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Effect of Unemployment on Health Capital

Abdalali Monsef*[1], Abolfazl Shahmohammadi Mehrjardi[2]

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Abstract

This paper has considered the impact of unemployment on health capital in 136 countries during 2002–2010. The review of presented literature on health capital shows that the life expectancy has been considered as a proxy for health capital. Although, there are numerous studies that surveyed the mental and physical effects of unemployment, but there is no previous study in our knowledge that investigates the influence of unemployment on life expectancy in these countries. In addition, the effects of other macroeconomic factors including inflation, gross capital formation and development degree on life expectancy are analyzed as well. To do this, the data provided by World Bank is used and the presented model is estimated by panel data method. The results show that unemployment affects the life expectancy, negatively. Also, the effect of inflation on life expectancy is negative and statistically significant. However, gross capital formation is the main positive economic factors for improving longevity. The development degree of countries is positively related to the life expectancy. So, the average of life expectancy in developed countries is more than poor countries. Also, the urbanity is the main socio-environmental cause for life expectancy. Therefore, in terms of policy, it is recommended that the planning for creating the new job opportunities and enhancing the national incomes take in consider by policy makers in order to use of health capital benefits for economic development especially in developing countries.

Keywords: Economic Development, Life Expectancy, Panel Data Method, Unemployment, World Bank.
JEL Classification: I19, O50, E17.

1. Introduction

Unemployment as a macroeconomic variable has always been considered by researchers and economic policy makers. Based on existing literature, although, this variable has economic, environmental and psychological impacts but this factor can affect

[1] . Department of Economics, Payame Noor University, Tehran, Iran (Corresponding Author: a_monsef@pnu .ac.ir).
[2]. Department of Economics, Payame Noor University, Tehran, Iran (shahamohamadi@stu.yazd.ac.ir).

human health capital directly and indirectly as well. The impact of unemployment on individual health has been an important issue for researchers in many different areas (Ahn et al., 2004).

Employment can be considered as the most important indicators of health status. In this respect, having a job is an important determinant of self-esteem. It provides a vital link between the persons and society and enables people to contribute to society and achieve personal fulfillment. The World Health Organization (WHO) identifies a number of ways in which employment benefits mental health (Doyle et al, 2005). These include the provision of structured time, social contact and satisfaction arising from involvement in a collective effort. Therefore, the loss of a job or the threat of losing a job is detrimental to health (Marmot and Wilkinson, 2003). Also, long term unemployment can affect outcomes of individuals and families. While, a worker is unemployed, the worker's family income falls due to the lack of earnings, and that loss of income (which becomes larger as unemployment is longer) can affect the worker and the worker's household. The loss of income can decrease the quantity and quality of goods and services that worker's family can purchase. Further, dealing with the loss of income can worsen stress (Nichols et al., 2013). In addition to have higher levels of impaired mental health including depression, anxiety, and stress, there are many damages for physical health with unemployment. The unemployed tend to have chronic disease (cardiovascular disease, hypertension, and musculoskeletal disorders) and premature mortality (Dean and Wilson, 2009). Therefore, unemployment can influence mental and physical health of individuals and families. Accordingly and subject to the effects of unemployment on nation's health status, this study is concerned with understanding the impacts of this factor on life expectancy as a proxy for health capital by using 136 countries data for the period 2002-2010. Accordingly, we organize this paper as bellow: After the introduction, section 2 represents the theoretical base of the study. The background of the study is reviewed in section 3. The research model is presented in Section 4. Section 5, reports the major findings. Finally, section 6 is allocated to the conclusions.

2. Theoretical Base

Theoretically, there are about six models types that indicate the nexus between unemployment and health. These models are presented as follow:

2.1 Economic Deprivation Models

This is the classical sociological model. Unemployed people will have less money, and less money will – directly or indirectly – worsen the prerequisites for good health. The model also suggests a potential solution to the problem: by giving the unemployed support for subsistence, the most deleterious effects of unemployment could be alleviated. Studies utilizing an economic deprivation model include most of the historical studies of the inter-war period (Janlert, 1991). Unemployed people lacked food, adequate housing and clothing. These studies followed a tradition from older investigations of pauperism and ill-health (Marsh et al., 1938). During the period of post-war unemployment, the economic situation was quite different, and unemployment benefits were the rule in most countries. Although the post-war unemployed were not as affluent as the employed, the economic conditions for the unemployed were substantially better than during the inter-war period. In spite of this, many studies still showed a persistent link between unemployment and ill-health (Vidgerhous and Fischeman, 1978). Economic deprivation theory is still one of the dominant models in current studies (Dooley, 2003).

2.2 Control Models

These models encompass a wide variety of formulations, however they all state that the possibility to control (or feel that you can control) the environment is crucial to respond to a situation of unemployment. The most widely used control concept in public health is the demand-control model, which was developed by Robert Karasek and combines job demands with decision latitude. In the demand-control model unemployment can be regarded as a passive work situation, with low control and low demands in relation to working-life (Karasek and Theorell, 1990).

2.3 Stress Models

Although originally introduced by Walter Cannon, stress theory was popularized above all by Hans Selye (1956). These models attempt to relate social stimuli to the health effects in the human being using physiological mechanisms as intermediating factors (French and Kahn, 1962). A theoretical model outlining the relationships between psychosocial stimuli and health outcome within the frame of stress theory was presented by French and Kahn (1962). Different versions of this model have been presented by many authors, including by Kagan and Levi (1975). In the stress models, psychosocial stimuli

(e.g., employment termination) together with the psychobiological program (including effects of earlier environmental and genetic factors) evoke the stress mechanism, which incidentally will result in precursors of disease. In more recent developments of the model, coping and social support play an important role in moderating the stress reaction. Many unemployment studies have been carried out in this field. One of the classical plant closure studies, the so-called Michigan study from 1966, uses the stress concept explicitly (Levi, 1997).

2.4 Social Support Models

Theories of social support and social network are closely connected to the stress perspective. It is usual to differentiate between two different mechanisms for social support, the direct and the buffer effect. According to the direct effect model, lack of social network is supposed to have immediate consequences for health. The presence of human contact is looked upon as a fundamental need – when this is lacking it will result in unfavorable reactions. According to the buffer model, social support acts as a shield against different types of stress, e.g., unemployment. House et al. conducted a study on effects of unemployment within this theoretical tradition (House et al., 1986).

2.5 Models of Latent Functions

The idea behind these models is that work is supposed to contribute to a number of so-called latent functions. These latent functions include giving the day a time structure, providing opportunities for social contact with other people, contributing to status and personal identity for the individual, and providing an opportunity to strive towards collective purposes and shared experience. When these latent functions are lacking, ill-health may result (Warr, 1987).

2.6 Micro and Macro Models

Micro and macro models have strengths and weaknesses. Most micro models trace the experience of small groups of individuals usually selected either because they are unemployed and/or are ill. Thus the results cannot be acceptably generalized to the population at large. Macro time series are concerned with a measure of the interaction of unemployment and health at the aggregate national level. In macro models the precise link between the unemployment experience of an individual and the health experience of the same individual is lost in favor of the association of a measure of aggregate unemployment with a measure of aggregate health status. Both model types are liable to

error in describing what is happening at the national level. The panel data macro models are likely to be most accurate as they answer most of the criticisms mentioned above, but such data are scarce and expensive to collect. However, it is argued that macro time series models applied to data for subgroups of individuals may provide a low cost way to obtain a useful measure of possible interaction (McAvinchey, 1984).

In this study, a macro model is used to indicate the interaction between unemployment and health using a panel data model.

3. Background Review

The relationship between health status and unemployment has been well surveyed in the previous literature. There are many research papers that have considered the influences of unemployment on physical and psychological health status. So, in the most of them, unemployment, job losses and reemployment subjects have been considered in terms of impacts on psychological health. For instance, Linn et al. (1985), Shamir (1986), Frese and Mohr (1987), Bolton and Oatley (1987), Kessler et al. (1988), Hammer (1993), Lahelma (1992), Morrell et al. (1994) showed the negative impacts of unemployment on mental safety of intended groups so they reported a significant lowering of mental health among employed people who became unemployed. Also, Payne and Jones (1987), Liem and Liem (1988), Claussen et al. (1993), Wanberg (1995) (only about satisfied employed) found that unemployed people who got job again experienced significant improvement in term of mental health. Paul and Moser (2009) considered some cross sectional and longitudinal studies in order to investigate the influence of unemployment on mental health. According to the average overall effect size, the unemployed persons were more distress in comparison to the employed persons. Huber et al. (2010) selected a long-term unemployed group and found that returning to work had positive impacts on health, especially about the mental health of males. Reichert and Tauchmann (2011) found that mental health status of employees can be affected by the increase in threat of unemployment negatively.

Also, Schmitz (2011) analyzed the effect of unemployment on health using information from the German Socio-Economic Panel of the years 1991–2008. Although, unemployment was negatively correlated with health, but he did not find a negative effect of unemployment due to plant closure on health across several health

measures including: health satisfaction, mental health, and hospital visits. Pharr et al. (2012) suggested that the impetus for unemployment had a significant influence on mental health of intended persons as well. Marcus (2012) used German panel study data and showed that the mental health of spouses decreased due to unemployment almost as much as persons who directly unemployed. Breuer (2014) addressed the impact of economic activity on suicide mortality by using panel dataset in 29 European countries during 1999-2010. According to the results of this study the, unemployment factor had a positive effect on suicides. Also, in a recent study, Farre (2015) investigated the impact of Unemployment and Mental Health in the Spanish financial crisis in 2007. The results show that an increase of the unemployment rate by 10 percent due to raised mental disorders in the selected population by 3 percent.

Whereas, there are some studies that found no evidence about the significant effects of unemployment on psychological health such as Feather and O'Brien (1986), Schaufeli and Van Y-peren (1992). In following them, Schmitz (2011) investigated the effect of unemployment on health using German panel data during 1991–2008. He did not find evidence about the negative influence of unemployment on health subject to some health indices such as mental health, hospital visits and satisfaction. Laanani et al. (2015) studied the effect of unemployment on suicide rate in Western European countries during 2000-2010. They indicated that suicide rates were statistically related to the unemployment rates in these countries. But, this relationship was weak.

On the relationship between unemployment and physical health, Linn et al. (1985) indicated that the number of visits to the physicians and the sick days in bed for unemployed men is more than employed group. Kessler et al. (1988) showed a positive and significant relationship between unemployment and self-reported illness in a sample formed from southeastern Michigan high employed people. Martikainen (1990) indicated unemployment and mortality among Finnish men during 1981-1985. The relative total mortality among unemployed versus employed men has been evaluated by 1.93. Also, the relative death rate for circulatory diseases was 1.54. Morris et al. (1994) concluded cancer and cardiovascular diseases was popular between unemployed middle aged men. Lavis (1998) showed that men with longer unemployment duration died earlier. In recent studies, Martikainen et al. (2007) analyzed the impacts of unemployment and workplace downsizing on mortality in Finland. They did not find excess mortality among persons who had endured large reductions in

employment. Buchmueller et al. (2007) indicated that unemployment had negative effect on mortality especially about the deaths because of cardiovascular diseases and accidents. Lundin (2011) concluded unemployment was related to increased risk of mortality and alcohol-related hospitalization. Halliday (2013) investigated the mortality risk due to unemployment by panel data method and indicated that poor local labor market conditions ware increased the mortality risk of aged men workers. Mork et al. (2014) studied the outcomes of parental unemployment and child health using Swedish hospitalization data for 1992-2007 for children 3-18 years of age. He found that the children with unemployed parents are 17 percent more likely to be hospitalized than other children. Maruthappu et al. (2015) used multivariate regression analysis in order to analysis the connection between unemployment and prostate cancer mortality in OECD members during 1990-2009. The results indicated that the augment of unemployment increased the prostate cancer mortality.

Recently, Stroukal (2016), using an individual panel data, indicated the nexus between unemployment and health for the Czech Republic during the period of 2008-2011. He found that the effect of unemployment on poorer healthy people is greater among men than women. Toge (2016) presented a longitudinal analysis of income and financial strain about the health effects of unemployment. The results denoted that becoming unemployed was associated with decreased self-rated health in Europe for the period of 2008-2001.

Summing up, the overview of studies which focus on the connection between unemployment and health status indicates that unemployment can affects the mental and physical health of unemployed people and their families. However, the intensity of this contribution is some ambiguous as well. Also, there are few studies that used global data to investigate the impact of unemployment on health. Accordingly, this paper attempts to consider these notices.

4. The Model

As mentioned in previous sections, our purpose in this study is analyzing the nexus between unemployment and health status in 136 countries using a panel data method during the period 2002-2010. To do this, the life expectancy factor is considered as a proxy for health status. In addition to unemployment, the effects of inflation and capital information as macroeconomic factors on life expectancy are investigated as well. Also, the urbanization as a social factor is included in the model. In order to estimate the influence of

development level on the life expectancy, the research countries are classified into two groups based on gross national income. These groups are the countries that have the gross national income more than global middle income and the countries that have the gross national income less than global middle income. The present study enjoys from the date which has been provided by World Bank. Accordingly, the model (1) is presented as bellow:

$$LE_{i,t} = a_i + \beta_1 INF_{i,t} + \beta_2 UNEM_{i,t} + \beta_3 GCF_{i,t} + \beta_4 UP_{i,t} + \beta_5 DUM_{i,t} + \varepsilon_{i,t} \quad (1)$$

where LE is life expectancy at birth total, INF and UNEM indicate the inflation and unemployment rates respectively. GCF is gross capital formation (% of GDP of selected countries), UP is urban population (% of total population of selected countries) as a proxy for urbanization. DUM denotes a dummy variable that for countries that have the income more than global middle income is equal to 1 and εt indicates the regression error term. The equation (1) is evaluated by STATA software.

5. Results

In this section the effect of unemployment on life expectancy in136 countries is investigated by using panel data method. This relationship is performed in three stages. The First is checking the variables Stationary. The unit roots tests is a standard procedure in time series analyzes. For panel data, panel unit root tests have been proposed by Levin and Lin (1992), Im et al. (1997), Harris and Tzavalis (1999), Madala and Wu (1999), Choi (1999) and Levin et al. (2002). To indicate the stationary of the intended variables, in this paper, the Levin, Lin and Chu (LLC) test is used. The results of using LLC test is provided in Table 1:

Table 1: The Estimated Results of LLC Test

Variable	Statistic	Prob.
LE	-13.72	0.00
INF	-49.27	0.00
UNE	-14.11	0.00
GCF	-14.12	0.00
UP	-2.62	0.00

Source: Calculated by authors

Table 1 indicates that all of variables are stationary at 5% confidence level. The second challenge in panel data analysis is the answer to this question that which the Fixed Effect Model (FEM) or Random Effect Model (REM) is better? To solve this problem the hausman test is used to selecte FEM or ECM (Gujarati, 2004). Therefore, the result of hausman test is presented in table 2 as bellow:

Table 2: The Estimated Results of Hausman Test

Chi2 (4)	Prob.
72.77	0.00

Source: Calculated by authors

According to table 2, the fixed effect method can be selected to evaluation the model (1). Despite there are some additional problems, such as heteroscedasticity and cross correlation in countries units at the same point in time. So, the Likelihood ratio (LR) test is used to test heteroscedasticity. The results are indicated in table 3:

Table 3: The Estimated Results of Likelihood Ratio (LR) Test

Likelihood-Ratio (LR Chi2 (135))	Prob.
1457.58	0.00

Source: Calculated by authors

According to the presented Likelihood-ratio and prob. in the table3, there is the problem of heteroscedasticity. Therefore, the model 1 is evaluated by GLS to solve the heteroscedasticity. The final results of estimation are provided in table 4 as bellow:

Table 4: The Results of Estimation of Model (1) by GLS

Variables	Coef.	Std. Err.	z	P>|z|
INF	- 0.174	.0256	-6.79	0.000
UNEM	- 0.243	.0314	-7.75	0.000
GCF	0.184	.024	7.67	0.000
UP	0.195	0.011	18.26	0.000
DUM	6.44	0.491	13.12	0.000
Cons.	52.88	0.817	64.74	0.000

Source: Calculated by authors

According to the table 4, the results of the panel data estimations based on the GLS method show that all of variables are statistically significant at the 5% level. As can be seen, the coefficient of unemployment rate is equal to -0.243. This indicates that the effect on unemployment rate on life expectancy is negative as expected. However, the estimated coefficient of inflation rate (- 0.174) is less than unemployment coefficient rate indicating that the life expectancy has been affected by unemployment more than unemployment negatively. Also, the gross capital formation variable has a significant positive effect on life expectancy. On the other hand, the estimated value for urbanization is equal to 0.196. This means that, with the increase of one percent in urban population as an indicator of urbanization, the life expectancy increases by .195 unit or almost 71 days in intended countries. The coefficient of dummy variable is equal to 6.44, indicating that the average of life expectancy in the countries that have the gross national income (GNI) more than the average GNI in the world countries is more than poor countries by 6.44 years.

6. Conclusion and Policy Recommendation

The review of the literature that focused on the determinant of individual's and nation's health status shows that a wide range of studies have examined the impacts of unemployment on mental and physical health of individuals and their families. A considerable body of these studies showed the negative effects of unemployment on mental health. However, there are some studies that found little evidence for psychological and physical effects of unemployment on health. Therefore, in these studies the amount of the impact of unemployment on health status has been evaluated differently. While, to enhance health status, it is necessary that policy makers in all areas consider the health effects of macroeconomic factors such as unemployment. But to do this, decision makers need to know precisely how their policy in this area might influence health status. The life expectancy is a popular indicator as a proxy for health status which has been used by many researchers in order to indicate the health status. There are many studies which consider the determinants of life expectancy. In these studies the impact of factors such as the cost of health care, education, globalization, urbanization, income, food security on the life expectancy is evaluated as well. Generally, these factors can be classified into economic, social and environmental factors as well. Whereas, in our knowledge, the impact

of unemployment, as a macroeconomic factor which can affect the health status as mentioned above, on life expectancy have been neglected. Accordingly, this study attempts to determine the effect of unemployment on life expectancy in 136 countries by using panel data method during 2002-2010. The needed date has been provided by World Bank. In addition to unemployment, the impacts of inflation, unemployment and capital formation as economic factors on life expectancy have been taken into consideration as well. Also, the intended countries have been classified into two groups based on gross national income in order to estimate the impact of development degree on the life expectancy. These groups are included the upper middle and lower middle income countries. In addition to economic factors, the urban population has been used to as a social factor. Also, the unemployment and inflation have negative effect and the impact of unemployment on life expectancy is greater than inflation. Also, the results indicate that the capital formation, urban population and development level of countries factors have a positive and significant influence on life expectancy. So that, the life expectancy in the countries that have upper middle income is more than the countries that have lower middle income. Summing up, this study presents some recommendations for health sector policy makers to enhance the health situation of nations. The planning for reduce of unemployment can operate more efficiently than the inflation control policies. Also, the policies that increase the rate of capital formation and promote the development and national income will help to enhance the health status of each country.

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