Original Paper

The Original Measurement of the Unemployment Rate is Obsolete-Interpretation of the Unemployment and Inactivity is Cumbersome and Redundant

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Abstract

In a society which can be described by the single-earner family model, unemployment and the unemployment rate could be relevant category of the economy in general, and that of macroeconomics in particular. In the 20th century, the share of employed women rose gradually, and as a result the traditional family model disintegrated by the second half of the century. The predominance of the dual-income family and the single-adult household model (cannot be regarded as insignificant), which crowded out the single-earner family model, does not allow the grouping of the population according to labour market criteria in the earlier manner even logically and it is also not supported by actual practice. If we want to measure the joint proportion of the unemployed and the inactive, we can only compare it to the number of working-age population, as the employment rate is the number of the employed compared to the working-age population.

Keywords

employment, unemployment, unemployment rate, active, population

1. Introduction

With the direction and magnitude of socio-economic changes in European countries in the second half of the 20th century and then in the first decade of the 21st century, the traditional macroeconomic interpretation of unemployment and the unemployment rate derived from it have not only become disputed but, according many economist, it is not valid any more. The main reason is the change of the traditional family structure, in which the double income and the single adult family models replaced the single earner family model.

Unemployment must be measured for social and economic policy in general and, in particular, for rational budgetary policy that does not disregard the principle of solidarity. The continuous measurement of unemployment is necessary; the parameters of individuals that can be regarded as unemployed within their working age and actively searching for jobs must be defined because only based on this data unemployment benefits can be regulated.

2. Debate of Employment, Unemployment, Inactivity, Definition and Measurement of Inactivity

The dilemma of unemployment-employment is one of the most debated topics of macroeconomics, it is essential to determine the very reason and thus a macro management of unemployment. Up to the seventies, the debate was mainly focusing on whether it was involuntary or voluntary unemployment, and on frictions of labour market (Keynes, 1936). According to the monetarists, economic policy (monetary policy) is not able to permanently keep a low level of the rate of unemployment (Friedman, 1968), however they were also unable to explain the natural rate of unemployment including other institutional factors (Shimer, 2012). The early models developed in the seventies did not fully explain unemployment, as they were based only on available, offered and expected real and nominal wage (McGall, 1970; Mortensen, 1970). Distinctly from the classical approach, they assumed that the potential employees have no complete information. Employees were supposed to decide to begin to work based on the expected wage, similarly to the neoclassical approach, nevertheless the expected wage could be modified by the search of job itself and by processing of information. Critics of the job search models (Diamond, 1971; Tobin, 1972) noted that due to the transaction costs and monopolistic structures of the labour market, the determination of equilibrium is not evident. To the contrary, according to Mortensen (1982) the individually owned information of employers and unemployed has potential mutual advantages, and their usage might lead to multiple equilibria. Pissarides (1988, 2000) deals not only with the offer side, but also the demand (corporate) aspects of the frictions, as in search for jobs not just the assumed wage determines acquiring or losing a job. In the critical approach of Shimer (2005), in case of unemployed the probability of finding a job is correlated with cycles, while for the employed to lose their job is much more countercyclical.

The debates do not focus only around the reasons and treatment of unemployment and successful job search (or remaining employed). Other researchers of the labour market have published several studies, in which the authors have clearly expressed that they are very much unsatisfied with the present terminology of unemployment, inactivity and employment, and by the methodology of measurement. Furthermore, the magnitude and proportion of these categories as a result of the above problems is also questionable. Nevertheless, there is no agreement on the direction of further refinement of these definitions and measurements.

Norwood and Tanur in their (1994) publication demonstrated that due to the transformation of social and economic structures, the methodology of American labour market surveys needs to be changed also. Participation of women in the labour market has increased, simultaneously with the participation of minorities. It was accompanied by the increase in the number of part-time positions and in accordance with the aging society, by the extended employment of the elders. The definition of employment had to be adjusted, as both the interviewers or the interviewees in the survey had the same interpretation of it. Sometimes, companies lay off people only temporary with the possibility to rehire them at any moment. The laid off workers do not actively seek new employment, and they were categorized as inactive in the surveys, while their chances to find job is higher than for the ones laid of permanently. It was also problematic how to categorize their house work. If these people worked more than one hour in the recent period, they answered with a definitive yes, thus they were labelled as employed. The main lesson of Norwood and Tanur (1994) publication is that indicators of activity, inactivity and unemployment can be drastically distorted, especially as unemployed (actively seeking a job) and certain group of the inactive population might have similar characteristics.

Centeno and Fernandes (2004) were trying to answer the question, how to generate homogenous groups among those not employed. The traditional approach distinguishes two separate groups:

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unemployed—those not employed but looking for employment; and the inactive—those not employed and not looking for a job. However, in any observed time period (e.g., quarterly), 1-2 percent of the inactive population actually manages to find a job, and as such their exclusion from the unemployed is artificial. According to their hypothesis, within the group of inactive, there is a subsection that is marginally attached to the labour market, which can be 30-60 percent of the unemployed depending on the exact geographical location. It was proved on Portuguese data that the above group exists. It has different characteristics than the rest of the inactive population, as their chances to be employed is substantially higher. Therefore, in regards to the characteristics of this group, it is much closer to unemployed than to inactive.

Jones et al. (2003) had similar conclusions as Centeno and Fernandes, furthermore they pointed out why it might be misleading to use the "traditional" definition of unemployment. In the Nineties, significant wage inflation was registered in the UK, while unemployment rate was unchanged. This phenomenon was labelled as puzzle among economists, although it can be solved by simply regrouping the working age population. By examination of the employment trends of the UK, it can be seen that since the 80's the portion of inactive population have increased. The reason is not only the higher participation in tertiary education. They have found that both in-cases of female and male inactive population the proportion who has refrained from the labour market due to health reasons have increased, and it is especially true for the lower educated and older segments of the society. Their conclusion is that the not employed, all together (unemployed and inactive) mean the real labour supply.

Bicakova (2005) has similar findings, by analysing the labour market of the USA, the UK, and France. She argues that the theory of wage flexibility used in macroeconomics, which states that with flexible wages the unemployment rate might be low, but income concentration increases, do not give a full explanation to empirical researches as it does not take into account the change in the activity rate. To filter out the effect of long-lasting education, she has examined the group so-called primed age (25-64 years old) employees and she observed that wage in the lower income brackets can significantly influence inactivity. This phenomenon can be observed primarily in the U.S. and in the U.K, while in France it is not that case as the institutional structure of the labour market creates inflexible wages. Consequently, of her work, transition in between the status of inactive and employed, and employed and unemployed in case of low income cannot be differentiated from each other.

Kakwani and Son (2006) differentiate unemployment and underemployment. The latter one, according official statistics, is not part of the unemployed; furthermore, in labour market survey group members do not label themselves as unemployed. Especially in the developing countries can be observed that many people work in the so-called grey economy, but their income is lower than the subsistence wage. According to Kakwani and Son (2006) research in Brazil between 1995 and 2004, the traditional unemployment rate is substantially lower, without incorporating underemployment into the measure. Among women the difference in between the two measures is higher than among men, which indicates that women finding jobs in the grey economy is more likely. Similar effect can be seen when comparing poorer and richer regions. The modification of the definition of unemployment, based on the recent paper, has a different direction than previously said (Centeno & Fernandes, 2004; Jones et al., 2003; Bicakova, 2005), as not the inactive, but part of the employed might be regrouped into unemployed.

Dewan and Peek (2007) starting point is similar to the previously introduced model, the mainstream measures used to describe unemployment and employment are not able to, especially in developing countries, properly measure labour-market tightness (Note 1). Many things can fall into the category of "employment", such as 1 hour labour in the past period. For example, in India the unemployment

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rate—according to the western definitions—is in the segment of full employment 2-3%, meanwhile it only means that the poor take any possible jobs. Therefore, according to Dewan and Peek (2007) it is worth to create several subcategories within the groups of employed and inactive. The definition of underemployed is the person who works but due to its working environment would like to change job. The income and consumption level of the working poor does not satisfy even the minimal living standards. Among the inactive it is worth distinguishing the group of discouraged workers, who want and able to work, however gave up job search because they do not trust success. For these groups, labour and income security is different from each other and their access to the labour market is substantially limited, if they are unemployed or inactive. The discouraged workers not only in the developing countries, but also in the developed world might distort the labour market measures.

This is pointed out in the research paper of Gregg and Wadsworth (2010), who proved it on British data that the size of this group fluctuates with economic cycles. Recessions in the last three decades has increased in each case the number of permanently unemployed (statistically inactive), however at the beginning of prosperity their chance to be rehired is equal to the officially unemployed. Their further comment, which fits with the previous results of Jones et al. (2003) that the increasing proportion of male inactive in the last three decade, and the observation of decreasing unemployment among the male population can be traced back to the previously described phenomenon. According their opinion, labour market institutions usually perform well to help the unemployed to be rehired, however the problems of lower educated and older inactive population are not managed properly by the same institutions.

Azmat et al. (2006) has pointed out that in the developed economies the difference in between male and female unemployment rate has disappeared in several countries, and thus the mainstream literature does not deal with it. However, this gender gap in several OECD countries (Spain, Greece, Italy and although in a smaller extent but also in France and Czech Republic) still exists. The explanation can be found in the concept of human capital, the level of skill among married and especially among females with children is lower, and thus their employment is also lower. The difference is attributable to the factor that the working ability of those women who leave the labour market due to family decreases, as in their absence new methods and processes, technology might be introduced and they are unable to acquire them. Furthermore, married women without a child might be treated with disadvantage, due to the expectation that they might leave for maternity eventually and their labour might erode. Labour market institutions, trade unions and minimal wage—do not allow the differentiation in case of low wages, and as such assuming same level of wage the women with lower or decreasing human capital are in a disadvantageous position compared to men. The authors are noting, that in the inactivity rates, the similar gender gap can be discovered, which has even got wider by the increased labour market participation of women.

Gailhard and Kataria (2014) introduce several factors, which might explain the flow between inactive and employed. As German data (similarly to other publications) shows that the probability to be reemployed is similar both in case of unemployed and inactive, and as such the differences cannot be simply explained by active job search or no search at all. They examine the urban and rural employees based on education, gender and marital status. Substantial fraction can be found based on place of living and marital status, and by aging the probability of inactivity increases.

Amable et al. (2011) analyzed the effect of labour, product and financial markets on unemployment and inactivity. Their works is different from the other similar papers as they take into account the transition between unemployment and inactivity, and also inactivity and employment. Their results show that certain institutions (unions, taxation, etc) influence the proportion of unemployment and inactivity

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equally, and therefore there is no reason to differentiate among these groups. Other macroeconomic variables have different effects, for example the increase of productivity is enhancing the employment in a way that lower skilled labour is pushed into the category of inactive. The education augmented model shows that the group of unemployed and inactive can be well distinguished. At the same time, if the analysis is restricted to the group of prime age employees (who most likely would not participate in tertiary education), similarly to Bicakova (2005), then the difference between unemployed and inactive disappears.

According to Nicaise (2007) even the inactive, so those who neither work as employees and nor looking for a job cannot be regarded unproductive from an economic standpoint, as they choose to be inactive either for their own benefit, or for the benefit of the others (e.g., family). Due to the above, the institutional structure of the labour market and the social protective or preventive net should be built not only to support short term unemployment but also to enhance productive activities.

János Kornai (2011) categorizes the participants of the labour market into four distinct groups. Apart from traditional categorization of employed and unemployed, inactive are divided into two sub-categories, those who do not want to work under any condition (children, handicapped people) and those, who are capable of working but do not want to participate on the labour market. In the denominator of the unemployment rate, distinctly from the mainstream terminology of the labour statistics, not the active population but the full population is included. In his paper, the author primarily focuses on and analyses the extra labour requirement of capitalism and compares it to the lack of sufficient labour among the more developed ex-socialist countries.

3. Some Observations to the Review of the Literature

There is a remarkably wide, complex and detailed literature of labor market analyses. Several criticism and objection can be found concerning the interpretation of employment, unemployment and inactivity. There are no significant disagreements, the differences rather come from the different ways of interpretation. There is a way of analysis in every country and it is inevitable that more solutions and definitions come up when we statistically consider the labor market groups because of the necessary compromises. What is missing is the criticism of the calculation method and the scientific interpretation of today's official economic policy.

According the actual and widely used official interpretation and measurement of unemployment rate:

- is the unemployed expressed as the percentage of active population (for the age group of 15-74);
- In which active population—who is present on the labor market both employed and unemployed.

This definition is used by:

- ILO;
- National statistical offices;
- Eurostat;
- Macroeconomic text books.

My view is, based on the drastic social change in the last cca. 100 years, is substantially the opposite. In a society predominantly determined by the single-earner family model, which was typical until the I. World War, any working age group could be divided into active or inactive segments and then the active was divided into employed and unemployed. In this social and economic setting, the previous definition was valid.

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However, at present it is not acceptable anymore due to the typical dual income and not insignificant proportion of single-adult family model, it is not possible to divide the population into active and inactive segments. Therefore, unemployed and inactive cannot be separated, thus comparing the unemployed to the active population is not a valid measurement and refuses to accept the changes in society. Consequently, by the inseparability of the active and inactive, the number of employed cannot be compared to the active population.

According my opinion, the first paragraph of my paper clearly states and argues the above statement ("Debate of employment, unemployment, inactivity, definition on measurement of inactivity"), including the overview of related literature. It is also clear, that none of the references fundamentally argues against the obsolete practice of calculating the unemployment rate and even more importantly it is theoretical foundation. Furthermore, I have found typical in almost all the referenced literature and I am fully in line with it, that one ratio/one number is not enough to describe the full labor markets and tendencies. If due to any reason only one ratio should be used, then I suggest to use the number of employed compared to the working age population.

4. Unemployment Cannot Be Interpreted as a Macroeconomic Category, If in a Society Dual-Income or the Single-Adult Family Models Are Typical

In a society which can be described by the single-earner family model, unemployment and the unemployment rate could be relevant category of the economy in general, and that of macroeconomics in particular. The head of the family, typically the man, was employed as a wage earner, while the other adult member of the family, typically the woman, managed the household and brought up the children. The division of labour within the family unambiguously designated the members of the active and inactive groups. The man as a wage earner was a member of the active group, while the woman working in the household and bringing up the child (children) was a member of the inactive group. Employment for working age men provided for the maintenance of their families, hence they could lose their jobs only for a transitory period because it jeopardised the upkeep (financing) of the family, consequently, the division of the working age population into employed and unemployed was justifiable. If the employed became unemployed, the search for a new job was a must for him. Thus, the unemployment rate applied to measure unemployment which related the number of the unemployed to the number of the working age actives was justifiable and an expedient method of measurement.

The predominance of the dual-income family and the single-adult household model (cannot be regarded as insignificant), which crowded out the single-earner family model, does not allow the grouping of the population according to labour market criteria in the earlier manner even logically and it is also not supported by actual practice.

If both the working age adult members of the family (double-earner family model) or the single adult member (single-adult household) are wage earning employees or a family member just looking for paid employment, then it is not possible to split the working age population into primarily active and inactive categories as it had been possible in the society characterised by the single-earner family model. Working age people are either employees or want to become employed, because financial needs or professional and intellectual commitments force or encourage them to do so. Thus, there is no *a priori* inactive group within the working age population, because there are no inactive family members of decisive magnitude. Individual cases where one family member (such as the female member of the family) "only" manages the household and brings up the children cannot be excluded. Furthermore, those studying in secondary and tertiary education without working at the same time are inactive for a

transitory period and so are the former actives, who have lost their ability to work. The share of the individual cases, the specific position of students of secondary and tertiary education without working at the same time (who are inactive until they complete their education and are generally active thereafter) and the number of actives, who have lost their ability to work cannot determine the operation of the labour market and the notional framework of macroeconomics.
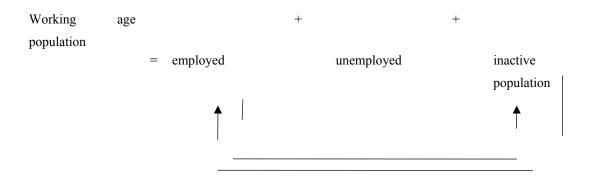
If the primary grouping of the working age population into active and inactive is not possible, nor is it possible to follow the two-step grouping typical for society with the single-earner family model. In the case of the two-step grouping (in the first step the working age population can be divided into the groups of the active and the inactive and then, in the second step, the active group is divided into employed and unemployed), it is necessary that there be a continuous transition between the employed and the unemployed, there be no transition between the active and the inactive group, that is, the inactive and the employed, and the inactive and the unemployed. In a society characterised by the double-earner family model and the single-parent household, it is *ab ovo* not possible to separate the unemployed and the inactive family members permanently, because they are merged. In other terms, if the notional differentiation between the unemployed and the inactive is accepted, then it must also be accepted that the transition between the unemployed and the inactive cannot be excluded and the movement can be continuous in both directions.

The relationship between the working-age groups can be described with equations as follows (=sign expressing the direction of movement).

On the single-earner family model:

$$\text{Working age population} = \text{active population} + \text{inactive population} = \begin{array}{c} \text{employed} \\ + \\ \text{unemployed} \end{array} + \text{inactive population}$$

On the dual-income and single-adult family models:

$$\text{Working age population} = \text{employed} + \text{unemployed} + \text{inactive population}$$

In the 20th century, the internal structure of society changed as a result of the processes taking place in the societies of advanced countries. The general spreading of the dual-income family model was decisive in this transformation supplemented by the single-adult households, which cannot be regarded as peripheral.

If we continue to divide the working age population into groups of employed, unemployed and inactive in accordance with the former triple notional distinction, we also need to accept that the unemployed and the inactive groups cannot be measured separately and defined in an exact manner at macro level

(at the level of the national economy), at best a categorisation may be opined at the level of the individual. Therefore, unemployment and inactivity in themselves cannot be measured, hence they cannot be interpreted. If we want to measure the joint proportion of the unemployed and the inactive, we can only compare it to the number of working-age population, as the employment rate is the number of the employed compared to the working-age population.

$$employment\ rate = \frac{number\ of\ the\ employed}{working\ age\ population}$$

Employment can be explained and a detailed methodology is needed for the statistical recording of the employed in which the minimal conditions of employment should be specified.

Like the absolute number of the unemployed and the unemployment rate was not sufficient to the detailed analysis of the labor market and the macroeconomy, the number of the employed and the employment rate is also not a sufficient indicator. A balanced scorecard which starts from the employment can characterize and explain the state and the change of the labor market.

5. Grouping of Working Age Population according the Traditional Single-earner Family Model

In the history of mankind, the development of the family and the distribution of labour between the genders were determined by the possibility and the needs of the early natural economy (hunting, shepherding, land cultivation) (Weber, 1979). Specific economic activities did not spread across society in the same manner or at the same time at the various geographical locations. Descriptions in economic history are not uniform either, but there is a general agreement concerning the fact that women played an outstanding role: women were the permanent; men were the ad hoc labourers. The evolving house community meant the family household of a small family, including parents and children (Weber, 1979). At that time, the place of residence and the place of work were not yet separate, the two were intertwined.

It was technical development and the broadening division of labour which forced the separation of the home (place of residence) and the place of work. After the industrial revolution, partly as its consequence, a family model evolved which can be regarded today as traditional, where the man was the head of the household, who supported (financed) the family (his wife and children) out of the wages he received for his work done during mandatory working hours in a physical or intellectual capacity. The female member of the family managed the household, looked after and brought up the children.

A man of working age, who is the head of the family, could only be active, financing the family out of his wages earned by being employed. He could not be unemployed voluntarily (at least not for a longer term), if he did become unemployed for reasons beyond his control, he had to find work in order to support his family. The female member of the family (the wife) could not take on work as an employee, she could neither be employed, nor be unemployed through the temporary or lasting termination of her employment, hence she was necessarily inactive.

When measuring the labour market and describing its rules of operation, the population of working age is put into three categories according to the generally accepted macroeconomic approach: the employed (E), the unemployed (U) and the inactive (not in the labour force, N). By consensus (based on the methodology of statistical recording), a person is employed if he worked full or part time (Note 2) during the week preceding the survey; a person is unemployed if he did not work but was verifiably in search of work during the preceding four weeks; and a person is inactive—based on the principle of residual—if he is not employed and not unemployed.

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There is a simple logical foundation for this categorisation: a part of the working age population works as an employee at the place of work or, if he is not actually working, he is looking for a job; the other part does not wish to work as an employee because she is bringing up children and managing the household or cannot work as an employee because s/he is studying or s/he is no longer able to work as an employee because of the loss of the ability to work. *In accordance with the structure and operation of the traditional single-earner family model, the working age population is split into active and inactive on the basis of categorisation according to activity and inactivity is unambiguously defined and there is no transition between them. While the transition in-between the subgroups of employed and unemployed within the category of active population is continuous. By definition, neither the unemployed, nor the inactive work as employees, but there is no possible transition between two groups, because the unemployed is looking for a job and could become an employee, while the inactive is not looking for a job and does not wish to be employed.*

Based on the group definition of the traditional single-earner family model, it is the statistical measure introduced and used exclusively in macroeconomics:

$$unemployment\ rate = \frac{number\ of\ unemployed(U)}{active\ population\ (E+U)}$$

and

$$activity\ rate = \frac{active\ population\ (E+U)}{working\ age\ population\ (E+U+N)}$$

6. Disintegration of the Single-earner Family Model

In the 20th century, the share of employed women rose gradually, and as a result the traditional family model disintegrated by the second half of the century. Sociological research of the family links the beginning of the change to the labour shortage following the I. World War (Giddens, 2006). Military losses, the dead and the severely wounded were largely men who could be replaced both at family (micro) and production (macro) levels by women employed (Note 3). On one hand, supporting the family (the children), in addition to managing the household, forced women to become paid labourers on the labour market, while on the other hand male labour lost in agriculture, industry and services could only be replaced by women. The change was forced and it could have been transitory, but it turned out to be permanent. The process was not reversed, rather, it continued and the share of the women increased gradually within paid employees. The reasons are manifold, of which the decisive ones can be highlighted, even if not in a breakdown by sharply distinguished groups.

Reasons stemming from the transformation of customs concerning childbirth:

- birth rates declined;
- the average childbearing age was continuously extended, thus paid employment became characteristic before childbirth, then, after delivery, paid employment continued or began just then for a series of individual reasons, including the professional need to work to escaping the tediousness of household chores at home;
- smaller families require less time spent at home.

Reasons stemming from the operation of the household and the changes in the division of labour:

- the increasingly wide automation of households substantially reduced the time needed to manage a household, so the time required to be spent at home lessened;
- gradually, more and more of the household chores were done by men as well.

Reasons stemming from the need to earn money:

- the loss of a job of a male member of the family (whether transitory or lasting unemployment) could be made up for by the income of the female member of the family;
- one income is not enough, two incomes are needed for the lifestyle that the family wished to follow.

Reasons stemming from the changes in women's thinking and acting:

- mothers who were maidens and never married opt for the single-parent household;
- after the break-up of the family (divorce), women are forced into one-parent families;
- single and childless adults live in independent households.

Reasons stemming from changes in labour market demand:

- the spreading of part-time employment is typical largely among the female employees.

These reasons, even if taken one at a time—are not negligible by any means, and when taken together, they are particularly effective and deserve extraordinary attention. Their development and spreading were assisted and influenced by socio-economic changes, first and foremost by urbanisation, the increase in average age and the extension of the pension schemes and social security.

Ultimately, the traditional single-earner family model disintegrated by the second half of the 20th century. The concrete reasons can be unified in two global processes. One is an intellectual process: the feminist movements of the 1960s, 70s and 80s, starting out from the desire for the fulfilment of personality, largely achieved the endeavours aimed at equality (but not in full, because the selection of leaders and the setting of wages continue to be exceptions to this day). This opinion is represented by Giddens (2006, p. 582) who, referring to Crompton (1997), writes: "In the last decade, women took major steps towards becoming truly equal to men, and their economic activities play a key role in this process".

The societal changes and economic process was both inevitable and unavoidable. The return of single earner families is an unrealistic assumption, the female career and economic independence are the typical symptoms of a modern society. According to Esping-Andersen (1996), the process is irreversible and the society has to accommodate to it. A possible serious disadvantage of the above process is the low productivity rate. Nevertheless, if the juvenile unemployment decreases, if the work occupation and family obligation of women can be harmonized with not overly costly services, then the higher productivity rates might be reproduced.

As a summary, Giddens (2008) might be and have to be cited: Labour is essential in the modern society and employment is a prerequisite of independent life. Furthermore, it can be continued and completed that employment is almost always a condition to higher family income and thus extra consumption.

7. Spreading of the Dual-Income and Single-Adult Family Models

The transformation within the family began prompted by economic pressures after the I. World War and continued due to intellectual and social motivations in the first decade of the third millennium. In the advanced European countries, the employment effect of the change in the role of women approaches or may even have reached the upper cut-off point of the female employment rate. The upper cut-off point can be interpreted as an average value partly because the process is not even in time or space (e.g., by country), and fluctuation may be a permanent feature. On the other hand, the thinking and actions of individuals, whether female or male, may differ from the average for several reasons, thus the employment effect of the traditional single-earner family model does not cease, but it declines substantially.

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Statistical data unambiguously verify the results of the century-old process (Table 1). It is not yet possible to decide whether the condition signified by the statistical data is just an interim result but definitely close to the final result or it is the end result itself.

In ten countries of the European Union (Germany, France, Italy, Belgium, Spain, Portugal, Greece, Sweden, Denmark and Ireland) and in two countries outside the European Union (Norway and Switzerland), the breakdown by sex of employees approached 50 per cent each in the period between 1999 and 2008 with the exception of two countries (Greece and Italy). The share of women was above 47 per cent in France, Sweden, Denmark and Norway; it was between 44.6 and 46.2 per cent in Germany, Belgium, Portugal and Switzerland, while it was 43.7 per cent in Ireland, and 42.1 per cent in Spain. Moreover, in almost every country—including in Greece and Italy—the share of female employees increased. The only exceptions are Sweden and Norway where the ratio of 47-48 per cent—which could be regarded as the upper cut-off point for female employment—had been achieved earlier and the annual data hover around these figures.

Beside the double-earner family model replacing the traditional single-earner family model, the single adult family model represents a non-negligible share which, in the case of women, either unifies the demand for professional fulfilment related to paid employment with the economic pressure to earn money, or the need to finance the upkeep of the household is the motivating factor.

Instead of the single-adult family model, the name tag of single-adult household may be warranted as a collective term, if the notion of the family includes the existence of a child (children) and both parents. Single-adult households can be divided into two main groups: in one of them the mother or father supports the child (children) alone, hence the single-adult family description is still acceptable, while in the other group, childless women and men are single self-sustainers. Both groups can be divided into three subgroups, each by the same criteria: single sustainers or self-sustainers right from the beginning, single widowed sustainers or self-sustainers, and single divorced sustainers or self-sustainers. The distinction between the former groups and subgroups can be warranted and expedient for several reasons; for the macroeconomic interpretation of employment and unemployment, such a detailed specification is not needed, the use of the single-adult household as a collective term may suffice. Naturally, the possibility of benefits for orphans in the case of widowed singles or that of child support in the case of divorced singles should not be forgotten, but the existence of either financial transfer does not exclude the, demand—in a better case—or need, in a worst case, for earning money by employment in single-adult households.

A few selected data from Great Britain with indicative force: two fifths of all marriages end in divorce (Giddens, 2006, p. 183); in 2003, the number of single-parent households was 12 per cent, in which the single parent was largely the woman (op. cit., p. 185), maiden and never married mothers accounted for 9 per cent of all the families with dependent children at the end of the 1990s (op. cit., p. 185).

While in a single-adult household paid employment by women is definitely linked to economic pressures, in the dual income family model the income level provided by the two earners needed for the desired lifestyle and the women's demand for independence and professional fulfilment, representing two different criteria, are merged. They cannot be unambiguously separated even at the level of individual specific families, so the statement is self-evident that division is not possible at any level of aggregation of families. If the two criteria cannot be separated when starting out from the reasons, one of the criteria—the need for independence and professional fulfilment—can be well approached from a different direction.

The demand for professional fulfilment definitely, that for human independence presumably relates to higher-level of education but at least not independent of it. Because of this, the composition of students in tertiary education by gender is not surprising or unexpected in the European Union.

Between 2000 and 2011, in the 27 countries of the European Union the share of female students in tertiary education ranged between 53.5 and 55.5 per cent with some slight growth since 2000. The differences are slightly larger by country (Table 2). Based on the 2011 data, the countries can be categorised into five groups. The women's share is the highest in the three Baltic countries (Latvia, Estonia, Lithuania), followed by Slovenia, Slovakia and Sweden (between 59.0 and 61.1 per cent). Denmark, Italy and the Czech Republic hardly lag behind the vanguard (between 57.2 and 57.6 per cent). The United Kingdom, Romania, Hungary, Belgium, Bulgaria and France are at around the average of the European Union. There are eight countries where the women's share is below the EU average but above 50 per cent (Finland, Spain, Portugal, Austria, Luxembourg, the Netherlands, Ireland and Germany). There are only two countries (Greece and Cyprus) with a share below 50 per cent, yet it should be added that the women's share exceeded 49 per cent in both countries and their share was above 50 per cent also in Greece before 2008 as well as in Cyprus before 2007 (with the exception of two years). The recent member—Croatia—topped up the EU average with its 57.3 per cent.

Data from a few countries outside the European Union provides an opportunity for comparison, of which the United States of America should be underlined first and foremost, where the ratio of women in tertiary education has been a relatively stable 56-57 per cent. In Iceland and Norway their share exceeds 60 per cent, in Switzerland it is at around 49-50 per cent, while it is the lowest in Turkey and Japan around 45-46 per cent (Table 3).

Within the European Union, the ratio of women and men by specific area of tertiary education is fully in line with preliminary expectations (Table 4). In 2010, there were two specialised areas where the predominance of women was observed in the 27 EU Member States: their share was 74.0 per cent in health care and nursing and 65.4 per cent in arts. As against this, they represent 25 per cent in engineering and technical sciences and 37.6 per cent in mathematics and computer science. Women constitute a substantial majority in the field of social sciences, economics and law (58.3 per cent) and in other areas not detailed (73.5 per cent), which is not negligible (making up 9 per cent of all students). The data for the countries are roughly the same in education related to services and in agricultural and veterinary sciences (49.4 per cent each).

The statistical data underpin the preliminary assumption that women's demand for independence is related to financial independence, which led to the utilisation of the opportunities to study.

8. Final Remarks

The use of employment rather than unemployment is not only a macroeconomic correction; it also challenges a number of interrelations and tenets of macroeconomics related to the notion of unemployment and the unemployment rate excluding some and requiring correction in the case of others. Nevertheless, it should be emphasised again that the regulation for determining the unemployment benefit and eligibility to other transfer payments related to unemployment is independent from the critique of unemployment which can be used and measured in macroeconomics and the change in categories stemming from the acceptance of such criticism. If it is a goal of social policy that the income of the unemployed should not decline below the level of subsistence minimum during the period of unemployment or at least a part of it, then cash or in-kind support is needed. The existing and operational social insurance and poverty policy systems are the results of processes

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spanning several decades in individual countries, certain elements of which are identical or similar or may differ. It is the responsibility of governments and within their decision-making competence to regulate the system of support through determining the financial framework within public finance policy. Both the regulation and the operation require ongoing statistical recording; hence unemployment must be defined in a legal sense in order to enable supporting the unemployed which, however, cannot be already an adequate notion (accurately reflecting the essence) for macroeconomics.

Table 1. Total Employment by Sex (Numbers in Thousands)

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Germany[1,2]										
Man	20 659	20 680[3]	20 629	20 336[4]	19 996[3]	19 681[5]	20 135[6]	20 462	20 890	21 188
%	56,8	56,5	56,0	55,7	55,2	55,2	55,1	54,8	54,7	54,7
Woman	15 743	15 924[3]	16 187	16 200[4]	16 176[3]	15 978[5]	16 432[6]	16 860	17 272	17 546
%	43,2	43,5	44,0	44,3	44,8	44,8	44,9	45,2	45,3	45,3
France[1]										
Man	-	-	-	-	13 303	13 316	13 350	13 382	13 522	13 670
%	-	-	-	-	53,9	53,7	53,4	53,2	52,9	52,7
Woman	-	-	-	-	11 393	11 485	11 628	11 752	12 043	12 243
%	-	-	-	-	46,1	46,3	46,6	46,8	47,1	47,3
Italy[1,2]										
Man	13 330	13 461	13 574	13 685	13 769	13 622[3]	13 738	13 939	14 057	14 064
%	63,89	63,42	62,74	62,43	62,21	60,80	60,88	60,64	60,53	60,09
Woman	7533	7764	8060	8236	8365	8783[3]	8825	9049	9165	9341
%	36,11	36,58	37,26	37,57	37,79	39,20	39,12	39,36	39,47	39,91
Belgium[1,2]										
Man	2321[3]	2368	2346	2339	2317	2344	2387	2391	2444	2461
%	57,9	57,9	57,9	57,5	56,9	56,9	56,4	56,1	55,8	55,4
Woman	1686[3]	1725	1705	1731	1753	1785	1849	1872	1937	1985
%	42,1	42,1	42,1	42,5	43,1	43,1	43,6	43,9	44,2	44,6
Spain[1,2]										

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Man	9434	9821	10 151	10 365	10 653	10 934	11 389[3]	11 743	11 987	11 721
%	64,2	63,3	62,9	62,3	61,6	60,8	60,0	59,5	58,9	57,9
Woman	5256	5685	5996	6265	6643	7037	7084[3]	8005	8362	8537
%	35,8	36,7	37,1	37,7	38,4	39,2	40,0	40,5	41,1	42,1

Portugal[1, 2]

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Man	2721	2777	2819	2825	2797	2789	2765	2790	2789	2797
%	55,3	55,2	55,0	54,9	54,5	54,4	54,0	54,1	54,0	53,8
Woman	2201	2256	2302	2321	2331	2339	2357	2370	2380	2401
%	44,7	44,8	45,0	45,1	45,5	45,6	46,0	45,9	46,0	46,2

Greece[1, 2, 3]

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Man	2554	2578	2589	2623	2666	2680	2706	2726	2762	-
%	63,2	62,9	63,3	62,6	62,2	61,9	61,8	61,2	61,1	-
Woman	1486	1520	1521	1568	1621	1650	1676	1727	1758	-
%	36,8	37,1	36,7	37,4	37,8	38,1	38,2	38,8	38,9	-

Sweden[1,2]

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Man	2121	2167	2203	2197	2191	2186	2225[3]	2273	2390	2422
%	52,1	52,1	52,0	51,8	51,7	51,9	52,2	52,4	52,6	52,7
Woman	1946	1992	2036	2047	2043	2027	2038[3]	2067	2150	2171
%	47,9	47,9	48,0	48,2	48,3	48,1	47,8	47,6	47,4	47,3

Denmark[1, 2]

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Man	-	1458	1456	1449	1448	1452	1456	1482	1476	1497
%	-	53,6	53,4	53,4	53,8	53,4	53,3	53,2	53,1	53,0
Woman	-	1264	1269	1266	1245	1269	1277	1304	1303	1330
%	-	46,4	46,6	46,6	46,2	46,6	46,7	46,8	46,9	47,0

Ireland[1, 2]

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Man	947	990	1014	1026	1039	1065	1113	1167	1202	1187

Year	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
%	59,5	59,2	59,1	58,3	58,0	58,0	57,6	57,7	57,2	56,3
Woman	644	681	703	734	751	770	818	855	900	922
%	40,5	40,8	40,9	41,7	42,0	42,0	42,4	42,3	42,8	43,7
Norway[1]										
Man	1209	1212	1214	1210	1198	1201	1211	1251[2]	1289	1332
%	53,5	53,4	53,3	52,9	52,8	52,8	52,9	53,0	52,8	52,8
Woman	1050	1057	1064	1076	1071	1074	1078	1111[2]	1154	1192
%	-	-	-	-	47,2	47,2	47,1	47,0	47,2	47,2
Switzerland[1, 2, 3]										
Man	2157	2172	2190	2175	2177	2173	2172	2214	2259	2289
%	55,9	56,0	55,6	54,9	54,9	54,9	54,7	54,7	54,8	54,1
Woman	1705	1707	1748	1790	1780	1780	1802	1837	1803	1940
%	44,1	44,0	44,4	45,1	45,1	45,1	45,3	45,3	45,2	45,9

Note. [1] Persons aged 15 years and over; [2] Included armed forces and conscripts; [3] May; [4] Prior to 2002: April; [5] March; [6] Methodology revised; data not strictly comparable.

F: [1] Persons aged 15 years and over.

O: [1] Persons aged 15 years and over; [2] Excluding conscripts; [3] Methodology revised; data not strictly comparable.

B: [1] Persons aged 15 years and over; [2] Including professional army; [3] June.

Sp: [1] Person aged 16-74 years; [2] Excluding compulsory military service; [3] Methodology revised; data not strictly comparable.

P: [1] Persons aged 15 years and over; [2] Data not reliable; coefficient of variation greater then 20%.

G: [1] Persons aged 15 years and over; [2] Second quarter; [3] Excluding conscripts.

Sv: [1] Person aged 15-74 years; [2] Including professional army; excluding compulsory military service; [3] Methodology revised; data not strictly comparable.

D: [1] Included armed forces and conscripts; [2] Persons aged 15 to 66 years.

Í: [1] Persons aged 15 years and over; [2] Second quarter.

N: [1] Persons aged 15 to 74 years; [2] Prior to 2006: persons aged 16 to 74 years.

Svájc: [1] Civilian labour force employed; [2] Excluding armed forces and seasonal border workers; [3] Second quarter.

Source: http://laboursta.ilo.org/STP/quest.

Table 2. Share of Women in Tertiary Education in the EU

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Austria	51,0	51,8	52,7	53,0	53,3	53,7	53,8	53,7	53,3	53,2	53,1	53,4
Belgium	52,3	52,8	53,1	53,3	53,8	54,4	54,7	54,9	55,0	54,8	55,2	55,3
Bulgaria	57,3	56,3	54,0	52,8	52,5	52,1	53,5	53,7	55,3	55,6	55,5	55,1
Cyprus	57,1	58,0	54,8	49,5	47,9	52,0	50,9	50,1	49,0	46,8	46,1	49,8
Czech Republic	49,8	50,1	51,2	50,7	51,2	52,6	53,8	54,7	55,5	56,5	56,8	57,2
Danmark	56,9	56,5	57,5	57,9	57,9	57,4	57,4	57,6	58,0	58,2	58,1	57,6
United Kingdom	53,9	54,5	55,2	55,9	57,0	57,2	57,3	57,2	57,2	57,0	56,6	56,4
Estonia	58,5	60,1	61,5	61,5	61,8	61,5	61,6	61,1	61,7	61,9	60,9	59,7
EU (27 Countires)	53,5	53,9	54,4	54,5	54,8	54,9	55,1	55,2	55,3	55,5	55,4	55,2
Finland	53,7	53,9	54,1	53,5	53,4	53,6	53,9	54,0	54,2	54,0	53,8	54,0
France	54,2	54,1	54,8	55,0	55,0	55,2	55,3	55,3	55,2	55,2	55,0	54,8
Greece	50,0	51,1	51,2	51,0	51,7	51,1	50,9	50,4	50,1	:	49,8	49,3
Holland	50,0	50,5	50,7	51,0	50,9	51,0	51,1	51,5	51,7	51,8	51,8	51,8
Croatia	:	:	:	53,2	53,7	53,8	54,1	54,1	54,6	55,0	56,3	57,3
Ireland	54,1	54,7	55,1	55,7	55,2	54,9	55,1	55,2	54,2	53,9	52,4	51,7
Poland	57,5	58,0	57,9	57,8	57,6	57,5	57,4	57,4	57,6	57,9	59,2	59,9
Latvia	63,4	61,8	61,5	61,7	62,3	63,2	63,3	63,9	64,4	63,7	62,7	61,1
Lithuania	60,0	59,8	60,5	60,0	60,0	60,1	59,9	60,0	59,9	59,2	59,4	59
Luxemburg	:	:	:	53,3	:	:	51,6	:	:	:	51,9	52,1
Hungary	53,9	54,8	55,3	56,7	57,3	58,4	58,5	58,3	58,0	56,8	56,5	55,9
Malta	53,3	54,8	56,9	56,9	55,9	56,3	57,0	57,4	57,9	56,5	56,3	56,0
Germany	48,1	48,7	49,0	49,5	49,4	49,6	49,7	49,7	49,7	51,4	51,3	50,6
Italy	55,5	56,0	56,2	56,2	56,2	56,6	56,9	57,2	57,4	57,7	57,6	57,6
Portugal	56,5	57,0	57,0	56,6	56,1	55,7	55,2	54	53,5	53,4	53,3	53,4
Romania	51,8	53,5	54,4	54,3	54,8	54,6	55,4	56,1	56,3	56,3	56,4	56
Spain	52,9	52,5	53,1	53,1	53,8	53,7	53,9	54,0	54,0	54,1	53,9	53,9

Sweden	58,2	59,1	59,5	59,6	59,6	59,6	59,6	59,9	60,3	60,1	59,4	59,1
Slovakia	50,4	51,3	52,1	53,1	54,1	55,3	57,7	58,9	60,3	60,5	59,7	59,6
Slovenia	56,1	56,1	57,5	56,2	56,9	57,8	58,4	58,3	58,1	58,0	57,8	60,6

Source: Eurostat, 2013. (http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tps00063)

Table 3. Share of Women in Tertiary Education Outside of the EU

Country	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Iceland	61,9	62,7	63,2	63,7	64,5	64,9	64,3	64,1	64,4	64,3	63,4	62,2
Japan	44,9	44,9	45,1	45,6	45,8	45,9	45,7	45,6	45,7	45,8	45,9	46,0
Norway	58,4	59,2	59,6	59,7	59,6	59,6	59,7	60,2	60,8	61,1	60,8	60,3
Switzerland	:	:	43,3	44,2	44,9	46,0	46,9	47,6	49,3	49,7	49,2	49,2
Turkey	39,8	40,8	41,4	41,3	41,4	41,9	42,4	42,6	43,1	43,6	44,4	45,2
USA	55,8	55,9	56,3	56,6	57,1	57,2	57,4	57,3	57,2	57,1	57,1	57,0

Source: Eurostat, 2013. (http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tps00063).

Table 4. Share of Women and Men among Tertiary Students according Their Field in the EU (2010)

	Men	Women	Men1	Women
Total	**8 850**	**10 997**	**44,6%**	**55,4%**
Social Sciences, Economics, Law	2 812	3 937	41,7%	58,3%
Engineering Technical Studies	2 147	717	75,0%	25,0%
Medical, Health and Nursing	704	2 001	26,0%	74,0%
Humanities, Art	838	1 586	34,6%	65,4%
Math and IT	1 246	750	62,4%	37,6%
Services	406	395	50,6%	49,4%
Agriculture and Veterinary	177	173	50,6%	49,4%
Others	519	1 438	26,5%	73,5%

Source: http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&plugin=1&language=en&pcode=tps00063

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Notes

Note 1. At low unemployment rate the labor market is called tight, while at high unemployment rate is called loose. In the later case, the employees can reach a wage increase harder, as they can be threatened by replacement. Nevertheless, the tight labor market also does not mean necessarily more job security, as the environment of labor is a quality measure, which cannot be incorporated in the traditional unemployment measure.

Note 2. The categorisation of those working part time can be disputed because not negligible different effects may arise in accordance with the length of the partial working hours. We shall, however, disregard this problem here.

Note 3. The estimated military loss of World War I was 10 million dead and 20 million severely wounded, while the number of direct civilian victims was about 10 million, and 20 million people died as a result of epidemics and starvation caused by the war (Cameron, 1993, p. 409).