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Does Past Unemployment Experience Explain the Transition Happiness Gap?

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Abstract

The profound economic and political changes of the 1990s had detrimental social effects in many domains of life in post-socialist countries, including diminishing life expectancy and growing unhappiness. Despite economic improvements in the second decade of transition, research has documented that happiness lagged behind. We test whether past unemployment experience can explain this "transition happiness gap in the context of Ukraine", a country with a painful delayed transition from planned to market economy. We analyze unique longitudinal data for the period 2003–2012. Current unemployment substantially reduces subjective wellbeing, and the effect is roughly 50% larger for men than for women. The effect of past unemployment is significant, but small in magnitude compared to the effect of current unemployment. However, it does correspond to around 8% of the "transition happiness gap" found by [1], suggesting that past unemployment experience can be considered as a partial explanation.

Keywords: transition happiness gap, unemployment, life satisfaction, social comparison, scarring, adaptation

JEL Classification Codes: I31, J65

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1. Introduction

For post-communist countries, the profound economic and political changes of the early 1990s led to significant social changes. A stable system of guaranteed employment gave way to labor markets governed by the laws of supply and demand. Many enterprises, whose products were no longer desired, closed down. Others remained open but still had to downsize their operations significantly. Inflation wiped out many people's financial resources, limiting the scope of private investment and entrepreneurial activities, which might have absorbed excess labor supply.

These developments resulted in an unprecedented high level of registered and hidden unemployment, wage arrears, and the reduction of non-wage benefits traditionally provided by employers. Furthermore, government authorities, faced with hyperinflation and weak institutions, were unable to maintain the system of universal social benefits, which existed during the socialist times. Hence, welfare support for the unemployed and needy was insignificant to provide meaningful protection.

However, by the early 2000s, most post-communist countries had seen a steady improvement in real GDP per capita and a rise in demand for consumer goods. Despite the economic improvement, happiness lagged behind: [2] documented the existence of a "transition happiness gap" of more than one point on a ten point scale (statistically significant at the one percent level), even after adjusting for income and current unemployment status. A more recent analysis, however, shows that the transition happiness gap shrank during the recovery period after the Great Recession [1].

It remains unknown why people in transition countries have been less happy (for reviews, see [2] and [1]). Several theories have been proposed, including increasing economic inequality, the decline of public goods, greater economic uncertainty, and depreciation of pre-transition human capital. While all of these theories have some merit, none seems to provide a full explanation. We explore another set of possible mechanisms involving unemployment experiences during

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the most turbulent times. In doing so, this paper bridges the gap between the literature on happiness in transition countries compared to the rest of the world and the general economic literature on the effect of unemployment on wellbeing.

The negative effect of unemployment on wellbeing is well documented in developed countries. The economic literature suggests that unemployment experience has long-lasting negative consequences (known as "scarring"). However, it is not known if unemployment has a similar negative effect on wellbeing in transition countries. If unemployment lowers wellbeing in transition countries, then the turbulent transition period with high levels of unemployment may partially account for the "transition happiness gap" in the 1990s. It may also explain the narrowing of the transition happiness gap in recent years, as the negative effect of past unemployment in transition countries dissipates while unemployment in Western countries peaked more recently during the Great Recession. Alternatively, if there is no scarring effect in transition countries, then the turbulent 1990s cannot be considered as part of the explanation for the transition happiness gap.

The economic literature has explored three main mechanisms for how individual happiness relates to unemployment. The first mechanism, known as "scarring", implies that some undesirable condition experienced in the past permanently scars the person, even if the condition is no longer being experienced. The second, known as the "adaptation mechanism", is fueled by the observation that people adapt to their circumstances. This mechanism implies that the effect of unemployment diminishes as more time is spent unemployed. The third mechanism is known as "social comparison", and refers to individuals comparing themselves to external reference groups, such as people in their neighborhood, region, or country, which alters their reaction to own unemployment status.

The economic literature has persistently found that unemployment lowers life satisfaction. This damaging effect of unemployment has been confirmed across countries and time periods studied. See, for example, [1], [3], [4], [2], [5], [6], [7], [8], [9], [10], and [11]. More specifically, [1] consider two most recent data sets — the third wave of the Life in Transition Survey (LiTS) (administered in

2015–2016) and the 2000–2016 waves of the annual Gallup World Poll (GWP). The LiTS covers 29 former communist countries (excluding Turkmenistan) and 5 comparator countries. The GWP covers 31 post-communist countries and territories (including Nagorno-Karabakh) and 133 comparator countries. The European Social Survey data for 21 European countries for the period of 2002–2008 are examined in [3], and [7] study 12 European countries between 1975 and 1991 as well as the USA between 1972 and 1994. Waves 3 and 4 of the World Values Survey covering 84 countries are explored in [2]. Furthermore, [6] and [11] use the British Household Panel Survey (BHPS) data for 1991-1997 and for 1991, respectively. The Great Britain data from the Eurobarometer Surveys between 1973 and 1998 are analysed in [5], who also study the General Social Surveys (GSSs) data for the USA between 1972 and 1998. Germany has been studied by [10] using the German Socio-Economic Panel (GSOEP) data for 1984–1990.

Happiness research rarely focuses on transition economies. A few exceptions, in addition to [2] and [1], [8] use the Russian Longitudinal Monitoring Survey (RLMS) data between 1995 and 1999 (as well as the BHPS data for 1996–1997), and [9] utilize the Kyrgyzstan Multipurpose Poverty Survey (KMPS) data for 1993.

In terms of the three mechanisms, scarring is concerned with whether any past unemployment influences human happiness. More specifically, research on the scarring mechanism (see, for example, [12] and [13]) shows that unemployment experienced in the past reduces a person's current life satisfaction — even after they become re-employed. Both [12] and [13] study Germany and use the GSOEP data for 1984–1994 and 1984–2003, respectively. [12] (p. 221) conclude "life satisfaction is lower not only for the current unemployed (relative to the employed), but also for those with higher levels of past unemployment." Furthermore, [13] (p. 283) suggest that "the scar from past unemployment operates via worsened expectations of becoming unemployed in the future, and that it is future insecurity that makes people unhappy."

While the scarring mechanism studies whether past unemployment affects

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life satisfaction, the adaptation mechanism maintains that people get used to their unemployment status the longer they experience it. In particular, [14] and [15] provide extensive reviews of studies on the economics and psychology of adaptation, respectively. Using the British data (BHPS) for 1991 and German data (GSOEP) for 1984–1994 [11] and [12] find that those who have a shorter duration of unemployment are less happy than those with a longer duration of unemployment; suggesting that people get used to their situation in the long run. Furthermore, consistent with the adaptation hypothesis, [12] conclude that current unemployment 'hurts' less for those who have been unemployed more often in the past. In contrast, having examined the GSOEP data for Germany between 1984 and 2003, [16] conclude that there is little evidence of adaptation to unemployment. Additionally, men are more affected by negative labor market events than women, and past job loss distresses men for longer than it does women.

The social comparison mechanism argues that unemployment hurts individuals less if there is more unemployment in the area. In particular, using the British Household Panel Survey data from the 1990s, both [11] and [6] show that the unemployed's wellbeing is strongly correlated with reference group unemployment at different levels. Furthermore, both studies find that unemployed people who live in areas with high unemployment are less dissatisfied with their lives than those who live in areas with low unemployment levels. Additionally, [6] shows that, in Great Britain, the effect of current unemployment on wellbeing is lower when either the individual's partner or a household member is unemployed.

A notable strand of the research on wellbeing focuses on the life satisfaction effect of job loss rather than that of unemployment, the distinction being whether someone loses their job due to bad individual performance. This strand addresses the concern that unemployment maybe endogenous in the sense that people who are likely to be unemployed are on the downward trend in life satisfaction. However, the literature on job loss does not rule out the causal effect of unemployment on life satisfaction. In particular, [17] finds persistent effects of

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involuntary job loss on earnings and wages, which in turn, have adverse effects on life satisfaction, as the above-mentioned research maintains. Additionally, [17] discovers that repeated job losses are behind this persistence.

As with area which relates to the world of work, the effect of unemployment on wellbeing may affect men differently than women. In labor economic studies, men and women are usually studied separately because of general differences in in life course patterns of employment in the formal workforce. The sociological literature suggests that the effect of job loss on wellbeing can differ according to attitude toward work and employment (psychosocial needs) (see [18], among others). Moreover, women are more likely to leave the workforce for several years to raise children. We would not, therefore, expect any effect of unemployment on wellbeing to be identical for men and women.

The literature on happiness in transition countries has found that Ukraine comes at or near the bottom for life satisfaction among 84 countries including 21 transition countries during the decade 1994–2003 ([2]). Specifically, the mean happiness in Ukraine, measured in the World Values Survey, is about 2 points below the predicted value (on a scale from 0–10). More recent evidence on the transition happiness gap by [1] found that the gap has narrowed. This finding is due both to improved happiness in transition countries and a decline in non-transition countries. Findings are not reported specifically for Ukraine, however, according to Figure 2 in [1], the decline in the average life satisfaction for Ukraine has been steeper than predicted for a corresponding drop in GDP per capita from 2010 to 2016, while all other countries (but Italy) have experienced an improvement in both life satisfaction and GDP per capita.

This paper's contributions are fourfold. First, we test all three mechanisms linking life satisfaction and unemployment within one country and using the same dataset. Previous research has mostly tested the mechanisms of interest using different datasets from several developed countries that are all characterized by having institutional stability and welfare systems, which provide a substantial degree of social protection. Secondly, the country we focus on — Ukraine — is a transition economy known for its turbulent transition period

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and substantial institutional instability. Our findings based on Ukrainian data are relevant for understanding the relationship between unemployment and subjective wellbeing in less stable institutional environments with a more present-oriented population. Thirdly, using unique data on massive exogenous job losses in the 1990s, we explore whether there is a different effect on wellbeing between exogenous and endogenous reasons for becoming unemployed. We use both a fixed effects approach, as in the earlier studies, and instrumental variables based on past exogenous job loss, which is novel in this literature. We study men and women in Ukraine separately during 2003–2012, taking into account their full work histories. Finally, we contribute to the understanding of the sources of the transition happiness gap and its dynamics over the transition period and beyond.

We find that current unemployment has a large effect on subjective wellbeing. It is equivalent to a loss of good health status for women and is double the effect of losing good health for men (0.3–0.7 points on a 5-point life satisfaction scale, depending on model specification). The effect of past unemployment (measured either as the number of months spent unemployed or as a share of total time unemployed) is significant, but small in magnitude compared to the effect of current unemployment. We estimate that the difference in the share of past unemployment between Ukraine and Germany explains a 0.019 point difference in the life satisfaction scale, which corresponds to approximately 8% of the "transition happiness gap" estimated by [1].

We also find that, controlling for current labor market status, women gradually adapt to being unemployed, improving their wellbeing the longer they were in a state of unemployment. Yet, there is no adaptation documented among men. Furthermore, exploring the social comparison mechanism reveals that the measure of local unemployment matters. When using a measure based on the number of people registered for unemployment benefits, we find no effect for women and only the direct effect of local unemployment for men. This may be related to the fact that the share of unemployed registered for unemployment benefits is far from the true unemployment rate. Also, given that the size of the

unemployment benefits is rather small and the cost of maintaining the status of the unemployed is rather high, the motivation for registering may depend on the availability of informal jobs in the area, which would be picked up by the unemployment rate, calculated according to the ILO methodology. And the

190 latter would be a better measure of the unemployment rate for the purpose of social comparison. Unfortunately, such statistics are not available at the small region level from administrative records. So, when we use a measure of local unemployment estimated from our data, we find a negative effect of local unemployment on the wellbeing of both men and women, and also evidence that

195 local unemployment mitigates the effect of own unemployment for men.

2. Estimating the Effects of Unemployment on Life Satisfaction

Our investigation of the relationship between unemployment experience and life satisfaction is motivated by the persistence of the "transition happiness gap" and its dynamics in recent years. We therefore aim to bring together all three

200 mechanisms described in the literature. However, as this is the first study to do this, we introduce some variations to the empirical approach while striving to follow the literature as closely as possible to enable meaningful comparisons. Furthermore, the richness of our data allows us to investigate more closely the causality of the unemployment-wellbeing relationship by exploiting information

205 on whether individuals had experienced exogenous job losses in the past.

2.1. Testing for the Scarring Mechanism

As a starting point, we consider an empirical model that studies whether past cumulative unemployment affects life satisfaction, after controlling for current unemployment and other factors.

$$
\begin{aligned}
Life\ satisfaction_{it} = {} & \beta_{10} + \beta_{11} If\ currently\ unemployed_{it} \\
& + \beta_{12} Past\ unemployment_{it} + \mathbf{x}_{it}\alpha_1 + c_{1i} + u_{1it},
\end{aligned}
\tag{1}
$$

8

where the dependent variable *Life satisfaction*$_{it}$ is a life satisfaction index of person i in year t measured on a scale from 1 "not satisfied at all" to 5 "fully satisfied," *If currently unemployed*$_{it}$ is a dummy variable indicating whether person i is unemployed at the time of the ULMS interview during year t, *Past unemployment*$_{it}$ is a cumulative time spent unemployed by person i up to the time of interview in year t, measured in months, $\mathbf{x}_{it}$ is a vector of individual characteristics (including time-invariant ones), c_{1i} is an unobserved individual-specific effect, and u_{1it} is an idiosyncratic error. The subscript 1 refers to equation (1). In the above model we intentionally separate unemployment experience into current and past experiences.

We expect $\beta_{11} < 0$ indicating that the current unemployment status at the time of the interview when the person evaluates his life satisfaction, hurts wellbeing. Furthermore, we expect $\beta_{12} < 0$, implying that longer duration of past unemployment leaves a 'scar' on life satisfaction, even after the person is re-employed. We start our investigation with the cumulative unemployment experience, but in further analysis use two other measures to enable comparison to the literature. These measures are past unemployment share, and an indicator for whether the person had ever been unemployed in the past. They are related to the cumulative unemployment measured in months. The first measure is the share of total labor market participation time spent in unemployment (months in unemployment/(months in unemployment + months working)), the second is simply an indicator for people with non-zero cumulative unemployment experience. All three refer to the same exposure to unemployment in the past, but have slightly different interpretations. They all have been used in the literature and there is no prior reason to prefer one over another, so we explore all three.

With this specification, we are concerned with two potential sources of endogeneity related to both past and current unemployment. Although the relative importance of these two sources is likely to be different for these variables. First of all, one such source of endogenity could be individual heterogeneity — people who are more pessimistic by nature are more likely to be unsatisfied with life in general and may be more likely to be unemployed or spend more time in

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unemployment, which should be more important for the current unemployment status. In such a case, the estimates of the effect of unemployment on life satisfaction in the cross-sectional setting, would be subject to a downward bias, so that the estimated coefficient would be more negative than the corresponding population parameter. Such bias can be eliminated with fixed effects.[1] The second source of bias maybe the measurement error, which is more likely to affect the past cumulative unemployment. The resulting attenuation bias would mean that the estimated coefficient is smaller in absolute value than the true population parameter. To deal with this, an instrumental variable approach would offer a worthy alternative. Ideally, though, one would prefer to combine the two approaches, to be able to deal with both sources of bias at once. However, this may not be feasible in our setting. The panel structure is only available for the survey years 2003, 2004, 2007 and 2012, and most of the variation in past unemployment experience refers to years prior to 2003. This means that the fixed effect approach will not work for past unemployment experience. Likewise, the instruments, which refer to the past exposure to the exogenous labor market shocks, are also mostly time invariant for the period for which wellbeing measures are available. Therefore, we resort to the following strategy. We first estimate the relationship between both past and current unemployment and wellbeing in the cross-sectional setting, which most closely corresponds to the literature on the "transition happiness gap". Then we apply in turns the fixed effect approach, which has sometimes been used in the literature on adaptation mechanism, and the instrumental variable approach, which is a unique contribution of this paper, to explore how they change the magnitude and statistical significance of the coefficients of interest.

Next, we test for the scarring mechanism by measuring the relationship between the timing of the unemployment experience and wellbeing. To test whether it matters when the person was unemployed and whether the effect

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[1]We tested our models for serial correlation and in all but two specifications, detected none. Hence, we opted for the fixed effect approach with standard errors fully robust to heteroskedasticity and serial correlation.

dissipates with time, we augment the previous model in the following way:

$$
\begin{aligned}
\text{Life satisfaction}_{it} = {} & \beta_{20} + \beta_{21} \text{If currently unemployed}_{it} \\
& + \beta_{22} \text{Past cumulative unemployment}_{it} \\
& + \gamma_{20} \text{If unemployed}_{it} + \gamma_{21} \text{If unemployed}_{i,t-1} + ... \\
& + \gamma_{25} \text{If unemployed}_{i,t-5} + \mathbf{x}_{it}\alpha_2 + c_{2i} + u_{2it},
\end{aligned}
\tag{2}
$$

where *If unemployed*$_{it}$ is a dummy variable indicating whether person i was un-
employed and looking for a job at some point during year t, c_{2i} is an unobserved
individual-specific effect, u_{2it} is an idiosyncratic error, and the rest of the vari-
ables are defined above. In addition to $\beta_{21} < 0$ and $\beta_{22} < 0$, we anticipate
$\gamma_{2k} < 0$, where $k = 1, ..., 5$, but being smaller in magnitude for higher order lags
if the effect of unemployment dissipates over time. This specification allows us
to test the relative importance of the length and timing of unemployment.

We estimate the two model specifications above to test the scarring hypothe-
sis (equations (1) and (2)) using the pooled OLS approach with standard errors
robust to heteroskedasticity and serial correlation.[2]

2.2. Testing for the Adaptation Mechanism

We study the adaptation mechanism to see if the negative effect of cur-
rent unemployment changes, depending on whether the person has past unem-
ployment experience. To be precise, we test the effect of the interaction term
between an indicator for current unemployment and various measures of past
unemployment — continuous cumulative unemployment in months, share of
past unemployment experience in total time active in the labor market, and
an indicator whether the person had ever been unemployed in the past using a

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[2]As our analysis is separate by gender, less than 10% of observations in any specific year
comes from the same household, which has no significant effect on the size of the standard er-
rors. The tests do not reveal the presence of serial correlation in most specifications. However,
as in a couple of cases serial correlation has been detected, we have opted for the standard
errors which are completely robust to any form of serial correlation and heteroskedasticity.
This is achieved by the individual level cluster option in fixed effects specification. Other
approaches, like for example Driscoll-Kraay standard errors, are not feasible within our case
of large N and small T.

model specification similar to the one used in [12] and [13]:

$$
\begin{aligned}
\textit{Life satisfaction}_{it} = {} & \beta_{30} + \beta_{31} \textit{If currently unemployed}_{it} \\
& + \beta_{32} \textit{Past unemployment}_{it} \\
& + \gamma_{30} \textit{If currently unemployed}_{it} * \textit{Past unemployment}_{it} \\
& + \mathbf{x}_{it} \alpha_{\mathbf{3}} + c_{3i} + u_{3it},
\end{aligned}
\tag{3}
$$

where $Past\ unemployment_{it}$ is individual i's past unemployment experience as
a share of his or her total active labor market time at time t, c_{3i} is an unob-
served individual-specific effect, u_{3it} is an idiosyncratic error, and the rest of
the variables are defined above.

Model (3) can be viewed as a simple test of the degree of adaptation to un-
employment. If an adaptation mechanism is present, then γ_{30} would be positive,
i.e., those with past unemployment experience know what it is and do not react
as negatively in terms of life satisfaction, if they become unemployed at present.
We estimate model (3) to test the adaptation hypothesis using the pooled OLS
approach with fully robust standard errors. In our setting we cannot follow [16]
approach to the adaptation mechanism, which took advantage of a long survey
when both unemployment and life satisfaction questions are asked simultane-
ously. In contrast, we only observe life satisfaction at four points in time and
build unemployment history from the recall data, making it difficult to identify
the effects of shorter unemployment spells.

Note that model (3) is sufficiently flexible to accommodate both the scarring
mechanism and the adaptation mechanism. On one hand, $\beta_{32} < 0$ implies that
past unemployment "scars." On the other hand, $\gamma_{30} > 0$, consistent with the
adaptation mechanism, would mean that the effect of current unemployment on
life satisfaction is not as severe for those who were unemployed more often in
the past.

2.3. Testing for the Social Comparison Mechanism

We explore the social comparison mechanism in the ULMS sample by testing if a person's wellbeing depends on the local unemployment rate, and also whether people who are currently unemployed are happier when the local unemployment rate is higher. We consider the following equation:

$$
\begin{aligned}
\textit{Life satisfaction}_{it} = {} & \beta_{40} + \beta_{41}\textit{If currently unemployed}_{it} \\
& + \beta_{42}\textit{Regional unemployment rate}_{ijt} \\
& + \beta_{43}\textit{If currently unemployed}_{it} * \textit{Regional unemployment rate}_{ijt} \\
& + \mathbf{x}_{it}\alpha_4 + c_{4i} + u_{4it},
\end{aligned}
$$

$$(4)$$

where *Regional unemployment rate*$_{ijt}$ is an unemployment rate in region j where person i lives at time t, c_{4i} is an unobserved individual effect, u_{4it} is an idiosyncratic shock, and the rest of the variables are defined above. Here, a region is defined as a raion (a smaller administrative unit in Ukraine, total number 668).

We anticipate that $\beta_{41} < 0$, meaning that being unemployed decreases wellbeing. Furthermore, we expect $\beta_{42} < 0$, because an increase in the unemployment of the social reference group has a further adverse effect on the individual's happiness. The negative relationship between wellbeing and the local unemployment rate can be justified by two considerations. First, when there are more unemployed people in the area, there is more competition for any remaining jobs. This makes finding a new job more challenging. Secondly, when the labor supply shifts out, the wage rate falls. Finally, we expect $\beta_{43} > 0$ because, according to the social comparison mechanism, an individual suffers from their own unemployment less when unemployment in the reference groups is higher.

In our empirical analyses, we explore three different measures of regional unemployment: (i) raion[3]-level data that is administratively collected and mea-

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[3]Ukraine has three levels of administrative division. On the first level there are 27 regions: 24 oblasts, one autonomous republic (Crimea) and two cities of special status (Kyiv and Sevastopol. On the second level there are 490 raions and 178 cities of regional significance.

sures the share of people registered for unemployment benefits among those participating in the labor market; (ii) raion-level unemployment rate calculated from our data, excluding the individual for whom the rate is calculated; (iii) oblast-level unemployment rate calculated from our data, excluding the individual for whom the rate is calculated. All of the regressions using data for the number of registered unemployed are on the 2003, 2004, and 2007 waves only, because this kind of data are not available for 2012. All measures of the regional unemployment rate are demeaned. We estimate equation (4) using the pooled OLS with standard errors robust to heteroskedasticity and serial correlation.

2.4. Testing for Multiple Mechanisms

Finally, we jointly test the three hypotheses for how unemployment influences happiness. To do so, we consider model specifications allowing for multiple mechanisms at a time, augmenting equation (3) to allow for the social comparisons mechanism to potentially play a role in explaining life satisfaction along with the scarring and adaptation mechanisms:

$$
\begin{aligned}
Life\ satisfaction_{it} = \ & \beta_{50} + \beta_{51} If\ currently\ unemployed_{it} \\
& + \beta_{52} Past\ unemployment\ share_{it} \\
& + \beta_{53} If\ currently\ unemployed_{it} * Past\ unemployment\ share_{it} \\
& + \beta_{54} Regional\ unemployment\ rate_{ijt} \\
& + \beta_{55} If\ currently\ unemployed_{it} * Regional\ unemployment\ rate_{ijt} \\
& + \mathbf{x}_{it}\alpha_{\mathbf{5}} + c_{5i} + u_{5it},
\end{aligned}
$$

$$(5)$$

where c_{5i} is an unobserved individual-specific effect, u_{5it} is an idiosyncratic error, and the rest of the variables are defined as above. Specification (5) encompasses all three hypotheses jointly. Similar to specification (3) in that it allows us to test for the scarring and adaptation mechanisms. At the same

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On the third level there are city councils, settlement councils and village councils.)

time, it also permits us to simultaneously check whether the social comparisons mechanism is at work in the ULMS sample. For this specification we will use the oblast level estimate from within the sample to measure regional unemployment rate, as it allows for us to use the full analytical sample, as defined above. Furthermore, given that the ULMS is not representative at the raion level, the estimate at that low level of aggregation may be problematic. We estimate (5) using the pooled OLS approach with fully robust standard errors.

3. Data

We analyze individual-level data from four waves of the Ukrainian Longitudinal Monitoring Survey (ULMS): 2003, 2004, 2007, and 2012 (Institute for the Study of Labor (IZA) (2014). The Ukrainian Longitudinal Monitoring Survey (2003 2004 2007). IDSC of IZA. http://dx.doi.org/10.15185/izadp.7090.1). The ULMS is a nationally representative survey of working age (15-72 year old) population. It provides information on individuals and households, including detailed working history starting from 1986, the year of the Chornobyl disaster. The sample is based on the 2001 population Census and is stratified by age, gender, city, and region [19].

The contemporaneous data is combined with the retrospective sections of the 2003, 2007 and 2012 waves of the ULMS to construct the individual labor market histories. This allows for the identification of a sufficient number of cases of unemployment during the turbulent transition period of the 1990s and onwards. The sample is restricted to those individuals aged 16 to 65 at the time of interview with complete job histories. The retrospective data section is designed to minimize recall by referring to labor market circumstances at specific, memorable points in time: December 1986 (after the Chornobyl catastrophe), December 1991 (after collapse of the Soviet Union), December 1997, and every December thereafter until 2003. In 2007 and 2017 the retrospective work history questions refer to December of each year in between the survey years. The analytic sample has repeated observations on 3709 women and 2716 men.

Measure of Life Satisfaction

ULMS asks whether a respondent is satisfied with life ("To what extent are you satisfied with your life in general at the present time?"). The answers take values from (1) (fully satisfied) to (5) (not satisfied at all). Our *Life satisfaction* measure is constructed by reversing the scale, which results into a categorical variable ranging from (1) = "not satisfied at all" to (5) = "fully satisfied." The distribution of satisfaction with life is generally uniform across the four top categories for both men and women, with only around 5 percent in the highest life satisfaction category (see Figure 1).

Unemployment Measures

The variables of interest are several measures of unemployment.[4] *Past cumulative unemployment* is the past cumulative time spent unemployed, measured in months. Women in our sample have on average 44 months of past unemployment experience, for men it is 37 months (see Table 1). *If currently unemployed* is a dummy variable equal to one if the person is unemployed at the time of interview during the year of interest. *If unemployed* is a dummy variable equal to one if the person has been unemployed at some point during the year of interest, prior to the reference week. *If ever unemployed* is a dummy variable equal to one if a person has ever been unemployed. *Past unemployment share* is an individual's past unemployment experience as a share of their total active labor market time. The numbers of 22% for women and 17% for men among those who ever experienced unemployment in the past, are a testimony to the significant turbulence that Ukrainian population endured during the period of transition.

The share of individuals who were unemployed for at least one month in a year is not equivalent to the overall unemployment rate in Ukraine for the general population, for several reasons: (i) the share of individuals unemployed for at least one month in a year, versus the share of unemployed among labor

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[4]These variables are already mentioned briefly in Section 2.

market participants at the time of interview used for the official statistics, (ii) ULMS sample is representative of Ukrainian population in year 2003, while the corresponding statistics for other years may not be representative of the population, (iii) [20] document significant discrepancies in the unemployment rates based on the Labor Force Survey data published by Derzhkomstat[5] and the estimates based on the ULMS data. The share of unemployed in any month of the year rose gradually from the late 1980s into the early 2000s, and declined after 2002 with some spikes in 2005 and 2008 (see Figure 2). One conclusion from these graphs is that unemployment was common and volatile in Ukraine during the study period. But it is important to remember that in the late 1980s, many in our sample were too young to be in the labor force, lowering the fraction who were unemployed.

We explore three aggregate measures of unemployment to test the social comparison mechanism, referred to in Section 2 as "regional unemployment rate". The first measure is taken from the administrative data routinely collected by the Derzhkomstat from the Employment centers and refers to the share of individuals registered for unemployment benefits among the working age population. The other two measures are calculated from the ULMS sample, leaving out the information on the respondent, and referring to the share of unemployed (according to the ILO definition) among people active in the labor market at raion and oblast level respectively. Each of the three measures have their advantages and limitations. The first one comes from a separate data set, which makes it less likely to be subject to endogeneity concerns. However, it is clearly an underestimate of the scope of the problem. Our hope though is that the regional variation and time dynamics of this measure reflects the dynamics of true situation with unemployment in raions. The other two measures better describe the situation with local unemployment, but originating from within the sample may be subject to a degree of endogeneity. Leaving the information on specific respondents when calculating these measures should partially take

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[5]Ukrainian State Statistics Committee.

care of this concern. On the one hand, keeping in mind the social compari-
son mechanism, one would probably prefer lower level of aggregation. On the
other hand, oblast level provides a better approximation to the labor markets,
given the existing system of public transport. Moreover, in some cases there are
simply not enough observations in some raion-year cells to calculate meaning-
ful unemployment rates. Given all these considerations, we report estimation
results with all three measures when considering social comparison. Table 1
confirms some of the considerations with the administrative unemployment rate
being much lower than those estimated from the ULMS sample.

Instrumental Variables

To instrument both current and past unemployment, we use two vectors of
variables derived from the labor market history which are related to exogenous
job losses. These measures of exogenous jobs lossess are constructed from infor-
mation about each individuals experience of job loss initiated by the employer
for reasons unrelated to the individual workers job performance (closing down,
reorganization, bankruptcy, privatization of enterprise/organization). The first
vector includes an indicator variable of whether an individual experienced an
exogenous job loss in the current year and the second counting total number
of exogenous job losses up to the current year. The second vector includes a
set of indicator variables for the incidence of exogenous job loss in current and
in any other years up to 10 years in the past. Table 1 shows that the share of
people who ever experience exogenous job loss in the past is quite high. Among
females with no unemployment experience it is 18%, while among females with
past unemployment experience it is 58%. The corresponding numbers for males
are 19% and 52% respectively. Non-zero job losses among those who never ex-
perienced unemployment simply indicate that some people found a job within
one month of a job loss. Figure 5 provides information on the distribution of
exogenous job losses over time. Two periods of clearly higher likelihood of ex-
ogenous job loss can be identified in late 1990s and after the start of the Great
Recession.

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The models also control for other factors likely to affect life satisfaction to investigate pathways through which unemployment affects wellbeing. With the choice of control variables we follow the literature: *If in good health* is an indicator variable equal to one if the person reported being in good or very good health on a 4-point scale ranging from (1) = "very good" to (4) = "bad"; *Household income per capita* is household income per capita measured in thousands of UHA. We also include other covariates, such as whether a person is employed part-time or self-employed, whether they are a carer (maternity leave, parental leave, taking care of other family members) or not in the labor market for any other reason, if they are married, if they are native (Ukrainians represent 77.5% of the population, with Russians being the second largest group at 17.2%), if they have a bachelor degree or higher, how many children they have, and their age measured in years.

Table 1 reports the summary statistics for our sample and allows for comparison of men and women by past unemployment experience. The significance levels indicate whether those who experienced unemployment in the past are different from those who did not (for men and women separately). As can be seen, life satisfaction level is on average lower for those who experienced unemployment in the past (for both men and women). The difference is statistically significant at 10% level for women and at 1% level for men. However, the magnitude of the difference is quite small - a fraction of the standard deviation. At the same time, the difference in the indicator variable for being satisfied with life (equal 1 if fully satisfied or satisfied with life), is not at all significant for women, but has a significant 6 percentage point difference for men. Logically, those who experienced unemployment live in areas with larger regional unemployment rates, are more likely to be self-employed, yet, surprisingly, less likely to be out of the labor market for other reason, and more likely to be in good health. They also have lower levels of education, lower household income, and are on average younger.

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4. Results

We start with a non-parametric exploration of the relationship between unemployment and subjective wellbeing, which reveals an interesting pattern based on age. Overall, wellbeing declines steadily with age for both men and women (see Figure 4). But experiencing a period of unemployment lowers wellbeing to the level of a 60-year old person, for both men and women. In our data, this decline is apparent from late teenage years into a person's 60s. For those who are unemployed, wellbeing is only slightly related to age; the main effect of unemployment is to bring down wellbeing to a much lower level. As an informal test for the exogeneity of past unemployment experience, we explore the relationship between current subjective wellbeing and past experience of exogenous job losses (see Figure 5). As can be seen, the pattern is similar to that reported for unemployment.

Moving next to the regression results, unemployment has a detrimental effect on self-reported wellbeing in the basic cross-sectional model that corresponds to equation (1) (see columns (1) and (5) in Table 2). Wellbeing declines with longer unemployment experienced in the past, at a rate of -0.002 per month for either women or men. However, the effect of current unemployment is much more dramatic in magnitude: it is equivalent to more than 200 months of past unemployment experience for women and more than 300 months for men. However, in a model with individual fixed effects, the relationship between past accumulated unemployment and wellbeing is no longer statistically significant, while that of current unemployment is still highly significant but half in magnitude (see columns two and four in Table 2).

Comparing pooled and fixed effect estimates confirms our prior expectation that part of the unemployment effect is due to the unobserved heterogeneity. As most of the past unemployment experience refers to the 1990s and most of the variation in this variable is across, rather than within, individuals, the effect is practically wiped out by the individual fixed effects. However, when we employ instrumental variable technique, we see quite the opposite. Consistent with the

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measurement error story, instrumenting makes the effect of past unemployment much larger — almost 4 times larger for women and 5 to 9 times larger (depending on the set of instruments) for men. As expected, the IV estimates are much less precise, to the extent that the second set of instruments produces an insignificant estimate of the coefficient on past unemployment. Although both IV specifications produce a large negative effect of current unemployment, as expected, the effect is only significant with the second set of IVs involving a vector of exogenous losses in all years up to 10 years prior. However, this set of instruments is a weaker one, especially for men, and mostly in what refers to current unemployment. This exercise clearly points to two sources of bias — one working upwards and one working downwards — and the need to address them simultaneously.

An ideal approach would have been to combine the fixed effect approach with the instrumental variable approach. However, when we did so, we again encountered the problem that both the measure itself and the instruments have little within group variation, and hence being weak to identify the effect. Moreover, in some specifications the variance-covariance matrix is not of full rank. Therefore, we do not report the results from all of the fixed effect with instrumental variables specifications. Yet, this investigation shows that if we had an ideal situation (for example, a panel with both life satisfaction and employment status information from early 1990s onwards) and could use both fixed effects and instrumental variables, our estimates of the effect of current unemployment would be closer to the OLS estimates, and those of the effect of past unemployment would represent a lower bound of the true effect, given the relative importance of the measurement error versus unobserved heterogeneity affecting the current versus past unemployment measures. Therefore, in what follows we opt to proceed with the OLS estimates (the other estimates are available upon request), as this corresponds to the transition happiness gap literature.

The coefficients on control variables have the expected signs, regardless of the specification. Although in fixed effects and IV specification, many are smaller in magnitude when compared to the OLS. Wellbeing is higher for people who are

married, in good health, and have higher income and a higher level of education. Comparing the magnitude of the effects of other variables to that of current unemployment, it is worth noting that the latter is quite high in magnitude. For example, in both the OLS and fixed effect specifications, it is almost the same size in absolute value as that of being in good health for women and larger than that for men. Hence, we conclude that past unemployment does leave a permanent scar on individuals' wellbeing.

Next we explore further the nature of the "scarring" mechanism - what matters most, the overall cumulative unemployment experience or the timing of that experience? We implement this analysis based on equation (2). There is no consistent evidence in support of the scarring mechanism based on this model specification (see columns (1) through (3) in Table 3 for pooled results). If the scarring mechanism was important, we would expect to see negative coefficients on the lagged dummy variables for unemployment. Although many lagged coefficients are negative, only the first lagged coefficient is statistically significant for women (and none are for men). Hence, there is no conclusive evidence on the importance of timing of the effect.

Given the considerations above, in the following analysis we only report the OLS estimates, although the fixed effect estimates and IV estimates are available upon request. Table 4 shows that past unemployment experience is important, even after controlling for current unemployment status and irrespective of the measure — absolute as in the case of the cumulative past unemployment, or relative as in the case of past unemployment share, or as a binary variable. The negative coefficient on past unemployment experience provides support for the scarring mechanism.

If the adaptation mechanism is present, then we would expect the coefficient on the interaction between current unemployment and past unemployment share to be positive. For women, this hypothesis is borne out with statistical significance at the 5% level for cumulative unemployment and past unemployment share, but not for the indicator of ever being unemployed in the past. For men, there is no evidence for the adaptation mechanism. We, therefore, conclude that

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the adaptation mechanism is present for women, but not for men.

To investigate the social comparison mechanism defined by equation (4), we test whether the local unemployment rate affects an individual's wellbeing both directly, by affecting the labor market (negative effect), and indirectly, by decreasing social stigma (positive effect). We report three specifications for women and men separately, corresponding to different measures of regional unemployment. In all but one specification for women, local unemployment has a further negative effect on individual wellbeing beyond that of own unemployment. However, we find no evidence for the social comparison mechanism for women (see Table 5), but some evidence for men. Because the estimate of the coefficient on the interaction term is positive, it points to the higher importance of the social comparison mechanism involving stigma. So for men, own unemployment is less detrimental for wellbeing when more people in the area are also unemployed.

Finally, we show results for all three mechanisms in the same empirical model. Table 6 only presents the results using oblast level unemployment rate, because this measure is available for all individuals in the sample. However, estimates using other measures produce results similar to the specification without the adaptation mechanism. When we combine all the mechanisms, the results are not qualitatively different from what we found before (for either men or women) for scarring, adaptation, and social comparison.

To compare our findings with the literature, we refer to [1] analysis based on the Life in Transition survey (LiTS) data. The estimates in their Column (1.4) in Table 1 are based on LiTS III and most closely relate to our pooled OLS specification. Similar to the ULMS, LiTS refers to life satisfaction on a 5-point scale, although it uses observations from all available countries, both transition and others. We compare them to our estimates of the most important factors determining life satisfaction in Columns (1) and (3) in Table 2 and find that the effect of current unemployment in Ukraine is much larger than the average effect across LiTS countries, the effect of higher education is comparable, while that of income is considerably smaller in Ukraine. [1] document the transition

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happiness gap of the size -0.23 in LiTS II (2010) which disappears in LiTS III (2015/16) (see columns (2.4) and (2.5) in Table 2). All the measures of past unemployment are related, so there is no prior preference for one or another. However, our calculation requires an equivalent measure of past unemployment in the developed countries, and that leaves us with the past unemployment share as used in [12] and refers to Germany. That paper reports past unemployment share of 1.74% (1.72%) among currently employed men (women) and 50% (48,3%) among currently unemployed men (women). Weighting these numbers by the 4.6% (5.8%) unemployment rate mentioned for men (women), makes the average share of past unemployment among both employed and unemployed men (women) to be 3.4% (4.4%). The average share of past unemployment over the course of the last 3 years in our sample is 9.1% for men and 8.7% for women. We assume that the difference in the share of past unemployment in the past 3 years between Ukraine and Germany is the same as that relating to the overall past working life, and is equal to 5.7% for men and 4.3% for women. As Columns (2) and (5) in Table 6 show, an individual who spent all past labor market time in unemployment (past unemployment share equal to 1) compared to the one with zero share of past unemployment, has life satisfaction lower by 0.41 point for men and 0.33 point for women. Hence, the difference in the level of wellbeing between Germany and Ukraine, which is attributable to the difference in past unemployment experience is 0.023 points for men and 0.014 for women. Taking into account that [1] analysis is based on a joint estimation for men and women, we use the simple average of the two numbers, which is 0.019. This number corresponds to 8.3% of the overall magnitude of the transition happiness gap cited above. Our calculation has a series of assumptions and shall be treated with caution. However, it does show that the contribution of past unemployment experience is not that trivial and shall be considered alongside with other explanations.

5. Conclusion

In this paper we take advantage of a unique data set documenting individual work and life histories in Ukraine, one of the countries of the former Soviet Union, over a period of significant economic turmoil. The Ukrainian economy shrank by over 60% of its size in 1990. This resulted in a significant share of workers losing their jobs. Importantly for this study, many lost their jobs because of circumstances beyond their control. The longitudinal data also allowed us to test several hypotheses about the mechanisms behind the adverse effect of unemployment on subjective wellbeing. We tested whether current and past unemployments has any effect on current wellbeing, whether the effect of past unemployment dissipates over time, whether individuals adapt to being unemployed and whether the local unemployment rate matters, accounting for current employment status, household income, health, and other controls.

Our findings suggest that current unemployment has a substantial negative effect on subjective wellbeing. This effect is equivalent to loss of good health for women, and is double the effect of losing good health status for men. We also find that past unemployment scars, but while the effect of past unemployment is significant, it is small in magnitude compared to the effect of current unemployment. Furthermore, we find that, controlling for current labor market status, women adapt to the state of being unemployed in terms of wellbeing while men do not. Also, when using the regional unemployment rate estimated from our data, we find that local unemployment has a negative effect on the subjective wellbeing of both men and women and that it mitigates the effect of own unemployment for men. Finally, given our estimates, we calculate that approximately 8% of the "transition happiness gap" estimated by [1] can be explained by past unemployment.

6. Acknowledgements

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Figure 1: **The Distribution of the Life Satisfaction Index**
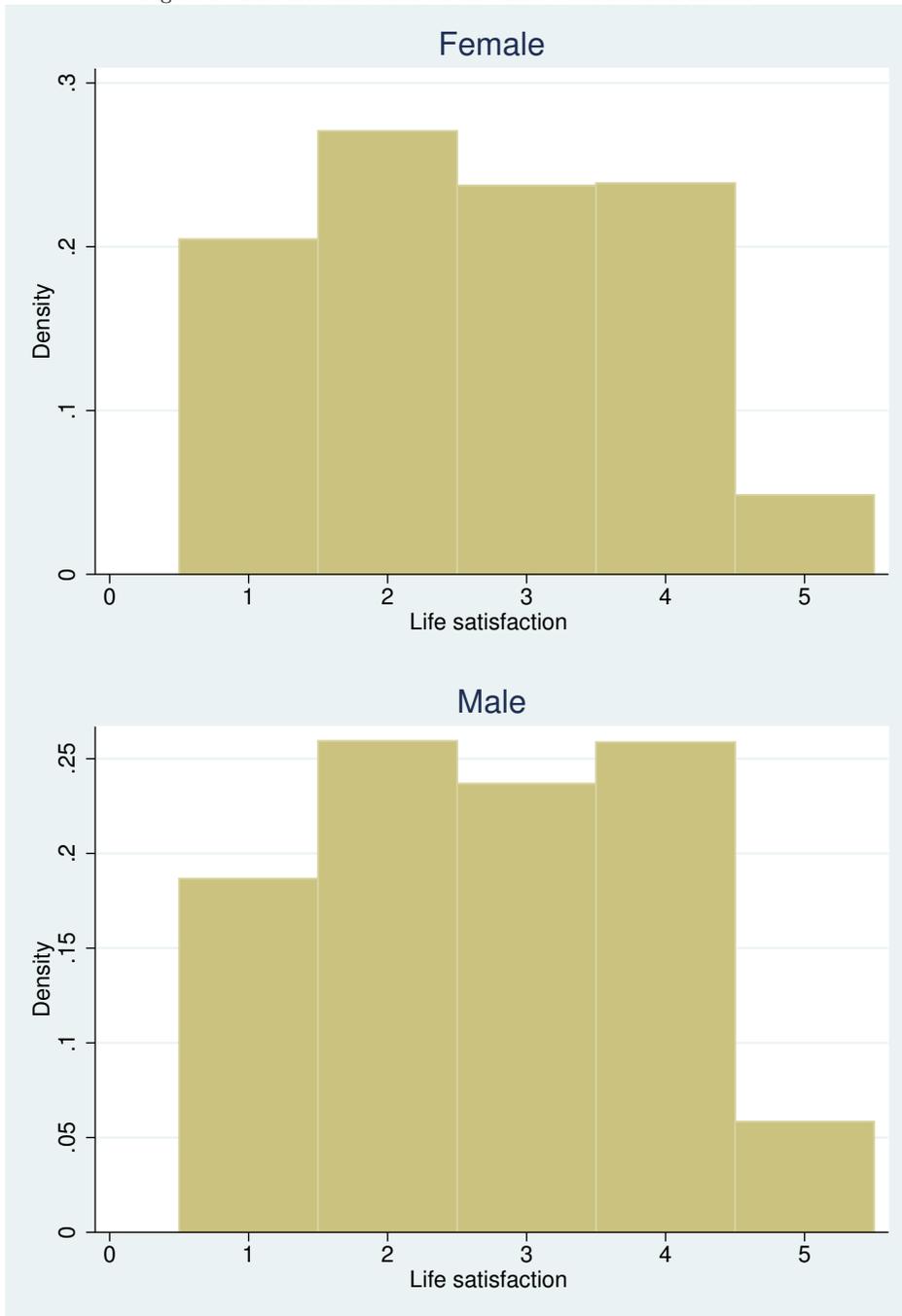
Figure 2: **Unemployed in at Least One Month**

Female

Male
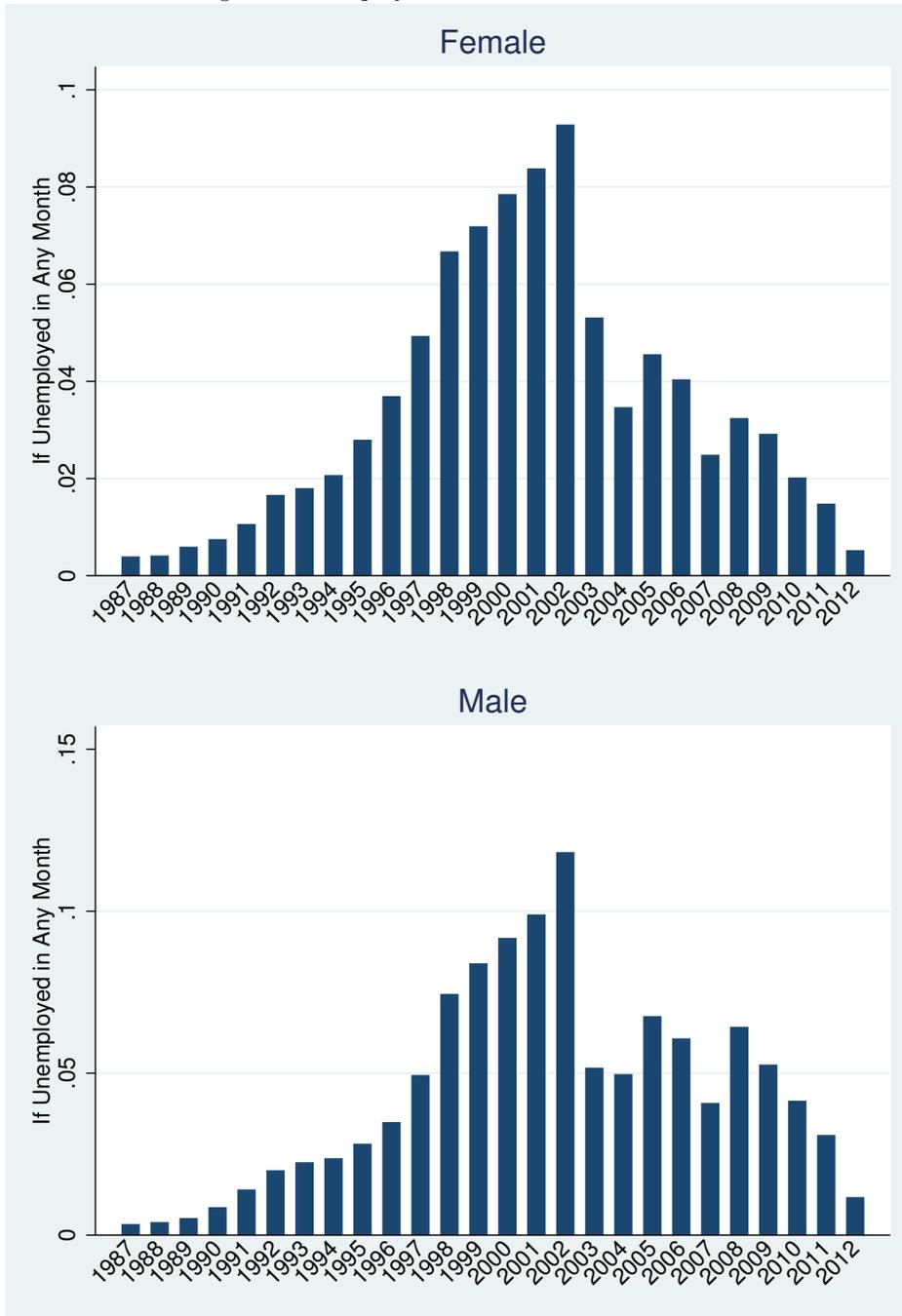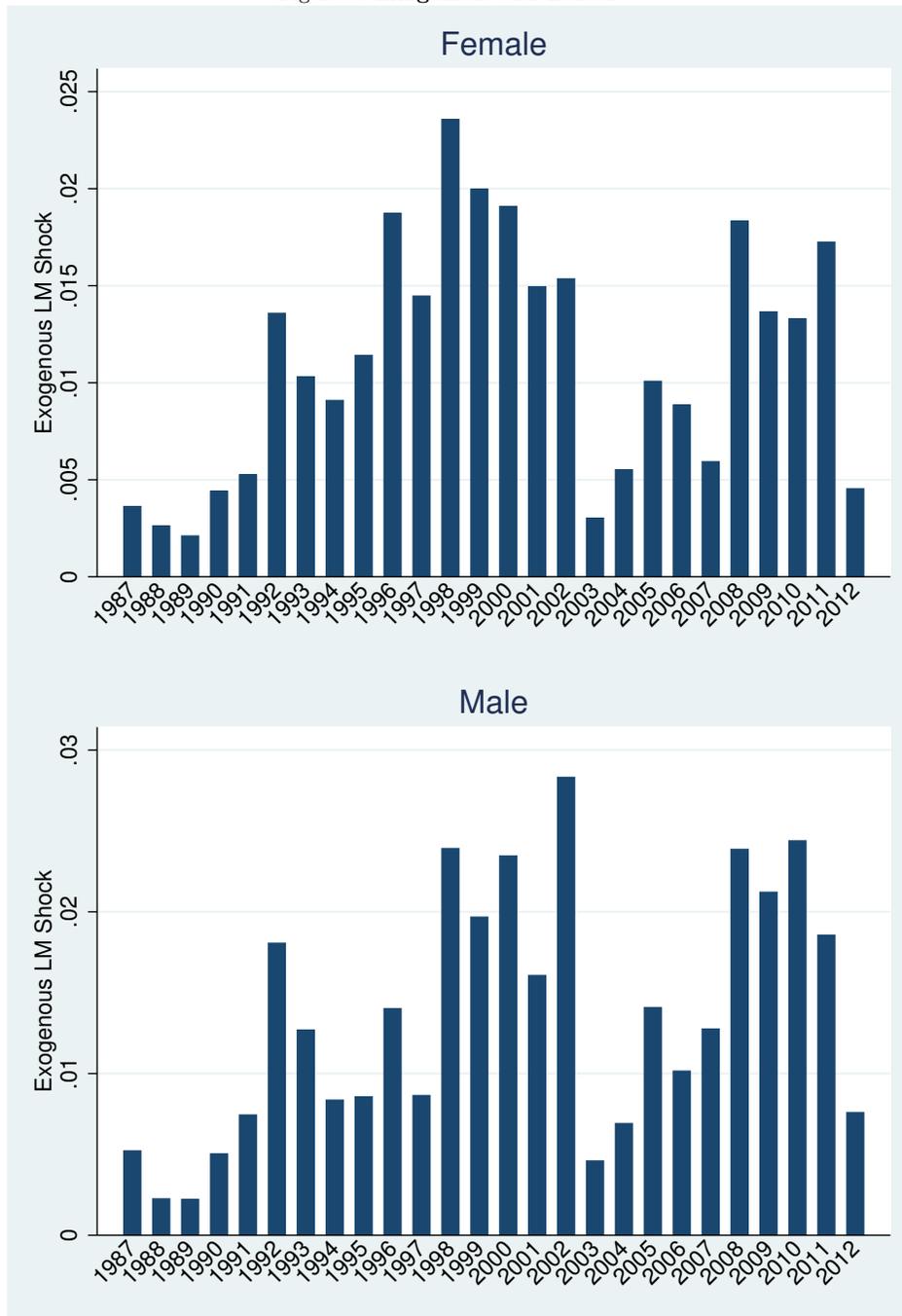
Figure 4: **Life Satisfaction Age Trajectories by Unemployment Experience**
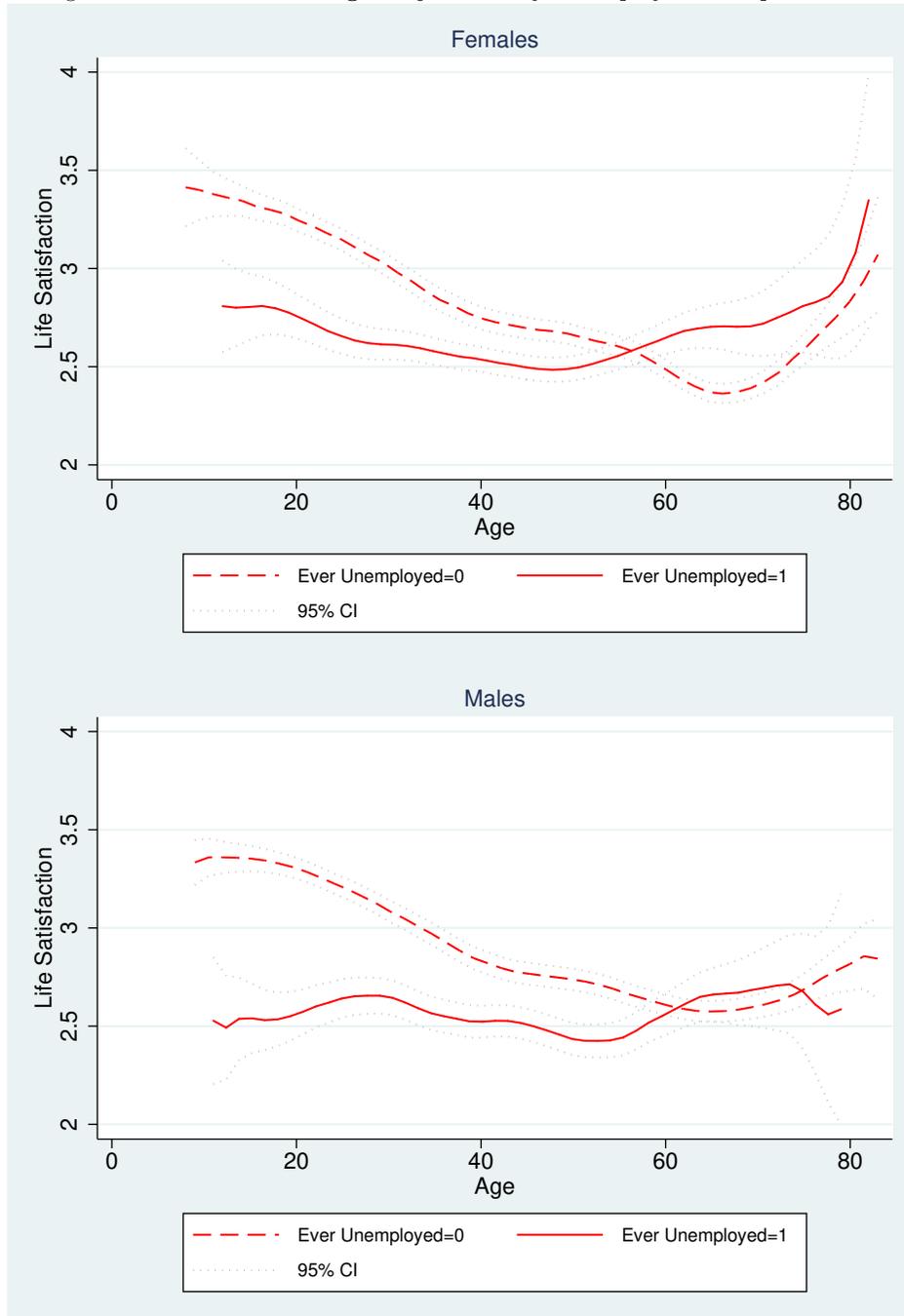
Figure 5: **Life Satisfaction Age Trajectories by Exogenous Job Losses (Labor Market Shocks)**
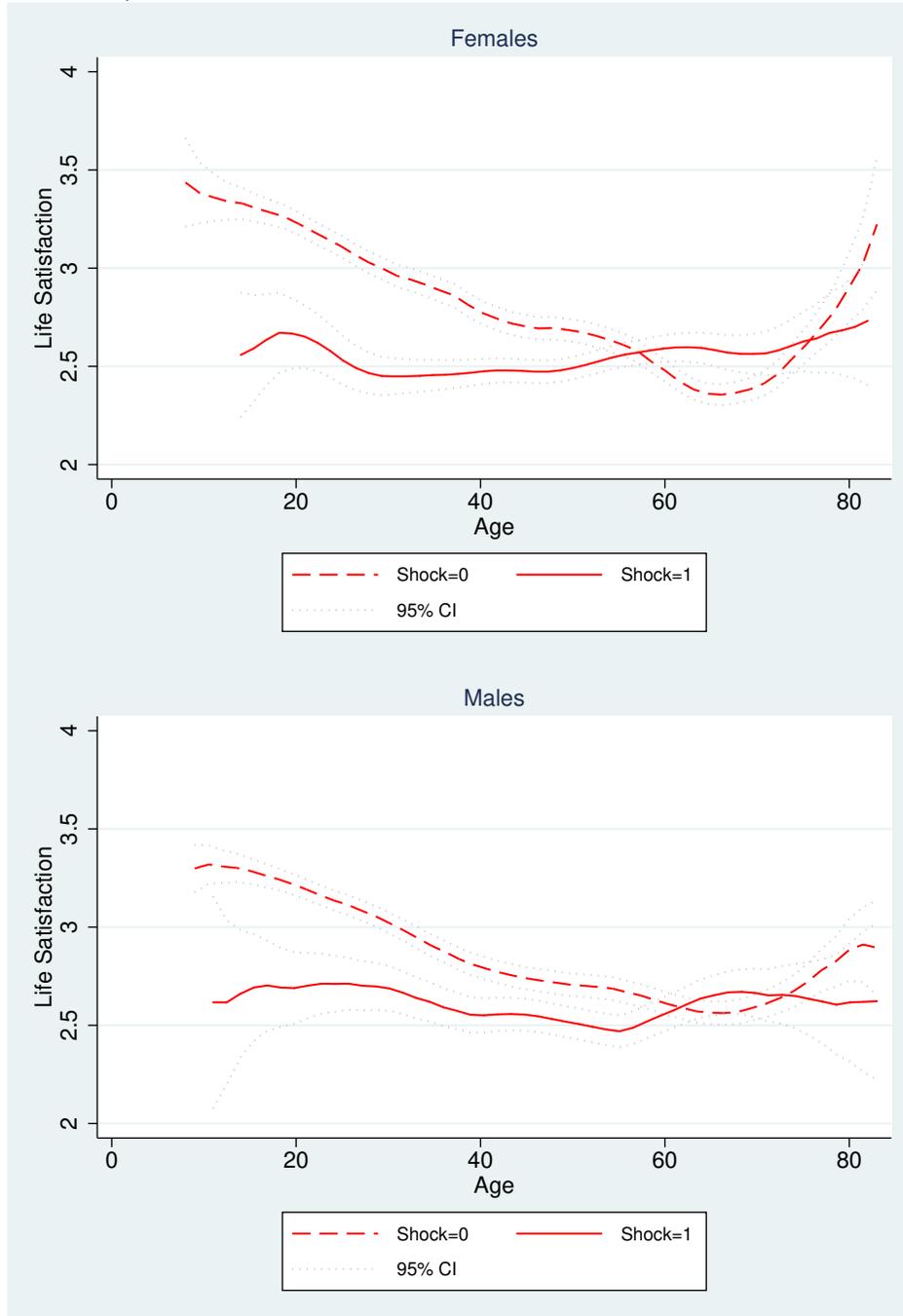
Table 1: **Descriptive Statistics**

	Women			Men		
	If ever unemployed			If ever unemployed		
	No	Yes	α	No	Yes	α
Level of life satisfaction	2.67	2.62	*	2.77	2.60	***
	(1.18)	(1.15)		(1.19)	(1.18)	
Whether satisfied with life	0.29	0.27		0.33	0.27	***
	(0.45)	(0.44)		(0.47)	(0.44)	
If exogenous job loss (ever)	0.18	0.58	***	0.19	0.52	***
	(0.38)	(0.49)		(0.39)	(0.50)	
Past cumulative unemployment (in months)		44.05			37.17	
		(42.47)			(39.12)	
Past unemployment share		0.22			0.17	
		(0.22)			(0.19)	
If unemployed (in current year)		0.15			0.15	
		(0.36)			(0.36)	
If currently unemployed	0.02	0.10	***	0.02	0.13	***
	(0.14)	(0.30)		(0.14)	(0.34)	
Regional unemployment rate (admin, raion)	3.08	3.21	*	3.14	3.34	**
	(2.40)	(2.48)		(2.38)	(2.42)	
Regional unemployment rate (calc, raion)	14.18	14.20		14.16	14.72	*
	(10.76)	(10.80)		(10.65)	(11.16)	
Regional unemployment rate (calc, oblast)	13.93	13.19	***	13.88	13.64	
	(6.05)	(6.03)		(5.95)	(6.24)	
If employed part-time	0.08	0.08		0.05	0.04	
	(0.27)	(0.27)		(0.21)	(0.20)	
If self-employed	0.04	0.07	***	0.07	0.13	***
	(0.19)	(0.25)		(0.25)	(0.33)	
If a carer	0.09	0.10		0.01	0.02	***
	(0.29)	(0.30)		(0.07)	(0.13)	
If not in the labor market	0.29	0.23	***	0.22	0.17	***
	(0.45)	(0.42)		(0.42)	(0.37)	
If native	0.87	0.85	**	0.88	0.89	
	(0.33)	(0.35)		(0.32)	(0.31)	
If married	0.71	0.72		0.88	0.86	
	(0.45)	(0.45)		(0.33)	(0.35)	
Number of children	1.76	1.79	*	1.69	1.72	
	(0.85)	(0.86)		(0.89)	(0.93)	
If in good health	0.19	0.22	***	0.31	0.34	**
	(0.39)	(0.41)		(0.46)	(0.47)	
If a Bachelor's degree or higher	0.20	0.14	***	0.16	0.12	***
	(0.40)	(0.35)		(0.37)	(0.33)	
Household income per capita (in thsnd UAH)	0.75	0.72	**	0.77	0.69	***
	(0.71)	(0.60)		(0.73)	(0.62)	
Ln(Household income per capita)	6.17	6.08	***	6.19	5.99	***
	(1.34)	(1.51)		(1.38)	(1.55)	
Age (in years)	46.74	44.67	***	46.35	44.61	***
	(12.40)	(10.58)		(12.55)	(11.19)	
Observations	7,337	1,999		4,558	1,675	

Notes: The sample is based on the 2003, 2004, 2007 and 2012 waves of the Ukrainian Longitudinal Monitoring Survey (ULMS). Number of observation on regional unemployment at the raion level is smaller than the reported sample size (for administrative measure information is not available for year 2012, and for calculated measure the limitations are related to the number of respondents in year-raion cells. The columns titled α report the significance levels for the two-sample t-tests for the mean differences between those who were never unemployed and to those were unemployed (separately for women and men). [*** $p-$value$< 1\%$, ** $p-$value$< 5\%$, * $p-$value$< 10\%$].

Table 2: **Scarring Mechanism**

	Women				Men			
	Pooled	FE	IV-1	IV-2	Pooled	FE	IV-1	IV-2
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Past cumulative unemployment	-0.002***	-0.002	-0.008**	-0.007*	-0.002**	0.002	-0.018***	-0.011
	(0.000)	(0.002)	(0.004)	(0.004)	(0.001)	(0.003)	(0.006)	(0.007)
If currently unemployed	-0.432***	-0.271***	-0.879	-0.900*	-0.669***	-0.348***	-0.370	-1.082*
	(0.059)	(0.073)	(0.769)	(0.499)	(0.063)	(0.083)	(0.663)	(0.564)
If employed part-time	-0.043	-0.120**	-0.070	-0.087	-0.134*	-0.007	-0.093	-0.188**
	(0.044)	(0.053)	(0.067)	(0.059)	(0.069)	(0.082)	(0.094)	(0.092)
If self-employed	-0.004	-0.065	0.002	-0.011	0.072	0.004	0.206*	0.162
	(0.064)	(0.081)	(0.091)	(0.088)	(0.060)	(0.087)	(0.108)	(0.119)
If a carer	-0.151***	-0.117**	-0.171**	-0.168***	-0.812***	-0.712***	-0.408	-0.729***
	(0.043)	(0.058)	(0.074)	(0.064)	(0.143)	(0.176)	(0.270)	(0.238)
If not in the labor market	-0.213***	-0.190***	-0.217***	-0.240***	-0.398***	-0.272***	-0.317***	-0.392***
	(0.035)	(0.050)	(0.078)	(0.060)	(0.043)	(0.072)	(0.086)	(0.081)
If native	-0.061		-0.088**	-0.082*	-0.038		-0.024	-0.016
	(0.040)		(0.043)	(0.046)	(0.050)		(0.057)	(0.057)
If married	0.204***	0.196***	0.201***	0.186***	0.214***	0.147*	0.157**	0.117*
	(0.028)	(0.051)	(0.028)	(0.031)	(0.048)	(0.082)	(0.061)	(0.071)
Number of children	-0.044**	-0.099**	-0.034*	-0.026	0.009	-0.021	0.009	0.014
	(0.018)	(0.050)	(0.019)	(0.020)	(0.020)	(0.053)	(0.023)	(0.022)
If in good health	0.435***	0.293***	0.428***	0.413***	0.372***	0.193***	0.383***	0.366***
	(0.032)	(0.040)	(0.033)	(0.038)	(0.035)	(0.045)	(0.038)	(0.043)
Ln(Household income per capita)	0.074***	0.025**	0.062***	0.067***	0.040***	0.005	0.023	0.016
	(0.011)	(0.011)	(0.013)	(0.013)	(0.012)	(0.014)	(0.017)	(0.019)
If a Bachelor's degree or higher	0.352***	-0.103	0.317***	0.341***	0.284***	0.156	0.235***	0.267***
	(0.035)	(0.104)	(0.037)	(0.042)	(0.045)	(0.163)	(0.051)	(0.056)
Age < 20	-0.074	-0.058	-0.077	-0.066	-0.105*	-0.045	-0.098	-0.432**
	(0.049)	(0.072)	(0.048)	(0.146)	(0.061)	(0.103)	(0.060)	(0.168)
$20 \leq$ Age < 30	-0.028***	-0.035**	-0.025***	-0.014	-0.013	0.014	-0.005	-0.009
	(0.009)	(0.014)	(0.009)	(0.018)	(0.011)	(0.021)	(0.012)	(0.018)
$30 \leq$ Age < 40	-0.009	0.004	-0.007	-0.007	-0.017**	-0.005	-0.014*	-0.009
	(0.006)	(0.010)	(0.006)	(0.007)	(0.007)	(0.013)	(0.008)	(0.009)
$40 \leq$ Age < 50	-0.003	0.004	-0.003	-0.000	-0.002	0.005	-0.000	-0.003
	(0.005)	(0.009)	(0.005)	(0.005)	(0.006)	(0.012)	(0.006)	(0.007)
$50 \leq$ Age < 60	0.004	0.008	-0.002	-0.002	0.004	0.013	-0.004	0.001
	(0.005)	(0.009)	(0.006)	(0.006)	(0.006)	(0.012)	(0.008)	(0.008)
Age ≥ 60	-0.041***	-0.027*	-0.047***	-0.047***	0.012	0.018	0.006	0.003
	(0.012)	(0.016)	(0.013)	(0.013)	(0.016)	(0.023)	(0.018)	(0.018)
Observations	9336	9336	9336	7984	6234	6234	6234	5094
R^2/Within R^2/F-statistic	0.21	0.13	51.14	42.50	0.20	0.11	27.46	23.39
Cragg-Donald Wald F-statistic excluded IVs			38.45	11.22			23.26	3.56
Stock-Yogo maximal IV rel. bias range			< 5%	5-10%			< 5%	> 30%
Hansen J-test p-value			n/a	0.22			n/a	0.42

Notes: The dependent variable is life satisfaction. The age variables are constructed using the *mkspline* command in Stata. All the regressions contain regional and wave dummies. The entire results for the reported regressions are available upon request. The analytic sample has repeated observations on 3,709 women and 2,716 men. Fully robust standard errors are shown in parentheses [*** $p-$value< 1%, ** $p-$value< 5%, * $p-$value< 10%].

Table 3: **Timing Behind the Scarring Mechanism**

	Women			Men		
	(1)	(2)	(3)	(4)	(5)	(6)
If currently unemployed$_t$	-0.428***	-0.427***	-0.424***	-0.638***	-0.635***	-0.608***
	(0.064)	(0.064)	(0.064)	(0.070)	(0.070)	(0.070)
Past cumulative unemployment$_t$	-0.001			-0.001		
	(0.001)			(0.001)		
Past unemployment share$_t$		-0.113			-0.223	
		(0.128)			(0.206)	
If ever unemployed$_t$			-0.055			-0.178***
			(0.044)			(0.053)
If unemployed$_{t-1}$	-0.167**	-0.172**	-0.161**	-0.127	-0.124	-0.074
	(0.071)	(0.071)	(0.072)	(0.083)	(0.082)	(0.084)
If unemployed$_{t-2}$	0.102	0.095	0.101	-0.121	-0.116	-0.094
	(0.089)	(0.089)	(0.089)	(0.096)	(0.095)	(0.094)
If unemployed$_{t-3}$	-0.063	-0.067	-0.071	0.075	0.078	0.087
	(0.077)	(0.077)	(0.077)	(0.084)	(0.083)	(0.084)
If unemployed$_{t-4}$	0.042	0.034	0.039	-0.077	-0.075	-0.048
	(0.078)	(0.078)	(0.078)	(0.087)	(0.086)	(0.086)
If unemployed$_{t-5}$	-0.059	-0.080	-0.072	0.051	0.056	0.099
	(0.068)	(0.066)	(0.068)	(0.084)	(0.079)	(0.080)
Observations	8480	8480	8480	5465	5465	5465
R^2	0.21	0.21	0.21	0.21	0.21	0.21

Notes: The dependent variable is life satisfaction. All the regressions contain regional and wave dummies. The entire results for the reported regressions are available upon request. Fully robust standard errors are shown in parentheses [*** $p-$value$< 1\%$, ** $p-$value$< 5\%$, * $p-$value$< 10\%$].

Table 4: **Scaring and Adaptation Mechanisms**

	Women			Men		
	(1)	(2)	(3)	(4)	(5)	(6)
If currently unemployed	-0.500***	-0.518***	-0.463***	-0.720***	-0.709***	-0.762***
	(0.066)	(0.067)	(0.084)	(0.083)	(0.074)	(0.109)
Past cumulative unemployment	-0.002***			-0.002**		
	(0.000)			(0.001)		
If currently unemployed× Past cumulative unemployment	0.003**			0.002		
	(0.001)			(0.002)		
Past unemployment share		-0.377***			-0.398***	
		(0.098)			(0.150)	
If currently unemployed× Past unemployment share		0.670***			0.342	
		(0.251)			(0.336)	
If ever unemployed			-0.130***			-0.196***
			(0.032)			(0.038)
If currently unemployed× If ever unemployed			0.080			0.203
			(0.113)			(0.131)
Observations	9336	9336	9336	6233	6233	6233
R^2	0.21	0.21	0.21	0.20	0.20	0.20

Notes: The dependent variable is life satisfaction. All the regressions contain regional and wave dummies. The entire results for the reported regressions are available upon request. Fully robust standard errors are shown in parentheses [*** $p-$value< 1%, ** $p-$value< 5%, * $p-$value< 10%].

Table 5: **Social Comparisons Mechanism**

Unemployment rate level:	Women			Men		
	Raion (admin) (1)	Raion (calc) (2)	Oblast (calc) (3)	Raion (admin) (4)	Raion (calc) (5)	Oblast (calc) (6)
If currently unemployed	-0.446***	-0.453***	-0.468***	-0.665***	-0.728***	-0.720***
	(0.075)	(0.061)	(0.061)	(0.079)	(0.066)	(0.066)
Regional unemployment rate	-0.007	-0.004***	-0.012***	-0.019**	-0.006***	-0.014***
	(0.007)	(0.001)	(0.003)	(0.009)	(0.002)	(0.004)
If currently unemployed×Regional unemployment rate	-0.019	0.005	0.012	0.021	0.011**	0.019**
	(0.025)	(0.005)	(0.009)	(0.026)	(0.005)	(0.009)
Observations	6870	9244	9336	4688	6177	6233
R^2	0.21	0.21	0.21	0.20	0.20	0.20

Notes: The dependent variable is life satisfaction. All the regressions contain regional and wave dummies. Regressions in Columns (1) and (4) are based on the 2003, 2004, and 2007 waves only since regional unemployment rates (based on the number of people registered at the Employment Centers) are not available for 2012. The regional unemployment rate is demeaned. The entire results for the reported regressions are available upon request. Fully robust standard errors are shown in parentheses [*** $p-$value< 1%, ** $p-$value< 5%, * $p-$value< 10%].

Table 6: **Multiple Mechanisms of Unemployment: Social Comparisons, Scaring, and Adaptation Mechanisms**

	Women			Men		
	(1)	(2)	(3)	(4)	(5)	(6)
If currently unemployed	-0.532***	-0.559***	-0.515***	-0.661***	-0.679***	-0.698***
	(0.086)	(0.085)	(0.109)	(0.104)	(0.090)	(0.127)
Regional unemployment rate	-0.012***	-0.012***	-0.012***	-0.014***	-0.014***	-0.014***
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)
If currently unemployed×Regional unemployment rate	0.011	0.010	0.011	0.018*	0.018*	0.017*
	(0.009)	(0.010)	(0.009)	(0.009)	(0.009)	(0.010)
Past cumulative unemployment	-0.002***			-0.002*		
	(0.001)			(0.001)		
If currently unemployed× Past cumulative unemployment	0.005***			0.001		
	(0.002)			(0.003)		
Past unemployment share		-0.331***			-0.414**	
		(0.126)			(0.183)	
If currently unemployed× Past unemployment share		1.057***			0.402	
		(0.326)			(0.423)	
If ever unemployed			-0.140***			-0.172***
			(0.039)			(0.045)
If currently unemployed× If ever unemployed			0.201			0.156
			(0.140)			(0.154)
Observations	9336	9336	9336	6233	6233	6233
R^2	0.21	0.21	0.21	0.20	0.20	0.20

Notes: The dependent variable is life satisfaction. All the regressions contain regional and wave dummies. All the regressions use regional unemployment rate calculated based on the sample data for the oblast level. The regional unemployment rate is demeaned. The entire results for the reported regressions are available upon request. Fully robust standard errors are shown in parentheses [*** $p-$value$< 1\%$, ** $p-$value$< 5\%$, * $p-$value$< 10\%$].