for inter-personal comparisons. The labor status predicted in this way is then considered a measure of the labor status that individuals would expect to have if all people with the same characteristics were treated equally. Subsequently, by taking the difference between actual labor status and expected labor status (the residuals of the prediction equation), we can measure the degree of individual labor deprivation.

Formally, let g_i be a binary variable that splits the labor force into two groups, with $g_i = 1$ if the individual belongs to a "good" labor market status and $g_i = 0$ if the individual belongs to a "bad" labor market status.[2] Let also X_i be a vector of personal characteristics thought to be used by individuals to self-select the reference group. In the first step, we estimate the difference between predicted and actual labor status as follows:

$$(4) \qquad\qquad g_i = \beta_0 + \beta_1 X_i + \varepsilon_i$$

$$(5) \qquad\qquad \hat{g}_i = \hat{\beta}_0 + \hat{\beta}_i X_i$$

$$(6) \qquad\qquad d_i = \hat{g}_i - g_i$$

where $-1 \leq d_i \leq 1$; $0 \leq \hat{g}_i \leq 1$; $g_i = \{0, 1\}$ and $\hat{\beta}_0$ and $\hat{\beta}_i$ are estimated in (4) with a probit model and Maximum Likelihood Estimation.

Positive values of the individual labor deprivation score (d_i) indicate a condition of deprivation, when the actual labor status is lower than the expected labor status. Vice versa, negative values indicate a condition of satisfaction with the actual status being better than the expected status.[3]

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[2]"Good" or "bad" labor market status refers to the labor market condition from the perspective of the social planner who wishes to maximize employment and production. This is not a judgment on the appreciation that individuals may have for one status or the other.

[3]Note that if group A has all jobs ($g_i = 1$), group B has no jobs ($g_i = 0$), and we make joint estimations for both in step 1 of the model (we assume that both groups compare themselves with both groups), the deprivation score (the residual, $d_i = \hat{g}_i - g_i$) will be always positive for group B and always negative for group A. This will make group B worse off than group A because all members of group B will show higher deprivation than any member of group A. In this case, the prediction would comply with the expectation that group B should feel more deprived than group A. However, if group A has all jobs and group B has no jobs, we cannot make *separate* estimations for each group in step 1 of the model because there would be no variation in the dependent variable for any of the two groups. Therefore, our measure cannot be estimated with the assumption of separate reference groups if the two groups observed are perfectly split along the two categories of the dependent variable in step 1 of the model.

In the first step of the model, it is also possible to make different assumptions about the reference group. We can estimate d_i using: (a) the full sample of men and women in equation (4); or (b) men and women separately in two equations. This amounts to making different assumptions about the reference group: joint reference group or gender specific reference group.

In the second step, this simple measure of deprivation can be conveniently used as a measure of welfare in a Yitzhaki type of relative deprivation index where the individual deprivation scores are used in place of the welfare measure. We can then define the individual Relative Labor Deprivation (RLD_i) as

$$(7) \qquad RLD_i = \frac{1}{\mu n} \sum_{J=1}^{i} \left(d_i' - d_j' \right)$$

$$\text{where } d' = \frac{(1+d) - min(1+d)}{max(1+d) - min(1+d)}.$$

The interpretation of (7) is that individuals not only take into account the distance between their own (normalized) actual labor status and their expected labor status (d_i'), but they also consider the gap between their own distance and the distance of other less deprived individuals in society. Therefore, we are introducing the concept of "envy" in the measure of relative deprivation and consider that individual relative deprivation can be affected by how other people in society feel about their own relative deprivation. It is also important to note that we are standardizing the measure by the mean. This is different from the Yitzhaki measure of relative deprivation and from Verme (2010), and makes our measure scale invariant, which is useful if we wish to compare relative deprivation across groups that might have very different means in observed welfare (such as urban and rural areas).

The individual values in equation (7) can then be additively aggregated to measure labor relative deprivation at the societal level as follows:

$$(8) \qquad RLD = \frac{1}{\mu n^2} \sum_{i=1}^{n} \sum_{J=1}^{i} \left(d_i' - d_j' \right).$$

Mathematically, the less diverse a society is in terms of personal characteristics (X_i), the closer actual (g_i) and expected ($\hat{g}_i$) labor status, the smaller individual labor deprivation (RLD_i), the smaller inequality across individual labor deprivation scores and the smaller societal labor deprivation (RLD) will be.

Such a measure of relative labor deprivation has the additional advantage that it can be additively decomposed by population sub-groups as follows:

$$(9) \qquad RLD = \frac{1}{\mu n^2} \sum_{g=1}^{m} \sum_{i=1}^{n} RLD_i$$

where $g = \{1, 2 \ldots, m\}$ = number of groups.

The RLD decomposition is an exact decomposition by population sub-groups. As it is well known in the welfare literature, the Gini coefficient can

be decomposed into within and between components (Bourguignon, 1979; Shorrocks, 1984) but cannot be decomposed additively into population sub-groups. The relative labor deprivation measure proposed, which utilizes the Gini formula, can instead be decomposed by population sub-groups simply because the individual scores of relative labor deprivation have a straightforward interpretation and are scale and population invariant.

There is an additional advantage of the relative labor deprivation measure proposed. When we estimate the expected labor status, we have a choice of making estimates using the whole population or sub-groups of the population. For example, we may argue that women tend to compare themselves with women only rather than with both women and men together. In this case, the estimation of the expected labor status can be done separately for women and men and the expected labor status can then be re-aggregated at the societal level. This seems an important advantage of the measure proposed in a country like Morocco and, more generally, in North-Africa and the Middle-East where the gender divide in the labor market is very important and still little understood.[4]

This last option allows us to test our main hypotheses. Using alternative reference groups can potentially offer some insights into why women may feel less relatively deprived than what we would expect given their labor status and their own personal characteristics. We expect the use of gender specific reference groups to provide different results from the use of the joint reference group. We also expect the use of gender specific reference groups to capture more accurately feelings of labor deprivation as reported in subjective questions by survey respondents. These are the main hypotheses that will be tested in the empirical application by first comparing the *RLD* under different assumptions about the reference groups and by testing the capacity of the *RLD* measure to capture subjective feelings of deprivation as reported by respondents when answering subjective questions.

4. DATA

This paper uses data from the Morocco Household and Youth Survey (MHYS) of 2009–10, a household survey designed to study economic and social exclusion of the young population in Morocco. It is a nationally representative survey of 2000 households, 1216 urban and 784 rural, including modules on demographic and educational characteristics, economic activities, household assets and expenditure, the ability to cope with shocks, use of social assistance, and migration behavior. In addition, the MHYS administered a separate instrument with additional questions on various aspects of employment and civic participation of 2883 young individuals aged 15–29 (representing about 90 percent of the youth in the surveyed households).

The sample of 2000 households was selected from a master sample representing 20 percent of the population and consisted of 1848 Primary Sampling Units

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[4]Another approach has been to use households' subjective responses on social/economic standing to construct household level discrete (0/1) measures of relative deprivation. Aleksynska (2011) constructs relative deprivation measures of income and employment using such an approach and links it to native born individuals' attitudes toward immigrants.

(PSUs) (1124 urban and 724 rural). These PSUs were established following a set of criteria reflecting differences between urban and rural areas, and boundaries dividing entities such as regions, districts, rural communities, cities, and municipalities. There were two stratification criteria for urban PSUs (city size and type of habitat) and one stratification criterion for rural PSUs (degree of isolation expressed by the distance from a paved road).

A total of 125 PSUs—76 urban and 49 rural—were finally extracted from the 1,848 PSUs in the master sample. The PSUs were further split into 12 Secondary Sampling Units (SSUs) of about 50 households each. One SSU was randomly selected from each PSU. The random sampling of SSUs was conducted by experts from the Department of Statistics of Morocco's High Commission for the Plan, who were also responsible for creating the master sample. A census of households was then conducted by the survey teams in each of the 125 SSUs. From this list, 16 households were randomly selected within each SSU, leading to a total sample of 2000 households.

For the analysis of relative income and labor deprivation, the sample is limited to those individuals aged between 15 and 64 who are not enrolled in school. This restricts the sample to 6451 individuals—3339 females and 3112 males. In the last stage, we further restrict the sample to the 2128 youth (aged 15–29)—1085 females and 973 males—who are not enrolled in school.

5. Results

5.1. *Relative Deprivation in Income Space*

Following from Section 3, in this section we start by illustrating the relation between the Gini inequality measure and the relative deprivation index proposed by Yitzhaki (1979), applying these measures to income, using household expenditure per capita as its proxy. The expenditure module of the MHYS was used to construct a household level expenditure aggregate, which was adjusted for cost of living differences across rural and urban areas. To adjust nominal expenditure across rural and urban households in the absence of CPI data that covers prices in rural areas or information on unit values from the household survey, we took a simple approach. We use the ratio of the official urban and rural poverty line of 2007 as reported by the HCP to adjust nominal expenditure across rural and urban households. Urban prices are assumed to be 7.4 percent higher than rural prices (the ratio of the urban and rural poverty line, or 3834/3569).We then apply our labor deprivation measure to expenditure per capita and show how this measure can be used in the income space. In the next section, we turn to the labor space.

In Table 1, we report the Gini index together with the mean and the relative deprivation measure proposed by Yitzhaki (1979). As shown by Yitzhaki, the relative deprivation measure is equivalent to the absolute Gini index, which is the Gini multiplied by the mean. This implies that relative deprivation is affected by either a change in inequality or a change in mean, or both. For example, if we compare the scores for females and males—more specifically, female and male headed households—we find inequality among males to be slightly lower and the mean expenditure to be barely higher. This results in an overall relative deprivation index being very similar across women and men.

TABLE 1

INEQUALITY AND RELATIVE DEPRIVATION (PER CAPITA EXPENDITURE)

	(1) Full Sample	(2) Female	(3) Male
Gini	0.316	0.321	0.311
	(0.0048)	(0.0075)	(0.0074)
Mean	747.0	740.3	754.2
	(6.82)	(10.46)	(11.45)
Yitzaki relative deprivation	236.4	238.2	235.1
	(1.87)	(2.63)	(2.39)

Note: Bootstrapped standard errors estimated on d_i in parentheses (100 repetitions).
Source: MHYS 2009–10.

TABLE 2

RELATIVE INCOME DEPRIVATION WITH DIFFERENT REFERENCE GROUPS

	Relative Deprivation (All)	Relative Deprivation (Youth)
When reference group is the population		
Society	0.157	0.140
	(0.0013)	(0.0020)
Female	0.076	0.071
	(0.0009)	(0.0015)
Male	0.081	0.069
	(0.0009)	(0.0014)
When reference group is gender specific		
Society	0.128	0.106
	(0.0015)	(0.0018)
Female	0.160	0.134
	(0.0018)	(0.0033)
Male	0.208	0.198
	(0.0025)	(0.0038)

Note: Bootstrapped standard errors estimated on d_i in parentheses (100 repetitions).
Source: MHYS 2009–10.

However, as shown in Section 3, the Yitzaki relative deprivation measure is not scale invariant and the observed difference across genders is a combination of inequality effects and mean effects. Moreover, the reference group in the Yitzaki measure is defined as all richer individuals and there is no in-built mechanism for the selection of the reference group. The labor deprivation measure proposed in Section 3 allows for the selection of the reference group and can also be applied to the income space.

Table 2 provides a first illustration of the two-step procedure using the Relative Income Deprivation index described in Section 3. The derivation of the index follows the process described in equations (4)–(6). The only difference is that we use income rather than labor as dependent variable and an OLS rather than a probit estimator in the first step of the procedure.

Results show that when we experiment with a joint reference group—that is, when women and men compare themselves with both genders, we find women to be less relatively deprived than men, while the opposite is true if we constrain the

sample to the youth population. These differences are however very small. When we change the reference group and estimate our first step of the model within each gender, we find that for the whole population males are now more deprived than females compared to the previous case; this ranking is maintained for the youth population as well. Although, as argued in the introduction, it is not income that appears to drive discontent, this first simple exercise shows that the gender ranking of relative deprivation can change if we change the reference group. We also find that relative deprivation at the societal level is lower if the reference group is within genders as the between group inequality does not play a role.

5.2. *Relative Deprivation in Labor Space*

In this section, we shift from relative deprivation in the income space to relative deprivation in the labor space. In doing so, we also turn from the household dimension to the individual dimension of relative deprivation. This will allow us to be more precise on assumptions related to the relevant reference group for individuals and for inter-personal comparisons.

Table A3 in the Appendix reports descriptive statistics of labor market outcomes as well as the characteristics of individuals used in the estimations of relative labor deprivation in the paper. The statistics are limited to working age individuals who are not enrolled in school. In general, employment levels are very low in the sample, with only 40 percent of the working age population being employed. Among young people aged 15–29, employment levels are considerably lower than the working age population as a whole, with only one in three people being employed. The unemployment rate among the young population is almost twice as high as compared with the entire working age population.

The disparity in outcomes between men and women is also telling. An estimated 11 percent of working age women are employed as compared to 71 percent for men, the latter itself being low by international standards. The gender dimension in unemployment is significant as well. The unemployment rate among women aged 15–64 years is twice as high as that of men (23 percent versus 12 percent). Education levels among women appear lower as well with the exception of tertiary education, although the tertiary education population is a small fraction of the overall population (less than 5 percent for both women and men). Thus, from the descriptive statistics, it appears that the youth are more objectively deprived compared to the non-youth, and that women are more objectively deprived compared to men.

To construct the labor group variable (g_j) used for the first step of the two-step model proposed, the labor force was split into two categories: individuals who were employed at the time of the survey were classified to be in the "good" category ($g_i = 1$), while those who were unemployed or were out of the labor force altogether were classified to be in the "bad" category ($g_i = 0$). This choice is justified by the fact that in a country with a large informal sector, a large rural population, and a history of long-term unemployment, unemployment alone is not a good indicator of labor market malaise. This is also witnessed by the fact that in Morocco the reduction in the unemployment rate of the last ten years has been accompanied by a reduction in labor force participation.

To estimate the predicted values of the good state (i.e., employment) we used education levels, marital status, age, and location related variables. We are therefore assuming that these are the main variables that individuals can observe in other people and can use to compare their own labor market status with the status of others. This is evidently a normative and also a conservative choice which may be seen as a common minimum denominator for all individuals. It is also a standard approach to the choice of variables for the selection of the reference group in papers that attempted similar approaches (see Van Praag *et al.*, 1979; Woittiez and Kapteyn, 1998; Clark and Senik, 2010). We may argue that each individual has a different reference group and that many more factors come into play when people compare themselves with others. However, it is also true that certain criteria for the selection of the reference group are rather standard and apply to most people and that it would be arguably hard to construct individualized preference models. By being conservative, we hope to capture the standard and essential comparison criteria used by most people.

Table 3 reports results from the probit regressions used to estimate the probability of individuals being employed—that is, being in the "good" labor market

TABLE 3

PROBIT REGRESSIONS FOR ESTIMATING EMPLOYMENT

Dependent Variable: Employed = 1; Not Employed = 0	All Individuals		Males	Females
	(1)	(2)	(3)	(4)
Primary education	0.0748***	0.249***	0.0551**	0.00602
	(0.0193)	(0.0162)	(0.0214)	(0.0150)
Low secondary education	0.0523**	0.247***	−0.0148	0.0778***
	(0.0241)	(0.0205)	(0.0268)	(0.0244)
Secondary education	0.100***	0.280***	−0.0129	0.160***
	(0.0275)	(0.0228)	(0.0303)	(0.0329)
Tertiary education	0.301***	0.386***	0.0789**	0.330***
	(0.0341)	(0.0258)	(0.0342)	(0.0489)
Married	0.0256	−0.00215	0.308***	−0.113***
	(0.0177)	(0.0155)	(0.0242)	(0.0130)
Age	0.0476***	0.0416***	0.0422***	0.0169***
	(0.00366)	(0.00326)	(0.00403)	(0.00270)
Age squared	−0.000576***	−0.000459***	−0.000599***	−0.000187***
	(4.55e-05)	(4.06e-05)	(4.93e-05)	(3.40e-05)
Urban	−0.0818***	−0.118***	−0.105***	−0.00689
	(0.0170)	(0.0150)	(0.0187)	(0.0130)
Male	0.601***			
	(0.0106)			
Region dummies	Yes	Yes	Yes	Yes
Observations	6451	6451	3112	3339
Pseudo R^2	0.33	0.07	0.15	0.15

Notes: Marginal effects, evaluated at sample means for continuous variables, are shown. Robust standard errors in parentheses: ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. One may expect sufficiently large geographic heterogeneity to justify the use of clustered standard errors at the level of the geographical origin of surveyed individuals. The introduction of regional dummies would then not be enough to correct standard errors for geographic clustering. In response to referee comments we conducted estimations correcting for this. Since the resulting standard errors did not change sufficiently to affect the significance levels of any of the variables of interest, we only present the estimations with no clustering.
Source: MHYS 2009–10.

state. Four different models are estimated: with all individuals (including and excluding the gender variable—columns 1 and 2), with males only (column 3), and with females only (column 4). Here we see how the researcher can make different assumptions about the reference group. If we want to compare the relative deprivation of men and women, we can either assume that both genders compare themselves with both genders, or alternatively that men compare themselves with men, and women compare themselves with women. In the first case, the first-step estimation is carried out jointly for men and women as in column 2. In the second case, the first-step estimation is carried out separately for men and women as in columns 3 and 4.

A first insight into the gender divide can be gathered by comparing columns 1 and 2. The gender variable is clearly very significant in explaining labor status and its inclusion increases the pseudo-R squared very significantly—from 0.07 to 0.33—indicating that gender is the major predictor of employment among the variables considered. In the two-step model proposed, however, we have to remove the gender variable if our objective is to compare men and women.[5] This is what we did in columns 2–4. Here we can see that—by splitting the sample across genders—the pseudo-R squared increases for both genders, from 0.07 to 0.15. We can also see how differently the same variables perform for men and women. For example, having primary education as compared to no education does not improve a female's employment status but improves the male's. Being married improves the likelihood of a good labor market status for men but reduces the likelihood for women. And urban women do not seem to have a comparative advantage in accessing a good labor status as compared to rural women while urban men do worse than rural men. Therefore, changing assumptions about the reference group by shifting from population to within-group reference group can make a very substantial difference in the first-step estimation and, consequently, in assessing relative labor deprivation.

The probit estimates from step 1 (equations (4)–(6)) are then used to construct individual relative labor deprivation indices as described in equation (7). Aggregating these individual indices we can obtain the societal relative deprivation measure as in equation (8). Table 4 reports the *RLD* values for different sub-populations based on different specifications of the reference group.

When all individuals constitute the reference group, we find women to have higher levels of relative deprivation than men. This can be seen by decomposing the societal value by gender, which shows that total female *RLD* is almost three times that of males for the society as a whole. This is expected as women in Morocco are also considerably more excluded from the labor market in an objective or absolute sense. If women compare their situation with better-off men, they would naturally feel more deprived than men. If we focus on youth only, the gender gap is reduced but the ranking is the same, with females being more deprived than males.

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[5]Our two-step procedure does not foresee the inclusion of the gender variable in the first step. Its inclusion would be a misstep because the objective of the study is to compare the *RLD* index between men and women. If the gender variable was included in the first step, we would not be able to capture the full effect of the difference in relative deprivation between men and women.

TABLE 4

RELATIVE LABOR DEPRIVATION

	RLD (All)	RLD (Youth)
When the reference group is the population		
Society	0.279	0.269
	(0.0027)	(0.0043)
Female	0.202	0.179
	(0.0014)	(0.0024)
Male	0.077	0.090
	(0.0017)	(0.0034)
When reference group is gender specific		
Society	0.240	0.221
	(0.0026)	(0.0037)
Female	0.137	0.118
	0.0015	(0.0025)
Male	0.292	0.291
	(0.0063)	(0.0081)

Note: Bootstrapped standard errors estimated on d_i in parentheses (100 repetitions).
Source: MHYS 2009–10.

By contrast, if the relevant reference populations are along gender lines, the situation is reversed. First, overall societal relative deprivation falls in comparison to the level when the entire population is the reference group. This is due to the fact that the *between* male–female difference does not play a role when the reference group is gender specific. Moreover, in this new gender specific scenario, the estimates for male relative deprivation are twice as high as that for females if we consider the whole society. If we focus on the youth, the reversal of gender positions also applies and the gender gap increases. Now young males appear to be much more deprived than young females.

Qualitative insights from a recent World Bank (2012) study can explain and validate these findings. As mentioned earlier, this study found that an overwhelming majority of both female and male interviewees believed men to be relatively more disadvantaged than women in the domestic labor market and this was motivated by gender specific norms, precisely as postulated in the Akerlof and Kranton (2000) study on identity.

The construction of an individual measure of relative labor deprivation also allows for the use of this measure in distributional analyses by constructing Pen's parades, Cumulative Distribution Functions (CDFs), or Lorenz curves. In essence, by changing the reference group, we find that the gender ranking is reversed and, rather than reflecting a condition of objective deprivation, it reflects a condition of subjective deprivation.

5.3. *How Good is the Indicator of Relative Labor Deprivation?*

The concept of relative labor deprivation developed in this paper is a statistical construct that claims the ability to capture subjective feelings of deprivation. In this section, we attempt to determine whether the measure of relative

deprivation proposed is effectively related to subjective feelings of satisfaction or deprivation with various aspects of life as reported by respondents in the MHYS.

For a sub-sample of the population (2,128 young individuals aged 15–29 who are currently out of school) we can examine the relation between relative labor deprivation and subjective wellbeing. The survey we use includes questions on self-reported satisfaction with different aspects of life. It also includes a question on the intention to migrate, a variable we presume to signal discontent with the current situation, especially with labor market status. We should expect a good measure of deprivation to be inversely related with measures of subjective satisfaction as found, for example, in D'Ambrosio and Frick (2007) and in Silber and Verme (2010, 2012).

Table 5 shows the results of an ordered probit regression of young people (aged 15–29) where the dependent variable is satisfaction with opportunities to improve social status in the future. The satisfaction variable takes four values, ranging from very unsatisfied = 1 to very satisfied = 4. The summary statistics indicated only 6 percent of youth aged 15–29 to be "very satisfied" and another 16 percent to be "satisfied" with their opportunities to improve social status in the future. A vast majority were not satisfied: 31 percent expressed that they were unsatisfied while 46 percent reported being very unsatisfied. Interestingly, across males and females the answers were very similar (though regression results suggest males to be more dissatisfied once we control for factors other than gender).

We consider different models. Model 1 does not include the indicator of relative labor deprivation, rather it includes the actual employment status of individuals. Conversely, models 2–4 include our relative labor deprivation variable but exclude employment. Model 2 estimates the influence of relative deprivation on satisfaction levels when the reference group is assumed to be the entire population. Models 3 and 4 include the measure of relative labor deprivation when the reference group is segmented along gender lines as we did in the previous section.

As expected, employment status matters for satisfaction with opportunities to improve social status in the future. Employed people evidently see better prospects for the future as compared with the non-employed. More importantly from the standpoint of this paper, in all specifications (models 2, 3, and 4) satisfaction with opportunities to improve social status in the future is negatively and significantly associated with relative labor deprivation.[6] This relation is significant at the 1% level in all specifications, a fact that supports our hypothesis that males and females tend to select the reference group within their own gender.

Education and marriage are factors associated with greater satisfaction with the potential to improve social status as it is also known in the happiness literature. Higher levels of education and marriage are typically associated with greater life satisfaction and our results are in line with such findings. In models 1 and 2, it is also apparent that young males have lower levels of satisfaction than young

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[6]Employment status is dropped in the other models' specifications due to its high multicollinearity with the relative deprivation variables. However, the overall conclusions remain similar with its inclusion.

TABLE 5

ORDERED PROBIT REGRESSIONS OF DETERMINANTS OF YOUNG PEOPLE'S (AGED 15–29) SATISFACTION WITH OPPORTUNITIES TO IMPROVE ONE'S SOCIAL STATUS IN THE FUTURE

Dependent Variable: 1 = Highly Dissatisfied; 2 = Dissatisfied; 3 = Satisfied; 4 = Highly Satisfied	All Individuals		Females	Males
	(1)	(2)	(3)	(4)
Employed	0.324***			
	(0.0639)			
Individual Relative Labor Deprivation (reference: all individuals)		−5465***		
		(968.4)		
Individual Relative Labor Deprivation (reference: individuals of same gender)			−3280**	−1964***
			(1,597)	(352.3)
Primary education	0.0987	0.182***	0.140	0.0920
	(0.0687)	(0.0696)	(0.0874)	(0.120)
Low secondary education	0.217***	0.297***	0.145	0.300**
	(0.0770)	(0.0781)	(0.104)	(0.126)
Secondary education	0.339***	0.431***	0.418***	0.360**
	(0.0955)	(0.0966)	(0.139)	(0.150)
Tertiary education	0.600***	0.749***	0.741***	0.759***
	(0.137)	(0.137)	(0.193)	(0.208)
Married	0.317***	0.317***	0.393***	0.0886
	(0.0609)	(0.0609)	(0.0758)	(0.113)
Youth aged 20–24	0.00640	0.0439	−0.119	0.164
	(0.0658)	(0.0656)	(0.0896)	(0.100)
Youth aged 25–29	−0.0541	0.0136	−0.0966	0.0542
	(0.0708)	(0.0701)	(0.0982)	(0.105)
Urban	0.258***	0.220***	0.332***	0.157*
	(0.0581)	(0.0583)	(0.0815)	(0.0867)
Male	−0.156**	−0.169***		
	(0.0619)	(0.0614)		
Region dummies	Yes	Yes	Yes	Yes
Constant				
cut1	−0.0574	−0.283	−0.129	−0.436
	(0.184)	(0.189)	(0.224)	(0.355)
cut2	0.843***	0.619***	0.802***	0.485
	(0.184)	(0.190)	(0.225)	(0.356)
cut3	1.719***	1.497***	1.759***	1.322***
	(0.187)	(0.192)	(0.229)	(0.357)
Observations	2128	2128	1155	973
Pseudo R^2	0.0463	0.0476	0.0513	0.0820

Notes: Robust standard errors in parentheses; ***$p < 0.01$, **$p < 0.05$, *$p < 0.1$. The reference groups is rural unmarried youth aged 15–19 without any education (for model 1 and 2 add female). Some of the variables used in Table 5 are the same variables used in the probit equation in Table 3. This can potentially cause multicollinearity and endogeneity. However, this is not uncommon in two-step models. In fact, Elbers *et al.* (2005) showed that in two-step models the statistics calculated from expected values can actually be used in subsequent research, either as a dependent or as an independent variable in models where the original first-step variables are also used. Tests for multicollinearity indicated no evidence of multicollinearity in our data. The variance inflation factors (v.i.f.) for the relative deprivation variable were lower than 1.5 for different model specifications. Note also that the estimates for the *RLD* variables in the regressions presented in Tables 5 and 6 of this paper are very large. This is an artifact of the way the *RLD* individual values are constructed; the *RLD* values can range from 0.000037 to a high of 0.0001498, much lower in the magnitude compared with the dependent variables in both the ordered probit and the probit regressions.

TABLE 6

PROBIT ESTIMATES OF DETERMINANTS OF YOUNG PEOPLE'S (AGED 15–29) WISH TO MIGRATE ABROAD

Dependent Variable: Yes = 1; No = 0	All Individuals		Females	Males
	(1)	(2)	(3)	(4)
Employed	−0.0236			
	(0.0243)			
Relative Labor Deprivation (reference: all individuals)		386.5		
		(377.3)		
Relative Labor Deprivation (reference: individuals of same gender)			−276.6	400.7***
			(439.2)	(154.6)
Primary education	0.0125	0.00723	−0.0202	0.0666
	(0.0301)	(0.0302)	(0.0286)	(0.0534)
Low secondary education	0.0937***	0.0884**	0.0800**	0.128**
	(0.0349)	(0.0352)	(0.0395)	(0.0562)
Secondary education	0.0778*	0.0713	0.132**	0.0683
	(0.0432)	(0.0434)	(0.0594)	(0.0681)
Tertiary education	0.0692	0.0584	0.0517	0.0987
	(0.0632)	(0.0625)	(0.0696)	(0.0960)
Married	−0.148***	−0.147***	−0.0790***	−0.224***
	(0.0229)	(0.0229)	(0.0222)	(0.0475)
Youth aged 20–24	0.00895	0.00640	0.00664	0.0141
	(0.0270)	(0.0268)	(0.0279)	(0.0444)
Youth aged 25–29	−0.0283	−0.0329	−0.0250	−0.00942
	(0.0284)	(0.0279)	(0.0294)	(0.0467)
Urban	0.0837***	0.0863***	0.0531*	0.0919**
	(0.0239)	(0.0240)	(0.0272)	(0.0389)
Male	0.321***	0.322***		
	(0.0237)	−0.0235		
Region dummies	Yes	Yes	Yes	Yes
Observations	2128	2128	1085	973
Pseudo R^2	0.176	0.176	0.0905	0.0907

Notes: Marginal effects, evaluated at sample means for continuous variables, are shown. Robust standard errors in parentheses: ***p < 0.01, **p < 0.05, *p < 0.1. The reference groups is rural unmarried youth aged 15–19 without any education (for model 1 and 2 add female).

women, which is consistent with our finding that relative labor deprivation is higher for young males as compared to young females.[7]

Next, in Table 6 we present a probit regression of determinants concerning young people's wish to migrate abroad. The dependent variable takes a value of one if a youth wishes to migrate and zero if not. About 15 percent of young females wish to migrate abroad, while a far larger share—48 percent—of young males wish to migrate abroad.

We would expect youth who wish to migrate abroad to be unsatisfied with domestic labor market conditions and/or suffer from stronger feelings of deprivation. Interestingly, employment status in itself is not a significant predictor of the wish to migrate. However, relative labor deprivation among men is strongly associated with the wish to migrate abroad (model 4). This variable is not significant for women (model 3), and not significant when we consider the reference group to

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[7]Specifying the above regression as a probit with the dependent variable being defined as satisfied/dissatisfied (1/0) yields results that are similar in interpretation.

be the entire population (model 2). This confirms once more the discontent of men with their current labor market situation and the importance of using separate reference groups when we study deprivation along gender lines.

We also estimated the models presented in Tables 5 and 6, controlling for household economic status proxied by household per capita expenditure or the asset index. While satisfaction levels are positively associated with economic status, the signs of the coefficients of relative deprivation do not change in either case, suggesting that the strength of the relation between our measure of relative labor deprivation and indicators of subjective satisfaction holds across the distribution of welfare.

As a final test of our relative labor deprivation measure, we also regressed the measure against subjective feelings of satisfaction that are not expected to be strongly associated with labor deprivation. While our measure of relative labor deprivation is a good predictor of individual optimism/pessimism about the future, we find that it is not significantly associated with non-economic subjective wellbeing measures, such as satisfaction with voice in society or with satisfaction with participation in the life of the community. We can therefore conclude that the measure of relative labor deprivation proposed in this paper is a fairly good predictor of subjective feelings of deprivation as reported by respondents.[8]

6. Conclusions

The paper highlighted the issue of the difference between objective and subjective deprivation, which seems particularly important in the light of the recent revolutions that characterize the Arab spring. It also suggested that the role of the reference group and of the selection of the reference group is pivotal in understanding the difference between objective and subjective deprivation. On these bases, the paper has proposed a measure of relative labor deprivation that could potentially help to better capture "feelings" of deprivation and help explain social outcomes in Morocco (and potentially in other Arab countries as well).

The measure proposed has several advantages. It builds in a mechanism for the selection of the reference group, it allows for making different assumptions about the reference group, and it can be decomposed into population sub-groups. Moreover, the individual scores of this measure can be used as a variable for econometric or distributional analyses.

The paper shows how, by using the relative labor deprivation measure proposed, we can gain much better insights into other important divides such as the gender divide. In particular, we found that when we change assumptions about the reference group, we can capture real feelings of deprivation much better. This would explain, for example, why women who are more objectively deprived than men in the labor market tend to feel less deprived.

We then tested the validity of these findings by studying the association between our measure of relative labor deprivation and subjective responses to

[8]Indeed, identities are more likely to be more affected by those individuals with whom people interact more regularly, including those in their vicinity (e.g., Clark *et al.*, 2009). The absence of more granular data limits this paper from examining this issue.

questions about social status and migration. We found a strong association between our measure and these variables, whereas we found no association between our measure and subjective variables that are not expected to be associated with labor deprivation, such as satisfaction with voice in society or satisfaction with participation in the life of the community. Moreover, we also found that our findings strongly match the findings of a study conducted with focus groups in Morocco.

These are encouraging results in the context of there being very few instruments to understand the relation between objective and subjective deprivation. The shock generated by the Arab spring among observers worldwide has underlined how inadequate our understanding of this relation is. This paper has provided a first set of tools to better understand how objective deprivation may turn into "feelings" of deprivation.

These findings have important policy implications. Policy makers should have an interest in understanding the gap between objective and subjective deprivation. In theory, policy should be guided by objective conditions of deprivation, not by subjective feelings. Economic policies should be concerned about reducing unemployment rather than distributing jobs to louder groups who may in fact be less objectively deprived. In practice, however, politicians or governments understandably respond to manifested social discontent and they frequently succumb to the temptation of implementing short-term policies. It is well known, for example, that the Arab spring has resulted in a wave of populist measures such as increases in public employment and public wages. These policies, however, are often not directed toward groups that face poorer outcomes such as women or the youth. Our method highlights the objective–subjective deprivation divide. An understanding of this divide can help policy makers make better choices by designing policies that are responsive to the objective conditions of deprivation as well as being cognizant of people's sentiments. For example, Morocco has several "Active Labor Market Programs" (ALMPs) that aim to improve labor market outcomes of youth. The programs are targeted largely toward youth with graduate degrees among whom unemployment levels are high (World Bank 2012). Such programs could also make special efforts to reach women, among whom unemployment levels are also high (as is lack of participation in the labor force due to discouragement), as well as those with less education regardless of gender.

More importantly, the findings of this paper suggest that changes in gender norms are associated with changes in the reference group, identity, and expectations that can have a lasting effect on labor market statistics. This is neither surprising nor new. It is a very well documented phenomenon that characterized labor markets in the U.S. after the 1968 youth movement. According to the U.S. Bureau of Labor Statistics: "Women's labor force participation, which was at a rate of 33.9 percent in 1950, increased significantly during the 1970s and 1980s, climbing to 57.5 percent in 1990.[9] Claudia Goldin, an authority on female participation rates in the U.S., described this phenomenon as a "revolution" (Goldin, 2006) and pinpointed two major factors behind this revolution; "expanded horizons," with women expectations increasing quickly and determining a shift in

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[9]http://www.bls.gov/opub/ted/2007/jan/wk2/art03.htm

educational choices; and "altered identities," with women behaving more independently from their partners and taking their own labor market decisions. As for the 1968 revolution, the 2011 youth movement in the Arab world may well contribute to change gender norms.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article at the publisher's web-site:

Table A1: Share of time (%) spent on household chores and child care (for 15-29 year olds, as a fraction of their non-sleep/non-personal time)

Table A2: Youth responses to present and desired future situation of certain tasks in the household

Table A3: Descriptive statistics