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SOMMARIO

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EMPLOYMENT IN SPAIN ACCORDING TO GENDER (2005-2009): EDUCATION AND OTHER RELEVANT VARIABLES

Abstract

The present paper aims to ascertain whether gender differences continue to exist in Spain's working population. It sets out to obtain empirical evidence of the employment profile according to gender, quantify the extent to which self-employment or salaried employment are associated with certain characteristics (age, education, marital status and economic sector) and to analyse the evolution undergone during the recent economic crisis (2005-2009). In the study multivariate analysis statistical techniques will be applied to micro-data from the Working Population Survey compiled by Spain's National Statistics Office (INE).

JEL Classification: J44

Keywords: Working Population, Gender, Level of Education, Activity Sector, Age.

1. Introduction

Recent years have witnessed a noticeable increase in the number of women joining the labour market in developed countries, most of which implement programmes to provide support for certain population groups, including women, who have suffered discrimination.

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Such programmes are essentially designed to foster female participation in the labour market by increasing their human capital, reducing the barriers caused by family circumstances or by encouraging new forms of employment, among which self-employment is emerging as a viable insertion measure.

Business creation is considered an essential factor in the competitive strategies devised by different sectors. In times of recession, an entrepreneur may be forced to turn to a business initiative as a means of creating his or her own job. In times of economic growth, meanwhile, the abundance of new opportunities acts as an incentive to company creation. Studies that analyse the factors impacting on entrepreneurship are many and varied: authors such as Chandler and Hanks (1994) focus on the personal characteristics and qualities of the entrepreneur; Cooper et al. (1986) and Stuart and Abetti (1987) on the circumstances of the economic and political environment; while more recently Sarason et al. (2006) consider entrepreneurship as the nexus of the individual and the opportunities offered by the environment.

The present paper seeks to offer empirical evidence of the profile of the working population in Spain according to gender, to quantify the extent to which this profile is associated with certain characteristics (employment status, education level, activity sector, age, marital status) and to analyse the evolution undergone between 2005 and 2009. Hence, it falls within the first of the theoretical focuses explained above, which centres on the characteristics of the worker.

Section two below summarises relevant findings of research into the gender profile of the labour market. Section three sets out the working hypotheses and describes the methodology followed in the analysis offered, while section four analyses Spain's working population by gender, defining its profile in 2005 and its evolution between 2005 and 2009. Lastly, a summary of the main conclusions is provided.

2. Labour market situation of men and women

Available statistical data corroborate the continued existence of a considerable wage gap separating men and women. The causes of this gap have not been accounted for fully. The most common economic ex-

planations have fallen into three categories: the human capital theory, discrimination and concentration of women in certain occupations. The human capital explanation is unsupported by the data: gender differences in experience, education level and employment background account for a mere one-third of wage differences between men and women (Corcoran and Courant, 1985, p.275). Moreover, although women are very much crowded into relatively few occupations, this circumstance in itself does not explain how and why it comes about.

Corcoran and Courant (1985, p.277) state that women earn less than men even if they hold similar qualifications and the gap is due to the effects of discrimination and socialization.

Men and women constitute separate groups as far as their labour market characteristics are concerned. This situation is reflected, above all, in the employment rate by sectors, in the case both of salaried workers and the self-employed (Navarro and Rueda, 2005). Hakim (1993) distinguishes between male, female and integrated occupations, depending on the degree to which women are represented in each.

One variable to take into consideration is the education level of the working population. The human capital theory (Becker 1975, 1981) establishes that the decision to invest in human capital is determined by the outcome of a cost-benefit analysis. According to Becker, women accepted that at some point in their lives they would have to leave the labour market to look after their children and hence they decided to invest less in human capital. This decision impacted on their careers and income, reducing their chances of attaining the best jobs. Traditionally, each partner in the family specialised in what was most profitable for him or her: as the higher earner, the man took paid employment offering career prospects while the woman assumed responsibility for the housework and for raising the children, a situation which influenced her employment decisions and income and career prospects. This situation was aggravated when reproduced within the employment market itself, which acted inefficiently by placing women in the worst occupations (Rubery et al., 1996). However, it appears to be changing of late: women are increasing their investment in human capital and are accessing higher levels of education. They also receive considerable specific training for their job (European Commission, 2009).

Age can have an important impact on labour market access for women. Whereas men exploit their employment potential to the full between the ages of 30 and 44, women in this age group often put raising a family before professional development. Family responsibilities influence the aspirations of women, who require greater labour market flexibility, especially while they are of child-bearing age (Díaz et al., 2000; Díaz et al., 2002; European Commission, 2009).

Entrepreneurship is one avenue for women to strike a balance between home and career. Self-employment is considered a way of overcoming the barriers to female access to top management jobs (Justo, 2008). Díaz et al. (2002) note that self-employed women tend to have more children than their salaried counterparts, although women are less likely to set up on their own than men (Cuadrado, Iglesias et al., 2004; González, 2008). Self-employment also appears to improve women's labour market situation and allows them to do more skilled jobs. Specifically, studies conducted by Castaño et al. (1999) and Cuadrado, Iglesias et al. (2004) show that the percentage of women occupying managerial positions increases considerably among self-employed women. Self-employment also modifies the sectorial distribution pattern of female work substantially, increasing women's presence in traditionally male-dominated activities and reducing their presence in certain traditionally female-dominated and less-skilled activities, such as cleaning in the hospitality sector (Cuadrado, Iglesias et al., 2004). The emergence of new activities in the services sector has contributed to this situation by offering women new opportunities. Nevertheless, for Scherer et al. (1989), Matthews and Moser (1995), Kolvereid (1996) and Kourilsky and Walstad (1998), among others, gender is a variable that influences self-employment decisions. In particular, men have a greater propensity than women for entrepreneurship and exhibit a greater preference for self-employment, although authors such as Sexton and Robinson (1989) stress that it is not a matter of preference but rather that women have fewer opportunities to become entrepreneurs.

In Spain studies by various authors (Rubio et al., 1999; Sanchís and Redondo, 1997; Cuervo, 1995) have shown that over 50% of the population of young people surveyed expressed a desire to set up their own company or enter self-employment.

Similarly, Minniti and Nardone (2007) demonstrate the importance of perceptions in entrepreneurship motivation, although they also show that the relationship between the likelihood of starting a business, age, household income, work status, and education is not dependent on gender. However, with respect to the dependency that exists between self-confidence, fear of failure and, to a lesser extent, opportunity perceptions, the same authors maintain that "individual perceptions may differ from actual abilities and risk levels and are likely to be biased" (p. 236).

Bearing in mind the above literature, the contribution of the present paper may be summarised as follows:

1. A study of gender differences in employment status, broken down into self-employment, public-sector salaried employment and private-sector salaried employment.
2. An insight into the role played in the aforementioned employment status of the following variables: education, marital status and activity.
3. An analysis of the effect of the economic crisis.

3. Working hypothesis and data source

Bearing in mind the discussion in the previous section, the following hypotheses are posited:

- H1. Significant gender differences exist in the employment status of Spain's working population, with salaried employment, particularly in the public sector, presenting fewest differences between men and women.
- H2. The education level of women has increased significantly in recent years, which has helped increase their labour market integration.
- H3. Age and marital status influence women's employment status.
- H4. The economic crisis is affecting men to a greater extent. The incorporation of women in the services sector has helped them remain in employment.

The variables gender, employment status, education, activity sector and marital status have been selected to ascertain if there is any association between them and their different modalities and to study the evolution of the working population in terms of gender.

General data from Spain's Working Population Survey (EPA in Spanish) are used for the analysis. The data, produced by the National Statistics Institute (INE), correspond to 2005 and 2009 and are used to study the evolution of the different variables and the effects on them of the economic crisis. In addition, microdata from the EPA of the third and fourth quarters of 2005 are used to analyse the characteristics of the working population according to gender with the aim of detecting significant differences that might account for the labour market situation of men and women during the current crisis.

4. Working hypothesis and data source

The following section is divided into two sub-sections. The first analyses the evolution, according to gender, of the variables employment status, education, activity sector, age and marital status during 2005-2009 in order to identify the changes undergone during this period of economic crisis. The second uses micro-data from the EPA to test for associations between the studied variables that would allow us to detect significant gender differences among the working population.

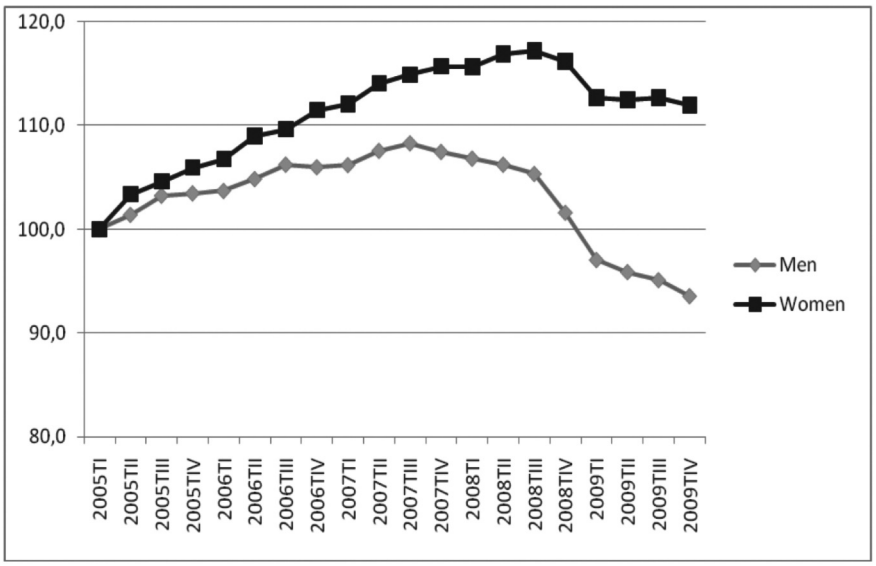
4.1 The evolution of the working population according to gender (2005-2009)

The decline suffered by Spain's working population between 2005 and 2009 has affected men and women differently. The female employment rate in Q1 2005 stood at 86.4% compared to 92.2% for men. By Q4 2009 the female rate had fallen by 5.5 points (80.9%), while the decrease in the rate among men was more drastic (down to 81.4%, 10.8 points below 2005).

Figure 1 illustrates the quarterly evolution through the corresponding indexes. As can be seen, the evolution is negative for men, 93.5%

in Q4 2009 compared with the base year (Q1 2005: 100), while the index for women is 111.9%, evidencing a more moderate fall.

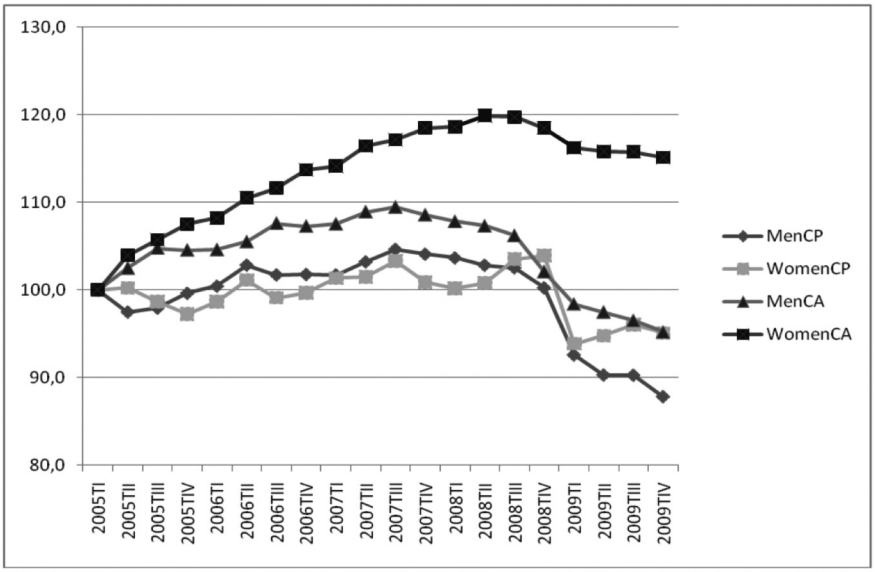
Figure 1. Spain's working population by gender (2005-2009). Index numbers.



Source: INE (Quarterly EPA 2005-2009). Figure compiled by author.

Employment status. Figure 2 shows the evolution of the self-employed and salaried working populations, which show major gender differences between the first quarter of 2005 and the fourth quarter of 2009. The biggest fall among the self-employed (CP) is seen among men (87.8%), whereas a relative recovery is noted for women as of the first quarter of 2009, with an index of 95.1%. Among salaried employees (CA), the differences are even more acute, with the index for men standing at 95.2% compared to the relatively positive position maintained by women (115.1%).

Figure 2. Self-employment and salaried employment by gender (2005-2009). Index numbers.



Education. An examination of the employment rate according to education level evidences a significant fall in the number of employed people with low levels of education (Table 1), particularly men. Conversely, scarcely any differences are found in the case of the university-educated working population.

Table 1. Employment rate according to gender and education (%)

Level of education	2005		2009	
	Men	Women	Men	Women
A&PR (Illiterate/primary studies)	91.4	85.0	73.4	73.5
ESO (Compulsory Secondary Education)	92.0	83.4	78.0	74.2
ESnO (Non-comp. Secondary Education)	93.6	88.2	83.9	81.9
FP (Vocational Training)	94.3	89.8	88.5	84.7
UNIV (University Education)	94.8	92.4	92.4	91.0

Source: INE (EPA, 2005 and 2009)

Distribution of female employment and salaried employment rate by sectors. The criterion of Hakim (1993) is followed to measure the share of female employment as a percentage of the total. According to the criterion, women are integrated in an occupation if the female percentage lies within the interval resulting from adding and subtracting 10% to the female share of the total employment. The interval in our case is 36.0-44.0 for 2005 and 39.2-48.0 for 2009 (see Table 2). Consequently, the services sector is markedly female, whereas women are under-represented in other sectors, especially Construction.

Table 2. Distribution of the female working population and female salaried employment index by sectors (%)

Sector	2005		2009	
	Distribution	Salaried employment index	Distribution	Salaried employment index
Agriculture	26.9	96.8	26.0	92.9
Industry	24.8	100.9	24.5	103.5
Construction	5.4	91.1	7.7	107.0
Services	51.7	109.7	53.7	109.5
Total	40.0	107.8	43.6	109.3

Source: INE (EPA, 2005, 2009)

Table 2 also shows the female salaried employment index, which is obtained by dividing the rate of female salaried employment by the male rate for each economic sector. The index is higher for women than for men in both 2005 and 2009 and increased slightly during the period studied. Only in agriculture is it lower, indicating a higher relative share of self-employment in the sector.

Age. The employment rates by age (Table 3) reveal that the biggest fall occurs among young persons under 30, especially men.

Marital status. The employment rates by marital status (Table 4) show that the fall particularly affects single men.

Table 3. Employment rates by gender and age (%)

Age	2005		2009	
	Men	Women	Men	Women
16 to 19	75.5	63.7	45.1	44.1
20 to 24	85.7	79.6	65.4	67.9
25 to 29	90.9	86.4	76.4	79.6
30 to 34	93.9	89.2	82.6	82.2
35 to 39	94.5	89.1	83.8	83.0
40 to 44	95.3	89.6	85.5	84.1
45 to 49	95.4	90.6	86.9	85.2
50 to 54	95.4	91.8	88.3	86.1
55 to 59	94.5	92.0	88.4	85.6
60 to 64	94.7	93.5	89.3	88.8
65 to 69	97.6	96.1	95.9	97.1
70 and over	99.4	97.5	100	98.6

Source: INE (EPA, 2005 and 2009)

Table 4. Employment rates by gender and marital status (%)

Marital status	2005		2009	
	Men	Women	Men	Women
S (Single)	88.2	85.1	74.4	77.8
C (Married)	96.1	89.5	87.7	83.8
R (Others) *	91.6	89.4	79.7	82.5

Source: INE (EPA, 2005 and 2009) * including widowed/separated/divorced

4.2 Profile of the working population in 2005

EPA micro-data are used below to analyse the characteristics of the working population prior to the onset of the economic crisis and to study the possible associations between the variables analysed.

• **Independence hypothesis tests**. Independence hypothesis tests were performed to begin checking for possible associations between

the variables studied and also between their modalities.

Table 5. Independence hypothesis tests (first case)

Variables and modalities		Pearson's Chi-square	df	Coefficient of contingency	Asymptotic sig. (bilateral)
Employment status	Age	12.1234	2	0.0211	0.0021
	Gender (*)	**2.2765**	**1**	**0.0091**	**0.1312**
	Marital status	10.0437	3	0.0179	0.0163
	Education	39.2677	4	0.0357	0.0000
	Activity	41.8235	9	0.0410	0.0000
Gender	Age	85.6324	2	0.0451	0.0000
	Marital status	482.1285	3	0.1272	0.0000
	Education	645.9337	4	0.1558	0.0000
	Activity (*)	**12.9261**	**9**	**0.0282**	**0.1674**
Age	Marital status	10912.7158	6	0.5154	0.0000
	Education	2046.7315	8	0.2711	0.0000
	Activity	4368.1829	18	0.3790	0.0000
Marital status	Education	612.1150	12	0.1440	0.0000
	Activity	639.9853	27	0.1634	0.0000
Education	Activity	432.8251	36	0.1370	0.0000

(*) Independence

The hypothesis to be tested (null hypothesis) is that the two variables are independent and the alternate hypothesis is that there is significant evidence of an association between them. As Table 5 shows, two coefficients have been estimated that measure the independence or association between two qualitative variables: Pearson's chi-squared coefficient and the coefficient of contingency. The last column shows the significance or the area to the right of the decision function of the independence hypothesis test. If this figure is less than 5% the null hypothesis is rejected and hence there is significant evidence of an association between the variables considered and their corresponding modalities. Conversely, a figure greater than 5% indicates there is no

significant evidence to reject the hypothesis of independence between the two variables.

In all the cross-tabulations between the variables 2 x 2 and their modalities, the resulting significance is less than 5%, except where gender is crossed with employment status and gender with activity sector.

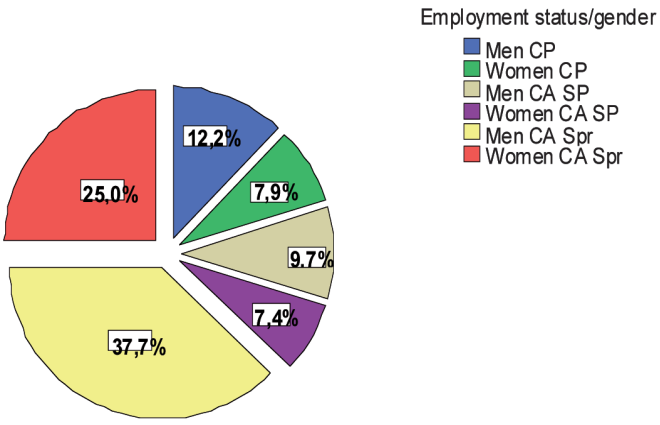
Given gender's importance as a variable in our analysis we tested to see what would happen if a new variable was constructed reflecting employment status disaggregated into its different modalities and disaggregating these, in turn, into male and female, that is, the intersection between employment status and gender. This gives us the following eight modalities:

1. Men:
   - o Self-employed (CP)
   - o Salaried employment, public sector (CASP)
   - o Salaried employment, private sector (CASpr)
   - o Other
2. Women
   - o Self-employed (CP)
   - o Salaried employment, public sector (CASP)
   - o Salaried employment, private sector (CASpr)
   - o Other

Since the modalities "Other/men" and "Other/women" were found to account for only a very small number of cases out of the total (55 of 46,741) and were widely distributed, and could therefore distort the results of the association analysis, it was decided to eliminate them, leaving a total of 46,686 cases distributed in the percentages shown in Figure 3. As can be seen, the biggest gender differences are seen in the private sector.

Lastly, the modalities "widowed/separated/divorced" have been added to the variable "marital status" using the collective term "others" (R), since they were considered to be single-parent family units.

Figure 3. Distribution of employment status/gender



The independence tests were repeated to check for association between the variables and their modalities two by two, using the new variable that summarises the disaggregated employment status and gender. The results were as follows (Table 6).

Table 6. Independence hypothesis tests (second case)

Variables and modalities		Pearson's Chi-squared	df	Coefficient of contingency	Asymptotic Sig. (bilateral)
Occup. status/gender	Age	115.015	10	0.0570	0.0000
	Marital status	536.453	15	0.1334	0.0000
	Education	767.275	20	0.1619	0.0000
	Activity	127.253	45	0.0637	0.0000
Age	Marital status	10912.7158	6	0.5154	0.0000
	Education	2046.7315	8	0.2711	0.0000
	Activity	4368.1829	18	0.3790	0.0000
Marital status	Education	612.1150	12	0.1440	0.0000
	Activity	639.9853	27	0.1634	0.0000
Education	Activity	432.8221	36	0.1370	0.0000

From the results it can be concluded that there is significant evidence of an association between all the two by two variables and their modalities.

• **Contingency tables of the relationship between employment status/gender and other variables.** 2 x 2 contingency tables were drawn up for all the variables. The results are given in column percentages in Annex 1. However, due to the interest they hold for verifying the working hypotheses, this section will discuss only the contingencies between the new variable created ("employment status/gender") and the other variables, in column percentages, for the 46,686 cases, as shown in Table 7.

Education. The data indicate that a higher percentage of working women have a university education compared to men in the three employment categories. In addition, a comparison of men and women in terms of vocational training shows the figure is also higher for women, particularly female entrepreneurs, although among public-sector salaried workers the results are similar for both. The highest percentages in the case of men are for those who have completed compulsory secondary education. The data suggest that women view more years of education as a competitive strategy in the labour market. The data for the different countries of the European Union (EU) show similar results to those obtained in this study as regards the proportion of self-employed working women with higher education (Alonso and Galvi, 2008).

Activity sector. The main sectors of activity for the three employment statuses are the retail trade/hospitality industry, construction and public administration/education/health, for which the percentages are much higher than for the other sectors. No major gender differences are detected among the employment statuses in this respect.

Age. Men and women behave differently in terms of age in the three employment status categories considered (self-employment, public-sector salaried work and private-sector salaried work). The percentage of men in each category with respect to the total is more or less similar in the 30-44 and 45+ age groups.

Table 7. Contingency table: Employment status/gender, education, age, marital status and activity sector

% columns	Employment status/gender						Total
	M CP	W CP	M CASP	W CASP	M CASpr	W CASpr	
Age							
16 to 29	23.8	26.0	21.2	24.5	21.1	24.2	23.5
30 to 44	38.8	**42.2**	38.3	39.8	39.6	**42.9**	40.0
45 and above	**37.4**	31.8	**40.5**	35.7	**39.3**	32.9	36.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Marital status							
Single	34.0	35.2	34.8	35.2	31.9	33.9	33.4
Married	**62.0**	54.0	**60.2**	54.0	**65.1**	57.2	60.6
Other	4.0	**10.8**	5.0	**10.8**	3.1	**8.9**	6.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Education							
A and PR	**26.6**	16.9	**20.1**	14.9	**25.3**	16.5	21.3
ESO	**31.7**	27.0	**28.4**	22.2	**30.2**	24.2	27.7
ESnO	12.0	12.3	14.8	16.3	10.5	11.8	12.0
FP	14.9	**18.9**	18.0	18.6	17.2	19.2	17.9
UNIV	14.8	**24.9**	18.7	**28.0**	16.8	**28.3**	21.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Activity * economic activity classification CNAE93 (old)							
A1 (Agric., forestry, fishing)	6.1	6.0	7.0	7.1	6.7	6.4	6.5
A2 (Food, textile, leather, wood, paper)	6.5	5.5	5.9	7.0	6.5	6.3	6.4
A3 (Mining/quarrying, chem., metal, energy and water)	6.4	7.1	8.9	7.5	6.0	6.1	6.6
A4 (Machinery., electrical equip., transp. material, various manufacturing activities)	5.1	4.9	5.0	4.6	4.7	4.4	4.7
A5 Construction	12.6	11.4	12.1	11.4	12.1	12.1	12.1
A6 (Retail trade and hospitality)	23.7	23.7	21.4	**23.0**	21.5	20.6	21.8
A7 (Transportation)	5.3	5.5	4.8	5.0	5.2	5.1	5.2
A8 (Financial and real estate activities)	**10.9**	9.5	9.8	9.6	9.9	9.6	9.8
A9 (Public admin., educ., health)	16.6	**19.0**	18.0	17.9	20.8	**22.9**	20.2
A10 (Other services)	6.8	7.4	7.1	6.9	6.6	6.5	6.7
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

In the case of women, however, the percentage in the latter age category is clearly lower in all three categories.

The percentage of male entrepreneurs and men in salaried employment is lowest among the 16-29 age group, increasing as the age of 30 for all modalities. In the case of women, the percentage is lowest also in the 16-29 age group, although significant differences are seen: while the percentages for the 45+ group are also higher, they are lower compared to the group of women aged 30-44.

Turning to a comparison by genders, we can see that the percentages of those under 45 are consistently higher in the case of women but lower above this age. The reason for this is to be found in the higher unemployment among women aged 45 and above, which is related to an as yet unconsolidated process of female labour marker participation (see previous section).

The age effect is directly related to maternity also. For example, for the working population aged between 25 and 49 for all EU countries, a comparison of Eurostat data (2002-2007) for the employment rate of women and men who look after children under 12 reveals that the gender gap is almost twice that found in the rest of the working population[1]. Specifically, the employment rate of women looking after under 12s falls by 12.4 points, compared to an increase of 7.3 points for men in the same circumstances.

Marital status. Turning to marital status, we can also see differences according to gender. In all three employment status categories working married men account for the majority of the total, with significant differences seen compared to working married women, whose percentages are lower. Most of these differences are due to the higher share accounted for by the category of 'Other' working women (widowed/separated/divorced) compared to the same category in men[2]. No significant differences are found between single men and women.

• **Multiple Correspondence Analysis.** Given that all the variables are nominal, it would be useful to situate the cases spatially according to the modalities considered. The most appropriate technique for this is Multiple Correspondence Analysis (MCA), which enables us to plot

[1] *Eurostat, Labour Force Survey (LFS), annual average.*
[2] *Similar results were obtained in Díaz et al. (2000).*

the modalities of the variables that proved to be most characteristic and to obtain new variables or dimensions from the original ones. The analysis is based on a Burt matrix, for which 2x2 contingency tables were drawn up for all the variables (absolute values) for the 46,686 cases (see Annex 1).

➢ **Results summary**

The first four dimensions accounting for 33.56% of the original information are used. Although the percentage is low, it is sufficiently high for an MCA provided that care is exercised in interpreting the results. Moreover, since it was concluded from the independence tests that the independence hypothesis was rejected, and some form of association exists therefore between some of the modalities considered, it makes sense to carry out an MCA.

➢ **Examination of scores and contributions**

The row and column points of the Burt matrix offer the same results, so only the latter will be used here.

- The scores in dimension refer to the distance to origin of each modality according to the conditional relative frequencies. The further away from the origin the points for the corresponding pairs of values of the dimensions of a modality are located, the better the modality is represented. The closer to the origin they lie, the poorer the interpretation since this indicates that the modality represented at the point exhibits average behaviour which is not differentiated according to other modalities.
- The inertia is the weight of each modality in the total analysis.
- The contribution of the points to the inertia of the dimension refers to the weight of each modality in the formation of the four axes considered.
- The contribution of the dimension to the point's inertia is the correlation of each modality with each axis or new dimension created.

In our analysis the best represented modalities in each dimension and their scores or distances to the origin, as detailed in Annex 2, are shown in table 8.

Table 8. Best represented modalities

+	-	+	-
Dimension 1		**Dimension 2**	
• 16-29 • Single • Agriculture, forestry, fishing	• 45 and over • Married	• 45 and over • Illiterate, primary education • Agriculture, forestry, fishing	• 30-44 • Public administration, education, health
Dimension 3		**Dimension 4**	
• Women CASP • Women CASpr • Widowed/separated/ divorced • University	• Men CASpr • Compulsory secondary	• Men CASP • Non-compulsory secondary	• Women CASpr • University

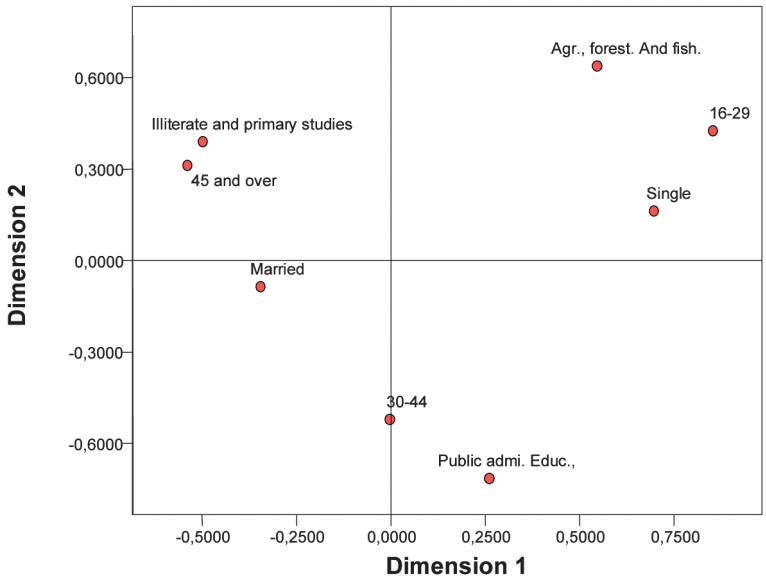
➢ **Analysis of the MCA results**

For a better interpretation of the results, the starting points are:

- The results presented in Annex 1 for the 2 x 2 contingency tables, with column percentages.
- The results presented in Annex 2 for the modalities considered, their contribution to the formation of the dimensions and correlations with the dimension obtained.
- The scatter diagrams of the new variables created or dimensions, always crossing dimension 1, which has the greatest weight in the results, with dimensions 2, 3 and 4. Only the points corresponding to well-represented modalities will be shown in the figures, since they are far enough away from the origin, contribute adequately to the formation of the dimensions and correlate with the dimension.

Dimensions 1 and 2. In the scatter diagram (Figure 4) we can see several groups, according to the conditional percentages and the results given in Annexes 1 and 2.

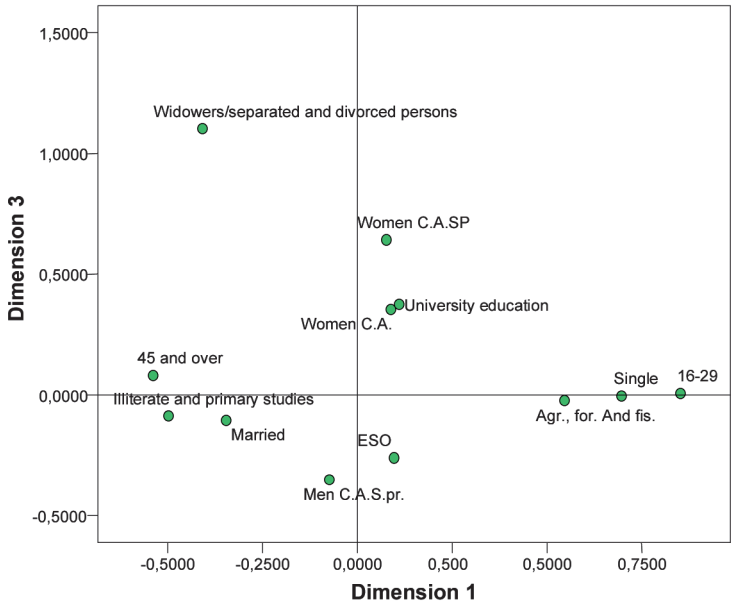
Figure 4. Dimensions 1 and 2



- Group 1: Higher percentages of 16-29 year-olds, single, and higher percentage of people employed in agriculture, forestry and fishing.
- Group 2: Higher percentages of over 45s, married, and higher percentages of illiterate/primary education.
- Group 3: Higher percentages of 30-44 year-olds. Higher percentage of persons employed in public administration, education and health than for the other age groups.

Dimensions 1 and 3. Figure 5 shows several groups according to the conditional percentages and the results given in Annexes 1 and 2.

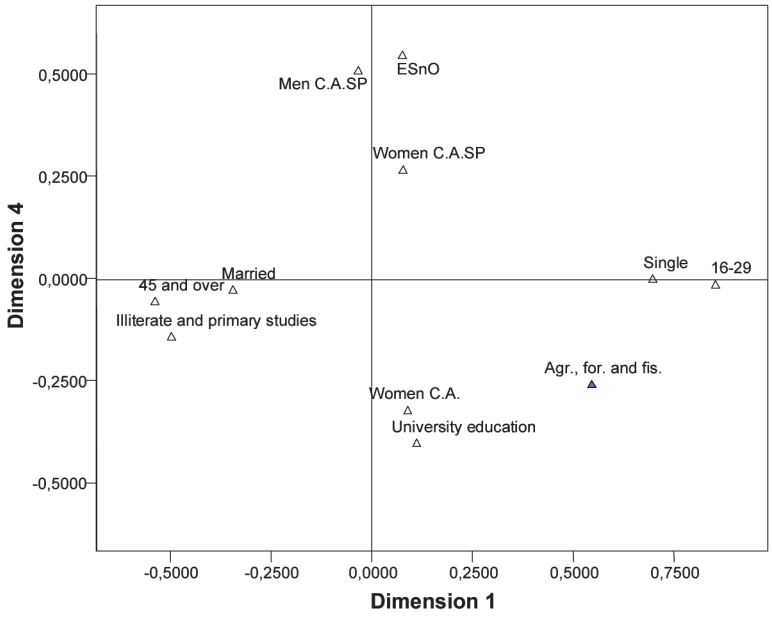
Figure 5. Dimensions 1 and 3



- Group 1: Higher percentages of 16-29 year-olds, single, with higher percentage of people employed in agriculture, forestry and fishing.
- Group 2: Contrasting with higher percentages of over 45s, illiterate/primary education, and married.
- Group 3: Higher percentages of Women CASP and Women CASpr, widowed/separated/divorced and university education.
- Group 4: Contrasting with higher percentages of Men CASpr, married and compulsory secondary education.

Dimensions 1 and 4. Figure 6 shows several groups according to the conditional percentages and the results given in Annexes 1 and 2.

Figure 6. Dimensions 1 and 4



- Group 1: Higher percentages of 16-29 year-olds, single and higher percentage of people employed in agriculture, forestry and fishing.
- Group 2: Contrasting with higher percentages of 45 and over, illiterate/primary education.
- Group 3: Higher percentages of Men CASP and Women CASP, with higher percentages of non-compulsory secondary education than the rest.
- Group 4: Contrasting with higher percentages of Women CASpr, with university education.

Conclusions

The main conclusions are as follows:

2. Significant differences can be seen between the sexes with regard to the professional situation if this is disaggregated into self-employment, salaried work in the public sector and salaried work in the private sector.
3. Level of education is an important variable in the differences between men and women. Men have a relatively lower level of education than women. There is a pronounced percentage of illiterate men and men with primary studies, which is fundamentally associated with married men of 45 or over, and a pronounced percentage of university educated women, associated above all, with salaried work in the private sector, although it is also significant in the public sector and in self-employment.
4. The marital status of widow/separated/divorced favours the incorporation of women in the labour market in comparison with men in all professional situations.
5. Activities related to agriculture, forestry and fishing are associated with the young, single working population. Due to the change in the classification of activities (CNAE93 becomes CNAE2009), a preponderance of women in health, education and other services can be seen in the new classification.
6. The economic crisis has had a negative impact, and mainly on men with a low level of education, single and under 30, both among those that work for somebody else and the self employed.

The results indicate that the hypothesis posed is relatively fulfilled and attention should be drawn to the role of education, a variable that appears strongly in the results of the statistical analysis. In any event, these results also confirm the fact that "women have made important progress in education, but the high level of education among women is not directly reflected in the position they hold in the labour market" (European Commission, 2009, p.8).

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ANNEX 1. Contingency tables between the variables. Micro-data EPA, 2005

ANNEX 1. Contingency tables between the variables. Micro-data EPA, 2005

Variable	Professional situation/sex						Age			Marital status			Education				
Age	**MCP**	**WCP**	**MCASP**	**WCASP**	**MCASpr**	**WCASpr**	**16/29**	**30/44**	**45/+**	**S**	**C**	**R**	**AyPR**	**ESO**	**ESnO**	**FP**	**UNIV**
6/29	23.9	26.1	21.4	24.4	21.5	24.3											
0/44	38.9	**42.1**	38.3	39.8	39.7	**42.8**											
45/+	**37.2**	31.8	**40.2**	35.7	**38.8**	32.9											
Mar.stat.																	
S	34.1	35.2	34.8	35.2	31.9	33.9	86.7	25.6	8.4								
C	**62.0**	54.0	**60.2**	54.0	**65.1**	57.2	12.6	68.3	82.3								
R	3.9	**10.8**	5.0	**10.8**	3.0	**8.9**	0.6	6.1	9.3								
Education																	
AyPR	**26.5**	16.9	**20.0**	14.9	**25.2**	16.5	12.0	13.3	**35.8**	13.4	**24.9**	**27.7**					
ESO	**31.7**	27.0	**28.4**	22.3	**30.1**	24.2	**31.7**	**29.9**	23.0	29.1	27.2	26.6					
ESnO	12.1	12.3	14.8	16.2	10.6	11.9	13.2	12.7	10.6	12.8	11.7	11.7					
FP	14.9	**18.9**	18.0	18.6	17.4	19.1	**22.7**	**20.8**	11.4	20.7	16.3	16.3					
UNIV	14.8	**24.9**	18.8	**28.0**	16.8	**28.2**	20.3	23.3	19.2	24.0	19.9	17.7					
Activity																	
A1	6.1	6.0	7.0	7.1	6.7	6.4	**14.8**	2.4	5.9	**9.7**	5.0	4.1	6.1	7.0	6.0	7.2	6.1
A2	**6.6**	5.5	5.9	**7.0**	6.5	6.3	4.6	6.0	**8.0**	5.0	7.1	6.9	8.0	5.9	6.1	6.2	5.6
A3	6.4	7.1	**8.9**	7.5	6.0	6.1	2.8	5.9	**9.7**	3.9	7.8	**9.3**	8.2	6.5	6.8	5.7	5.6
A4	5.1	4.9	5.0	4.6	4.7	4.4	3.2	4.4	6.0	3.6	5.2	6.2	5.6	4.2	4.6	3.8	5.2
A5	**12.6**	11.4	12.0	11.4	12.1	12.1	12.1	8.6	15.8	10.9	12.7	11.3	13.7	12.0	12.4	10.4	11.8
A6	23.7	23.7	21.4	**23.0**	21.5	20.6	**29.1**	16.1	23.6	23.9	20.6	21.8	23.4	22.6	21.3	20.8	20.3
A7	5.3	5.5	4.8	5.0	5.2	5.1	5.3	5.4	4.8	5.1	5.2	5.3	5.0	5.2	5.8	4.9	5.1
A8	**10.9**	9.5	9.8	9.5	9.9	9.6	8.4	9.0	11.7	8.6	10.3	12.2	11.0	9.2	10.8	9.5	9.3
A9	16.5	**19.0**	18.1	17.9	20.9	**22.9**	15.1	**36.0**	6.0	**24.0**	18.6	15.8	12.0	20.8	19.3	**24.5**	**24.5**
A10	6.8	7.4	7.1	6.9	6.6	6.5	4.8	6.3	8.5	5.2	7.5	7.0	6.8	6.6	6.9	7.0	6.5

ANNEX 2. Multiple Correspondence Analysis Results, four dimensions

ANNEX 2. Multiple Correspondence Analysis Results, four dimensions

Modal.	Mass	Scores in the dimension				Inertia	Contribution								
							of de points to the inertia of the dimension				of the dimension to the point's inertia				Total
		1	2	3	4		1	2	3	4	1	2	3	4	
MCP	0.0243	-0.0477	0.1898	-0.2883	0.3119	0.0354	0.0004	0.0106	0.0361	0.0523	0.0016	0.0247	0.0570	0.0668	0.150
WCP	0.0159	0.1093	-0.0500	0.4307	0.3632	0.0371	0.0014	0.0005	0.0526	0.0462	0.0051	0.0011	0.0794	0.0564	0.142
MCASP	0.0194	-0.0336	0.0809	-0.0188	**0.5065**	0.0362	0.0002	0.0015	0.0001	**0.1103**	0.0006	0.0035	0.0002	**0.1377**	0.142
WCASP	0.0149	0.0777	-0.0099	**0.6405**	0.2628	0.0374	0.0007	0.0000	**0.1090**	0.0227	0.0024	0.0000	**0.1633**	0.0275	0.193
MCASpr	0.0754	-0.0736	0.0432	**-0.3533**	-0.1441	0.0255	0.0031	0.0017	**0.1682**	0.0346	0.0160	0.0055	**0.3688**	0.0613	0.452
WCASpr	0.0500	0.0894	-0.1700	**0.3532**	**-0.3245**	0.0307	0.0030	0.0175	**0.1115**	**0.1165**	0.0130	0.0472	**0.2035**	**0.1719**	0.436
16/29	0.0461	**0.8535**	0.4244	0.0050	-0.0173	0.0448	**0.2545**	0.1004	0.0000	0.0003	**0.7498**	0.1854	0.0000	0.0003	0.936
30/44	0.0809	-0.0016	**-0.5219**	-0.0744	0.0631	0.0278	0.0000	**0.2660**	0.0080	0.0071	0.0000	**0.7928**	0.0161	0.0116	0.821
45/+	0.0730	**-0.5379**	**0.3101**	0.0794	-0.0590	0.0337	**0.1599**	**0.0847**	0.0082	0.0056	**0.6262**	**0.2080**	0.0136	0.0075	0.855
S	0.0669	**0.6972**	0.1620	-0.0056	-0.0044	0.0387	**0.2461**	0.0212	0.0000	0.0000	**0.8408**	0.0454	0.0001	0.0000	0.886
C	0.1211	**-0.3445**	-0.0858	-0.1060	-0.0308	0.0211	**0.1088**	0.0108	0.0243	0.0025	**0.6797**	0.0422	0.0644	0.0054	0.798
R	0.0120	-0.4076	-0.0365	**1.1008**	0.3353	0.0391	0.0151	0.0002	**0.2598**	0.0298	0.0510	0.0004	**0.3720**	0.0345	0.458
AyPR	0.0424	**-0.4974**	**0.3890**	-0.0896	-0.1452	0.0352	**0.0795**	**0.0775**	0.0061	0.0198	**0.2983**	**0.1824**	0.0097	0.0254	0.516
ESO	0.0556	0.0974	-0.0180	**-0.2627**	0.1957	0.0292	0.0040	0.0002	**0.0686**	0.0471	0.0181	0.0006	**0.1313**	0.0729	0.223
ESnO	0.0241	0.0758	-0.0169	0.1612	**0.5428**	0.0353	0.0010	0.0001	0.0112	**0.1571**	0.0039	0.0002	0.0177	**0.2011**	0.223
FP	0.0356	0.2569	-0.1793	-0.0345	-0.0199	0.0337	0.0178	0.0138	0.0008	0.0003	0.0697	0.0340	0.0013	0.0004	0.105
UNIV	0.0422	0.1117	-0.2065	**0.3732**	**-0.4054**	0.0324	0.0040	0.0217	**0.1050**	**0.1533**	0.0163	0.0556	**0.1816**	**0.2142**	0.468
A1	0.0131	**0.5464**	**0.6361**	-0.0252	-0.2614	0.0391	**0.0296**	**0.0640**	0.0001	0.0198	**0.1001**	**0.1356**	0.0002	0.0229	0.259
A2	0.0127	-0.2626	0.0591	-0.0345	-0.2306	0.0377	0.0067	0.0005	0.0003	0.0150	0.0233	0.0012	0.0004	0.0180	0.043
A3	0.0131	-0.4708	0.0500	0.1786	0.5319	0.0381	0.0220	0.0004	0.0075	0.0821	0.0763	0.0009	0.0110	0.0974	0.186
A4	0.0094	-0.2859	0.0423	0.1536	-0.1548	0.0383	0.0058	0.0002	0.0040	0.0050	0.0201	0.0004	0.0058	0.0059	0.032
A5	0.0241	-0.1421	0.2402	0.0088	-0.2842	0.0356	0.0037	0.0168	0.0000	0.0431	0.0137	0.0391	0.0001	0.0548	0.108
A6	0.0436	0.0893	0.2719	0.0232	0.1061	0.0319	0.0026	0.0389	0.0004	0.0108	0.0109	0.1012	0.0007	0.0154	0.128
A7	0.0103	0.0218	-0.0347	-0.0130	0.2052	0.0380	0.0000	0.0001	0.0000	0.0096	0.0001	0.0003	0.0000	0.0114	0.012
A8	0.0197	-0.1598	0.0763	0.0623	0.0989	0.0362	0.0038	0.0014	0.0014	0.0043	0.0139	0.0032	0.0021	0.0053	0.025
A9	0.0404	0.2609	**-0.7144**	-0.1492	-0.0536	0.0361	0.0208	**0.2491**	0.0161	0.0026	0.0761	**0.5707**	0.0249	0.0032	0.675
A10	0.0135	-0.2254	-0.0045	0.0515	0.0870	0.0375	0.0052	0.0000	0.0006	0.0023	0.0182	0.0000	0.0010	0.0027	0.022
Total	1					0.9419	1	1	1	1					

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UNDERGROUND ECONOMY AND INCOME INEQUALITY: TWO CONNECTED ASPECTS IN THE ONCOMING CONTEXT OF ITALIAN FEDERALISM

Abstract

The issues of underground economy and income inequality between areas of a country, and within the same Region, are recurring themes in economic literature and are connected to each other. In Italy the illegal practices committed by businesses and workers prevent a clear understanding of many socio-economic phenomena and certainly are a source of wealth that must be primary studied and then included in the estimates and economic research. The illegal economic practices are among the causes of social issues, such as the unequal distribution of income in particularly affected areas, but, at the same time, could mitigate the income differentials in the context of North-South. The policy maker must take into account these phenomena for many reasons, that may affect the determinants of consistent and long-run economic growth and development. In sustaining reforms, such as that related to fiscal federalism, it is necessary therefore to take into account several aspects that are going to change in a complex and dissimilar system, as the Italian one.

JEL Classification: E26; D31; O10; H77

Keywords: Underground Economy, Income Inequality, Economic Development, Federalism.

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1. Introduction

In all countries, from the poorest to the richest, the scourge of the underground economy represent an obstacle to the potential processes of economic growth and development. Today it seems that this phenomenon, that is very difficult to estimate quantitatively, is steadily spreading in spite of repressive countermeasures arranged around the world (Schneider and Enste, 2000). However, there are differences between singular systems and geographical contexts, between countries, and within areas of the same country. In Italy, for example, irregularities of enterprises, illegal workers and tax evasion problems are strongly felt throughout the national territory, and rooted in particular local subcultures. It is considered that in Italy, however, the value of the underground economy is not likely to affect the analysis based on official GDP, unlike other countries, although extremely important in contemporary economic studies. Among these nations there are for example China and India, and the latter in particular suffers an estimated value of the black economy, in most pessimistic calculations, that is up to 50% of the official income.

In Italy these problems are a recurring theme of social and political discussion, employing new technical and resources to deal them, but over time, confirming an extremely common phenomenon, with a not homogeneous propagation in different areas, from the North to the South of the country. It is clear that in the northern Regions, where the economy is more prosperous and active, the value that businesses and professionals tend to evade to public scrutiny is high, when compared with other Italian areas, but numerous episodes of non-compliance of the law are found in all Regions. Among the causes that are often discussed, representing a possible encouragement to such unfair practices, there is the excessive bureaucracy and taxation in the national fiscal system, but also a widespread sense of an alleged inefficiency and poor quality of public institutions, responsible for the collection and the use of these resources. In addition, there is the argument of the "distance", between taxpayers, who live and work in a specific area, where taxes are levied, and the administrative center, where decisions are taken, with consequences for all areas.

In our Country there are also substantial differences in *per capita* income and in the way by which it is distributed. Our interest is to see whether these differences can be mitigated by the submerged values, or other instruments, such as tax reform. Illegal practices, as it will be explained below, can be seen both as a possible factor of reduction of real differences of wealth and income and as a cause of local warnings, where strongly present.

In the present paper we study underground economy and income inequality as two connected aspects in the Italian context.

We also suggest to analyze if these phenomena could be mitigated by an appropriate fiscal reform, in particular by a federal reform. This last possibility is considered also in relation to the fiscal competition involved in a federal system.

In particular we refer to the so-called horizontal competition in a federal system, which occurs between agencies of the same hierarchical government level. In this case there is a trade-off between the level of taxation and the quantity and quality of public services offered. In the horizontal fiscal competition there may be effects of "migration" of rich and poor subjects that have different perspectives and objectives. In addition, income inequality, i.e. a greater polarization of income and the formation of a large number of rich and poor, encourages migration. As the presence of underground economy influences the evaluation of this inequality, invalidating the goodness of data, the policy makers cannot obtain a perfect foresight of the evolution of the system and cannot adjust their choices in order to avoid migration itself.

2. The actual situation of the Italian underground economy

There are several possible reforms under discussion (also related to fiscal federalism which will be discussed below) aimed to contrast phenomena like inequality, as well as black economy, which necessarily must be observed separately, nevertheless connected as they are actually in Italy.

It should be noted how the strong differences in terms of income and wealth between the various parts of the Country, before of possible future administrative and fiscal reforms, may be mitigated by the

presence, particularly in certain areas, of a portion of the local economy which is invisible in official statistics.

The underground economy is, by its nature, only quantifiable by estimates, but, for all countries, the values vary greatly between the optimistic and the most negative evaluations. According to the annual estimates edited by Istat for Italy, in 2008, this value is considered to be between 255 and 275 billion euros, equivalent to a measure of 16.3% and 17.5% of national GDP. The value, if measured as a percentage of GDP, is lightly increasing if compared to the previous period, after a phase characterized by a downward trend; but there is a growing trend if considered in absolute value. Among the components of this phenomenon, the irregular employment in the years 2008-09 has reached the 11-12% of the total input of work, while the added value undeclared reached in 2008 the 9.8% of GDP.

Certainly these conditions affect both the income and its distribution, and examining the value of the average income in different parts of the country, we see that the differences in terms of GDP *per capita* are evident, so as to create a deep borderline directly perceptible from the examination of the data.

From the values developed by Unioncamere, it is possible to show as the value of the average income of the southern Regions is around 60% of that of the northern ones. Quantitatively, in the North and in the Center, all the Provinces have levels recorded more than 20,000 euros (22,349 euros minimum value of Viterbo), to over 30,000 (36,530 euros maximum of Milan), with averages of 30,259 in the Northwest territory, 29,763 in the Northeast and 28,214 in the Center. The situation is clearly different from the South, where the average is 17,208 euros and where, with the exception of the Provinces of Cagliari and Olbia-Tempio, in Sardinia, only the four Provinces of Abruzzo are permanently above the threshold of 20,000 euros (allowing to reach the regional average of over 21,000 euros *per capita*). In addition, four of the most populous southern Regions (Campania, Apulia, Calabria and Sicily) have a level of GDP *per capita* less than 17,000 euros.

On the other hand, it is interesting to observe how the richest Provinces in the North and Center of Italy are the most indebted, with values of family-average debt twice as many southern realities (Unionca-

mere Report, 2010). These are the first signs of differences in lifestyles and economic opportunities within the same country.

After describing briefly the economic situation, it is necessary to identify indicators of hidden values, even through proxy variables useful to portray the actual national condition. From the latest data in the annual UIL report on the black economy (2010 and 2011), it is possible to see as the national average of companies found illegal by the checks amount to almost 62% of the total (of those inspected, period 2006-2009) and almost half of workers have been found at least partially irregular by checks. Observing every single Region, the most extreme values, both positively and negatively by the number of irregular companies, are located in the Center and North Italy. Among the highest percentages of irregularity: Liguria (73.1%), Lombardy (63.9%) and Marche (62.9%); the lowest in Friuli Venezia Giulia (36.9%), Piedmont (38.8%) and finally, in a southern Region, Basilicata (38.1%). If we consider instead the three macro-areas, the average values are very close each other: 51.06% in the North, 53.75% in the Center, and 52.02% in the South. From the survey report of UIL (2010), among the 11 Provinces with values higher than 70% of companies irregular, only three are in the south (Naples, Cosenza and Sassari) and none of them is above 80% (while of this type are Genoa, Como and Terni). As anticipated, the presence of unknown values to the official statistics may limit the availability of the differences in income and wealth in diverse contexts in Italy.

We can therefore say that, by these socioeconomic variables considered, there is not a clear division between areas of the country, but the general framework is very mixed and complex, showing the Provinces of the North distinctively advanced in many ways, but with data on the shadow economy that does not allow to delineate differences.

Moreover these illegal practices, because of their characteristic of being not-revealed, are only of partial understanding, like all the so-called shadow economy, which by its nature is a phenomenon that is only estimated, both from the point of view of theoretical analysis (eg Frey and Weck, 1983) and by empirical research.

3. Income inequality in the Italian Provinces: some possible causes of underground economy

After noting that the actual *per capita* GDP shows strong differences and that the shadow economy is present widespread in Italy, we must consider how the disposable income is distributed in the Italian Regions and Provinces.

In the economic theory income inequality, as well as wealth inequality, is studied as a determinant of economic growth and development, but there are conflicting theories about its optimal level (among the many researches: Deininger and Squire, 1998; Galor and Moav, 2004; Easterly, 2007; Grossmann, 2008). Certainly, from the perspective of social equality, it is necessary a proper redistribution of income, but we must also consider how the consumption, saving and investment choices impact on the national economy. For example Italy, being a western country, possesses a wealth of so-called physical capital, which would not need to be increased quantitatively but qualitatively and at the same time it is a system of education and training that enables a wide range of population to increase their level of human capital. In this condition, it must be find the optimal level of redistribution that allows households to provide a high education to offspring (i.e. a trend towards lower inequality) and entrepreneurs to invest in both R&D and to improve the physical capital in the production activities (and therefore a stronger polarization of income). In addition should be considered external factors, level of development, political institutions, or indeed the level of aggregate wealth (Forbes, 2000).

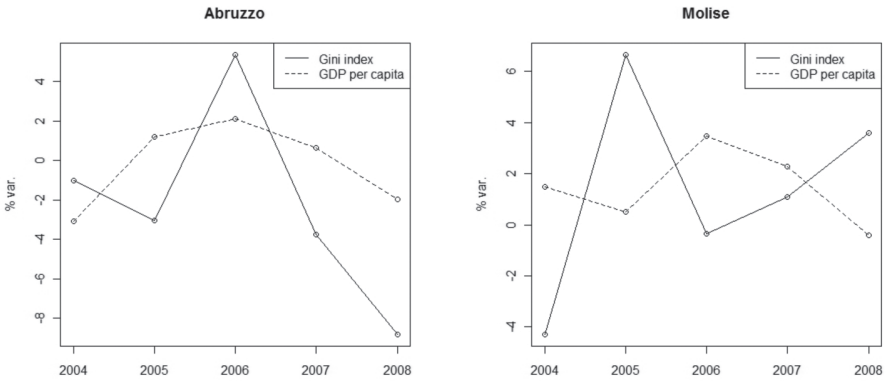
In this paper we do not seek the relationship between inequality and growth, but rather we are interested to note if different areas are characterized by dissimilar trends, and if there are other variables that could mitigate these phenomena of disparities between Regions of the Country.

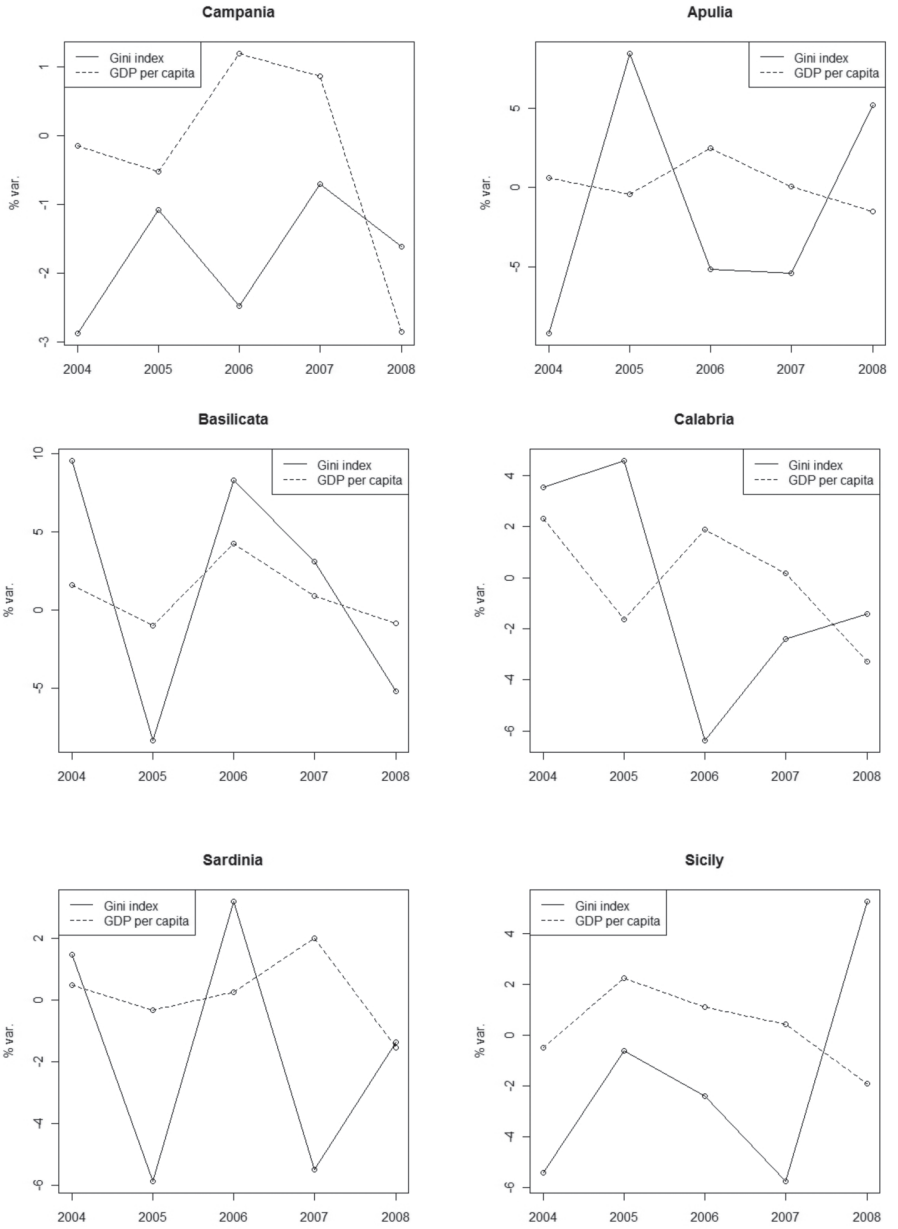
Reflecting on the theme of income inequality in the sense of its redistribution, Istat notes that, with reference to the year 2008, latest data available, the North-South division is again predominant. The only southern Region that in the past showed positive signals, and in 2008 recorded the lowest value of the national Gini index in Italy, is Abruz-

zo, with a value of 0.263 (the same year, Eurostat estimates the value of the same index equal to 0.264 for Finland, for Italy 0.31). The highest values are held by the South with the addition of Lazio, and the value that marks the highest polarization of income is that of Sicily (0.335, a value much higher than almost all European countries). As was the case for income in recent years, there were negative signs for the North, certainly because of the economic uncertainties that have plagued the most vulnerable and exposed groups, to the recent events. In the South, Campania and Sicily continue to maintain the highest values, although trends show a decrease of the indicator.

In general, for all Italian Regions there has been a period of decline of this variable of inequality, at least until 2008 when, partly because of the general national and international economic slowdown, especially in the North increased, economic problems have affected different areas and social groups. Below are shown the situations regarding the trends (annual % change) of the recent past in income and inequality, in the eight Regions of the South, including as mentioned, there are those with the lowest and highest in terms of Gini index, Abruzzo and Sicily. We specify this macro area that is most affected by the phenomena of inequality and of certain illegal practices.

Figure 1. Percentage change of the Gini index on income inequality and GDP *per capita* in the southern Regions





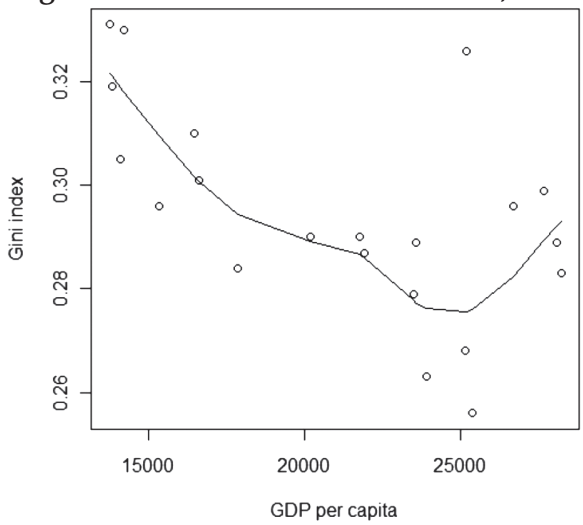
Source: our elaborations on Istat data

The two variables considered in the graphs above are indicative of the general state of the regional economy (% change in GDP *per capita*) and then they describe how this is split among the population (Gini index on income). These and following representations allow us to observe the shadow economy as a social evil, being associated with an increase in local income inequality. The period showed in the graphs covers the economic recession that led all the Italian Regions to strong decrease of GDP in 2008 and 2009. Considering a longer period of ten years and including the above mentioned recent years, the southern Regions have certainly suffered less than the Center and the North, of course, the changes refer to initial values lower than the northern Regions. The average percentage of changes in regional GDP for the period 2000-09 turns out to be almost everywhere positive, though in some cases close to zero, with the only exception of Apulia, just negative (-0.1%) and Abruzzo (-0.4%). The signals of resistance of the local southern economies, rather than the northern ones, however, show a certain distance of these contexts from the broader international perspective, which has clearly infected adversely those Regions more open to trade with foreign countries. This was certainly an adverse effect when considered over the past two years, but still indicates greater involvement in supranational dynamics, and therefore ability to exploit the developments of globalization and economic interdependence.

In general we must say that inequality, if perceived too high by the population, may cause social discontent, as studied by the empirical trend of sociopolitical instability (for a survey of theories of inequality see Barro, 2000) and then even if a certain value of the Gini index is inevitable, the policy maker must be careful not to create situations that could lead in the best case to express themselves by voting in elections and in the worst to social unrest. In all cases, more or less strong, the consequences in terms of supporting the economy would be negative, and this would happen in already problematic areas.

It is interesting to understand the relationship between inequality and average income, two variables that will certainly have a mutual influence. The following chart can be considered a synthesis of what said earlier, representing all Italian Regions.

Figure 2. GDP *per capita* chained year 2000 and income inequality (Gini index of family net income excluding imputed rents) of the Italian Regions (and autonomous Provinces), 2006-08 average



Source: our elaborations on Istat data

The graph above shows the average (2006-08) of *per capita* income and the Gini index of inequality, registered at regional level. It is possible to note that inequality tends to be substantially of low level respect an high income level, especially in the Center and North contexts.

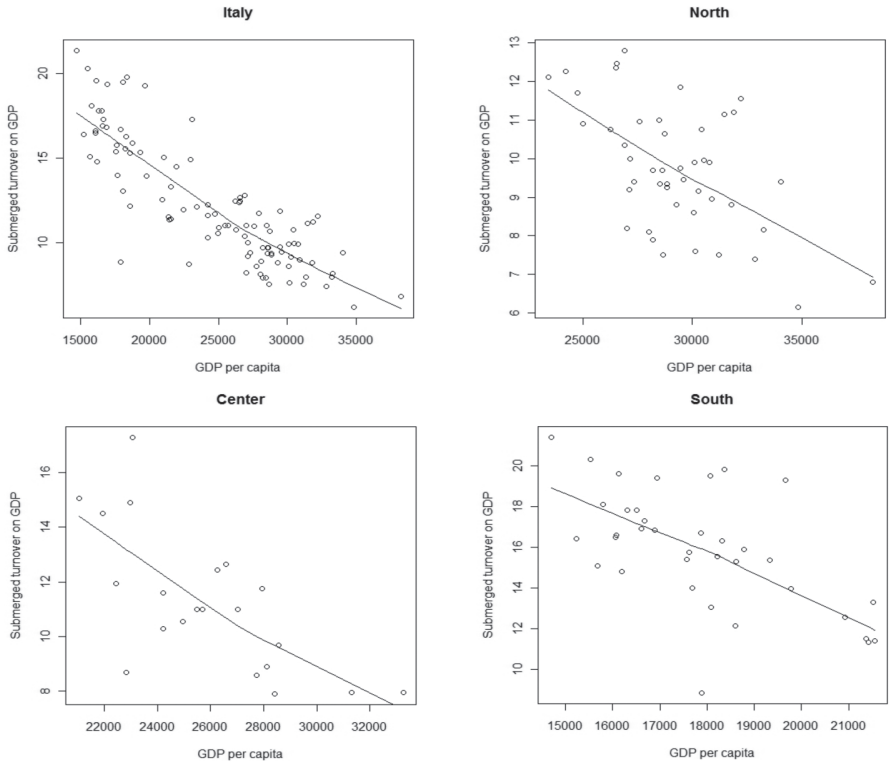
We adopted a function interpolating, using weighted least squares that provides a generally smooth curve, used to render greater clarity in the graph, to reduce the spread of data and to see how the phenomenon occurs.

Looking at the graph of Figure 2 and referring to the archetypes derived from theoretical studies of Simon Kuznets (1955, 1963), although criticized by a large specific literature since the '70s, it seem possible to outline a hypothetical and ideal path to reducing levels of income inequality for the southern Regions, resulting in the increase of income *per capita*. This condition, however, as discussed in this contribution, can not exempt from considering the many negative consequences, especially in these latter Regions, that are played by the so-called un-

derground economy. Furthermore, current conditions, not present in the past, have allowed the most development of the North and are no longer the same for other areas.

If the relationship is observed on the contrary, it is clear how inequality, a constraint at the level of social development, is crucial in less prosperous Regions which correspond to those in the South and lowest in the remaining ones. To demonstrate these effects, in the following charts it is shown as the standard of living appears to be considerably lower where the shadow economy (measured by the value of turnover submerged in proportion to GDP) is most evident.

Figure 3. Ratio of turnover undeclared to GDP and GDP *per capita* at current prices for the Italian Provinces, average 2008-09



Source: our elaborations on UIL Report 2010 and 2011, and Unioncamere Report 2009 and 2010 data

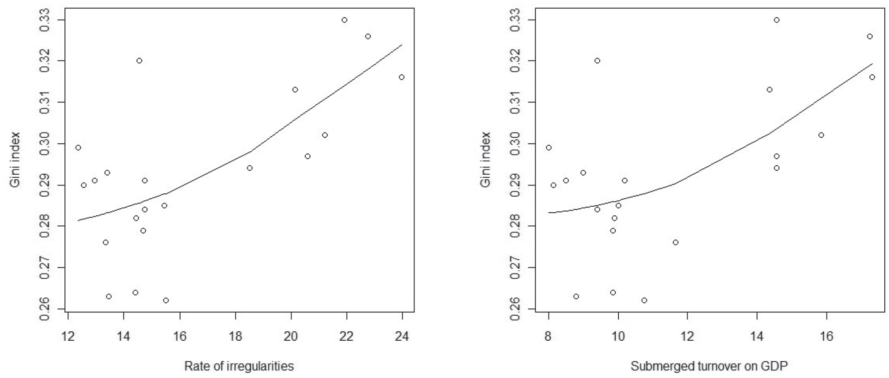
The interpolating function shows a similar evolution in the three graphs that represent different geographic areas, but the differences are very deep both in terms of income and revenue undeclared. The values of the impact of turnover undeclared on GDP in the Mezzogiorno area are in some cases more than double of those of many Regions in the Center and in the North of Italy and the only value low enough to be compared to that of the northern Regions is that of Abruzzo (11%). Considering the last values (year 2009), the Provinces which occupy all the positions less virtuous are southern ones, the first three are in Sicily: Agrigento, Enna and Ragusa, with values of about 20%. The data is even more significant when compared to the national average of 10.3% and to the values of the most virtuous Bologna and Milan, under 7%.

A second variable included in the following graphs, namely the rate of irregularities related to the business and work, shows a similar trend of the previous one. All the southern Provinces, with the exception of Abruzzo and Sardinia show levels (2009) between 19% and almost 26%. The average of the Abruzzo Region, such as individual provincial values, are much lower, with an average of 13.4%, only 0.2% more than the average of the northern Regions; even in this ranking Milan and Bologna Provinces have lowest values, below 11%.

At the same time, this result implies that in all the Provinces on the left side of the chart, it should certainly be added a share of income that can not be included in that recorded by the Institute of Statistics. Therefore it is clear an overall decrease in actual income differences between Provinces and Regions of North and South.

If the black economy, when characterized by high values, has negative effects in economic terms, even on the level of inequality, the consequences are bad, as it is shown in the following graphs, in which two different variables, related to improper practices by firms and workers, are considered.

Figure 4. Gini inequality index for the Italian Regions (average 2007-08) compared to the rate of irregularities on the job and turnover submerged on GDP (average 2008-09)



Source: our elaborations on Istat and UIL Report 2010 and 2011 data

In the graphs it is possible to see as irregular activities by firms and workers correspond to an increase of inequality. The unequal distribution of income is obtained from "official" income, which in southern Regions is lower and more concentrated and may represent one of the causes that lead to malpractices. The need for an equal distribution of income, which in practical life is equivalent to more opportunities of profit, or at least to the well-being of one part of the population, stimulate to seek opportunities also adverse to the law and therefore contrary to the general interest. This is because the effects occur in the social and economic areas, often controlled by the organized crime, that in many ways restricts local socio-economic development. On the other hand, the level of income remains relatively low because a high proportion is hidden from the official count and then, if the GDP *per capita* is not entirely representative, may be the same for the indicator of inequality.

The availability of additional income and the willingness and ability to borrow for their consumption and investment make the contexts of central and northern most active and productive from an economic standpoint and thus increase the general welfare.

However it does not seem possible to state a clear reduction in inequality North-South from official income and undeclared one. The illegal practices are widespread throughout the territory and certainly affect the economies, especially in the most backward areas; at the same time, where these practices are stronger present, there is also the phenomenon of higher income inequality. This situation, when present in a relatively low average income area, means discomfort for at least a portion of the population, which in turn could be led to evasive behavior of legal practices.

4. Underground economy and income inequality in a context of fiscal federalism

In Italy it was thought to remedy to some negative effects of income inequality and, above all, of underground economy with the introduction of a model of federal system and in particular of fiscal federalism, with the objective of a more efficient and profitable management of public resources.

The proponents of the adoption of the federal reform hope the most careful control over the area of competence, including the explicit need for device administrations to achieve the revenue from taxation, that will be essential to support all the primary public services to be provided to the population. It is necessary a strong sense of responsibility of all the peripheral structures in charge.

At the same time, those who support the outlay, would have a greater propensity to pay taxes for certain target, to promote its territory, having a direct and most reliable benefit. Even on the expenditure side, the best knowledge of local features and propensities, make it possible to address more effectively measures on the territory and possibly to achieve a saving of resources. Local actors become directors of many aspects of life of citizens, which are now regulated in a unified way by the central government.

The themes of a tax reform, in this case a federal reform, and the underground economy are closely linked. In Italy, while being able to be inspired by countries with historic federal systems, it may be that federalism will have a positive impact in the contrast of shadow eco-

nomy and should work better than the classical methods, often proved vain like punitive and educational ones (Schneider and Enste, 2000).

However possible limitations of the administrative territorial division are evident. While in any case the possibility of transfers from the high levels to the peripheral ones would be in difficulty, the socioeconomic differences would remain strong in many areas of the Country. This would lead to strong differences also in terms of public goods and services offered, well-being of individuals and convenience of companies to settle and stay in the territory. In this case it would be desirable a process of "imitation" between Regions. Of course it will be opportune to perform a benchmarking for copying the best practices under the motivation, for example by the voters, to conform to the most virtuous districts.

Furthermore, different conditions would lead to "migration" of social groups to other Regions. In this context we refer to "horizontal competition" and to the search for virtuous circles of efficiency and competition between different Regions in the Italian case.

The concept of competition in a federation is seen in the double sense, vertical and horizontal, respectively, if there is competition between administrations of different hierarchical level, or of the same degree of power; when this situation is present, there is a competitive federalism (Buchanan and Brennan, 1980).

Members of the federation, or in this case the Regions, are both cooperating and competing for the maximum general welfare after having regulated its own territory and the border areas, unless the law requires otherwise. The competition, which leads to different levels of taxation in various jurisdictions, is a useful tool for efficiency and redistribution (Wilson, 1999; Pagliari, Bucciarelli and Odoardi, 2010). Problems may arise from the border areas of expertise, or when major infrastructure assets across multiple neighboring areas; in order to overcome these limits, the central and peripheral administrations must cooperate together.

5. Conclusions

In the Italian Provinces there are considerable differences in the economy and consequently in the styles of life. This is certainly due to the fact that in some areas of the country, as mentioned, the economy

is more vital and laborious, especially when compared with other Regions where, instead, problems in economic relations and development remain persistent.

These differences reflect in the local economy in several opportunities for improving life conditions, by limiting the full achievement of the individuals, who do not have the opportunity to participate actively in local and national economy, thus also restraining the harmonious and joint development of the Country. However, it is necessary to consider additional sources of income and wealth that can not be considered in official statistics, the so-called shadow economy, a phenomenon which is present in many areas of the country. It is clear that in many economic environments the practice of holding "submerged" several work activities, evading the tax due, with consequences in distribution of the new wealth generated, plays an important role.

These practices are widespread throughout Italy, but represents a more serious problem especially in the South, where the whole system, composed of professionals, artisans and entrepreneurs, is "weaker" and most likely to fall into acts contrary to law and where a high polarization of income does not allow an homogeneous growth of well-being.

The absolute numbers of this phenomenon show how important the problem is also in the northern Regions, but we must consider that in those environments, the total volume of employment, production and creation of new wealth are much higher than in the South of the country, as well as the quality of living conditions.

In conclusion, illegal business practices and excessive inequality are two connected aspects to be combated. In a difficult environment like Italy, it is hard to imagine a reform or intervention that may be suitable for all areas of the Country, today still so different. The idea of fiscal federalism may be useful, like other tax reforms, to introduce innovations in fighting the underground economy, with particular attention to the reflections in the field of social welfare, for all areas of the Country.

In relation to the important socio-economic aspects discussed above, we can not avoid to consider some relevant implications for the Economic Politics. The quantitative evaluation of the macroeconomic variables under investigation is of primary importance from several points of view. But, if the evaluation does not include all the compo-

nents of the real phenomenon, there is a risk of generating an induced effect on individual and governmental choices, which are necessarily relied on the "official" assessments. When these values are distort, such as in the case we have discussed, they can lead, at both micro and macroeconomic level, to errors which perpetuate into the socio-economic system. The "perfect revelation" and the "exact evaluation" are therefore essential sources of quantitative signals for the decision processes of both microeconomic agents and policy makers.

Economic Politics can not avoid to pay attention to these two aspects strongly interconnected, i.e. underground economy and income inequality, of course in order to bring out the current submerged economic reality and obtain an improved socio-economic result, but also in order to consider the effects of the shadow values on the evaluation of income inequality in the varied Italian contexts, for which traditional explanations certainly exist, but that often require very specific knowledge and studies to be well understood.

The benefits that can result from the federal reform are certainly influenced by the structure that it is possible to give to central and local Institutions. Obviously there is no perfect form of federations for each socio-economic context and indeed many Nations, which have chosen it in the past, continue to adapt and refine the legislature (among others Weingast, 1995).

The possible advantage of a targeted control is linked to that of local knowledge, which must be the basis for the structure of Institutions (Oates, 1993) and for the appropriate sizing of Regions and local Authorities (Goyal and Staal, 2004) to exploit possible advantages such as economies of scale. It is necessary to take into account the possible mobility of the population, the competition between Agencies (Tiebout, 1956), the choice of provision of public services, the choice of productive investment and support to the local economy (Castles, 1999; Besley and Coate, 2003).

These conclusions can be specifically referred to the many open questions about the oncoming federal structure in Italy.

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HUMAN CAPITAL IN PERSONALIST ECONOMICS

Abstract

In this paper we point out the main methodological differences between the mainstream theory of human capital and the heterodox theory of personalist capital. On the basis of the description of the three levels of human actions which are respectively related to a person's physical liberty, intentional liberty, and participative liberty, we explain how and why the concept of personalist capital includes and integrates that of human capital.

In fact, personalist capital goes beyond the costs-benefits analysis of investment in education and training, the idea of a stock accumulation of working capabilities and technological knowledge, the comparison of human capital level among nations and continents.

According to personalist perspective it is important to understand the ethical impact of human actions in the social context and in the economic market. Personalist economics connects the moral virtuosity or viciously of human behaviors with the enhancement of human dignity and the improvement of the quality of social relations.

Finally, within the personalist approach we distinguish the principal schools of thought and we try to highlight their original macroeconomic and microeconomic insights and just in case to indicate their limits.

JEL Classification: B30, B40, I25, Z13.

Keywords: Human Capital, Personalist Capital, Civil Economics, Social Catholicism, North-American Personalism, North-American Neo-Conservatorism

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1. Introduction

Although the role of education and training in economic dynamics had been deeply analysed by Adam Smith, John Stuart Mill, Alfred Marshall, and many other important scholars, the expression 'human capital' was introduced by Theodore Schultz in occasion of his presidential address at 1960 American Economic Association annual meeting (Blaug, 1966; Spalletti, 2008). He described human capital as the individual's embedded stock of technical-operative knowledge and competences. Through Chicago school's contribution the field of research of education economics was introduced in literature. In fact, Edward Denison (1962) identified the knowledge as the factor explaining the 'residual' of American GDP not imputable to the traditional determinants, while Gary Becker (1964) elaborated a specific formalised theory and proved a series of statistical findings demonstrating the microeconomic expediency of human capital investment in a perfect competition context.

Mainstream economics considers human capital according an utility-maximising perspective. Its economic agency is the paradigm of *homo oeconomicus*. This completely informed and fully rational individual is lack of sentiments, emotions, and values or - and this is the same - he/she is capable of properly inserting them within the calculus of maximisation of his/her utility. Mainstream microeconomics takes account of the amount of individuals' financial resources spent for education and training investment, the opportunity cost of time spent during the time of study and apprenticeship, the trend of human capital consumption allowance (by hypothesising a supposed useful life). In this way mainstream microeconomics states a net present value of the investment and its profitability index.

Mainstream macroeconomics examines the aggregate of human capital through econometric instruments, such as data linear regression and principal component analysis. The human capital level is connected to the endogenous economic growth, social well-being, population's health, nation's political freedom, and nation's respect of human rights. Finally, mainstream macroeconomics compares the results of each nation/continent with those of the others according a *descriptive* conception of economic science.

On the other hand, personalist economics promotes a less elegant approach to education and training. It emphasises the *qualitative* aspects of people human capital, such as their learning and practicing civic virtues. Personalist economics believes that human capital cannot be treated as any other type of economic investment simply because it is "human". In fact, personalist microeconomics maintains that human being is a multi-dimensional person and not a stereotyped individual. Person is at the same time constituted by an individual and a social nature. He/she has *boundaries* related to his/her physiology, psychology, emotionality, and knowledge which leads him/her sometimes to make sub-optimal choices and sometimes to confuse his/her ultimate goals.

Finally, personalist macroeconomics highlights that humans are influenced each other because they spontaneously live in community. It thus supports that human capital growth must be connected to the integral human development of all people. In this view personalist economics stresses that *integral* human development implies the strict connection between economic and moral aspects of social life.

2. Levels of Human Action

Personalist economics praises Ludwig von Mises' (1949) praxeology because it provides instruments of observation to explain what people want by acting in one way rather than in another in the awareness that everyone always acts because he/she wants to improve his/her state of affairs. Every human subject continuously tries to change a less desirable state of affairs into a more desirable one. Acting thus consists of selecting a pattern of behaviours designed to further the actor's purposes. Choosing not to act also constitutes a modality of action represented by a wanted absence of actions aimed to the actor's purposes.

However, human actions can be unsuccessful because sometimes people achieve unintended outputs or harbour unfair expectations and unjust judgments. In fact, human decisions are *free* actions made by creative people and not by static and perfectly predictable individuals -as mainstream economics argues. Personalist economics recognises that a real decision among alternative choices supposes a concrete economic agency and not just his/her abstract preferences.

On the other hand, personalist economics contrasts Misesian silence concerning the moral goodness or badness of the ends of human actions. For personalist economics people must take economic choices within a moral pattern and in a moral perspective. In other words, human actions must be morally good in processes as well as in objectives. As a consequence, personalist economics goes on the description of values intrinsically contained in the unpredictable human actions. It tries to *orient* human behaviours towards meta-economic values, such as friendship, trust, fraternity, common good.

In this perspective personalist economics distinguishes among three levels of human actions:

i. The lower level of human actions is related to people exercise of their *physical liberty*. It deals with survival actions that individuals and animals can carry out, such as to eat something that is available and near to the hungry being. This *biological* type of human actions has been considered by all schools of economic thought in history;
ii. The middle level of human actions is connected to people exercise of their *intentional liberty*. It deals with actions that require the employment of adequate means for purchasing a desidered end, such as to send a curriculum vitae to firms' human resources offices to find a job. This *rational* type of human actions can be fulfilled by people and by individuals (not by animals) and it is examined by mainstream economics as well as by personalist economics;
iii. The higher level of human actions is linked to people exercise of their *participative liberty*. It deals with actions associated with self-determination that makes one a better person, such as to spend time speaking with the other members of the family exclusively because this produces moral good in the person. As this *transcendental* type of human actions is exclusively performed by people (not by individuals), it is only pointed out by personalist economics.

Personalist economics argues that being a person is a constitutive property which can never be denied. Every human being maintains his/her dignity from his/her conception through his/her natural death. Anyway, one once begins acting at the third level he/she somehow becomes more fully a person. This improvement of one's own personhood is a continuous process that takes place throughout one's en-

tire lifetime. Personalist economics states that people personality forms their personalist capital and that their personalist capital includes human capital of mainstream economics.

Personalist capital indicates people integral upbringing. The adjective 'integral' refers to the plurality of material and spiritual aspects of people personhood. The substantive upbringing intends people education and training –human capital notion of mainstream economics– but also adds the idea of experiencing the *ultimate truth* of whole reality. Therefore, personalist economics extends the idea of human capital supported by mainstream economics to people practice of good civic virtues in political and economic affairs.

However, we can distinguish between a series of personalist approaches: the civil economics, from Antonio Genovesi's and Pietro Verri's Italian classical school through Luigino Bruni's and Stefano Zamagni's communion economics; the social Catholicism, from Luigi Taparelli d'Azeglio's and Matteo Liberatore's corporatist economics through Cardinal Pietro Pavan's and Francesco Vito's social economics; the North-American Personalism, from Bill Waters' interpretation of Schumpeterian thought through Edward O'Boyle's moral action theory; the contemporary North-American neo-Conservatorism, from Irving Kristol's cultured civilization through Michael Novak's working vocation.

3. Personalist Capital in Civil Economics

The civil economics specifically underlines human capital in a non-materialistic and relational perspective of society and the economy. This view stresses the role of *qualitative* attributes of human capital, such as moral values, relationships, reciprocity, altruism and sense of community belongings. Antonio Genovesi (1765) and Gaetano Filangieri (1780-1785) thought that the aim of economic dynamics was represented by the attainment of 'public happiness'. This concept indicated the spiritual and material well-being of the bigger possible number of people. As the Neapolitan authors conceived human capital in a strict connection with *social capital*, they promoted the defence of human dignity of every person and emphasised the un-reducible value of

the intermediate bodies, such as family, associations, groups, schools, enterprises, and so forth. In these communities a person performs his/her innate talents and he/she lives and grows up in a climate of trust, solidarity, and kindness. In fact, Genovesi and Filangieri pointed out that every person's moral and ethical values determine how he/she works, treats his/her family, and spends his/her time. If the *hierarchy* of societal values were correct, people would have good morals. On purpose, the Neapolitan scholars sustained the role of the state in supporting the diffusion of good customs and building a social system based on good laws, reciprocal confidence, and solidarity.

The Lombard-Venetian school also elaborated a significant human capital theory which was partly influenced by living in a geographic area richer and more developed than Naples. Paolo Maria Doria (1729), Pietro Verri (1771), Gianmaria Ortes (1774), and Gherardo d'Arco (1791) were the principal exponents of the first generation while Melchiorre Gioja (1815), Giandomenico Romagnosi (1836), Carlo Cattaneo (1859), Luigi Luzzatti (1874), and Fedele Lampertico (1874) were of the second one. The former were more concerned with the identification of means morally acceptable which allows the increase of the material wealth of a nation. In this perspective they highlighted the role of human *creativity* for discovering new things and for improving the methods of production in an anticipated version of Schumpeterian entrepreneurship. They argued that commerce is not only an economic activity but a political and social one too. As a consequence, they viewed the moral principles of reciprocity and worthiness as functional instruments for attaining *common good*. On the other hand, the second generation of the northern economists believed that the growth of human capital constitutes the presupposition of economic growth and social stability. They understood that the state must promote initiatives for the *civilisation* of society whilst remaining in a supplementary position. In the second northern generation of scholars economics is intended as the science of human work and not of the wealth of a nation, although the former does not exclude the latter. Cattaneo strongly emphasised the impact of *metaphysical* ideals on the economic performance of every person and whole community while Lampertico sustained the necessity of an *interclassist* approach to economic issues in the awareness that society is an organic reality.

On their side, Bruni and Zamagni have developed the Italian classical school's theoretical and empirical pattern which connected intellectual sources in economics, politics, and morality. Bruni and Zamagni argue for the Aristotelian-Thomist *holism* of society, the Humanist tradition of the *dynamism* of civil society and economic institutions[1], and the *interactive* feature of human rationality. They promote communion economics as a series of means directed to the construction of a society where mercantile exchange, equity of redistribution, and free and trustworthy reciprocity can coexist efficiently. Economic literature usually separate commercial relations from social ones, by referring to the former as instrumental relations which are substantially broken in the moment of exchange of equivalents (principle of equivalence) and to the latter as the civil relations which are characterized by cooperation (principle of proportionality). Instead, Bruni and Zamagni distinguished between markets *â la Darwin* based on positional competition and on the Shermin Rose's super-star effect and civil market where the distances of economic agents tend to be reduced. In fact, utilitarianism, positivism and consumerism have historically provoked the end of civic humanism whose special feature was the profound unity between charity and economy, between gift and contract in those experiences near the rise of markets (quasi-markets). As a result, the person-centred pre-modern community was replaced by the anonymous and impersonal market society. Civic humanism was not only a theory but also a common practice. It is sufficient to mention the *Montes Pietatis*. These old credit institutes did not work in the logic of monetary incentives but in a perspective characterised by reputation, trust, solidarity and horizontal subsidiarity. The cultural substratum of these institutions was constituted by Christian *reciprocity*. This principle was somehow missed in current economics by causing the undervaluation of the importance of *relational goods* for a person's happiness and human capital flourishing (Gui, Sudgen, 2005). Reciprocity implies

> *a series of bi-directional transactions, which are at the same time independent and connected among them* (Bruni, Zamagni, 2004, p. 166).

[1] *They mainly refer to the late medieval and early Renaissance periods in Italy.*

As a consequence, reciprocity possesses a character of transitivity and thus normally almost provides a triadic pattern: I, you and the other. Society survives and improves if reciprocity, which is buried in the heart of every human being, is unearthed and made to work. Irrational ignorance and fear can prevent that from happening. On this concern it is emphasised the role of a person's human capital of rationally acting according his/her real nature of social being. In other words, for Bruni and Zamagni an integral upbringing of a person involves the practical learning of behaviours of reciprocity.

4. Personalist Capital in Social Catholicism

Social Catholicism is strictly related to the Thomist *natural law* approach to social sciences which characterised the social doctrine of the Catholic Church from Pope Leo XIII to Pope John XXIII. With the election at papacy of Pope Paul VI the Church's referenced philosophy became the communitarian personalism of Jacques Maritain and Emanuel Mounier. This communitarian philosophy was in turn substituted by the original phenomenological thought own of Pope John Paul II. Concerning social Catholicism, we must recognise the emphasis on the person's penetrating *cognition* of whole reality. The person is capable of orderly unifying all aspects of the world in the light of the ultimate end of reality. The person is endowed of intelligence to understand the complexity of world and the interconnection of its factors. Many scholars belonged to social Catholicism, such as Luigi Taparelli d'Azeglio, Matteo Liberatore, Heinrich Pesch, Oswald von Nell-Breuning, Giuseppe Toniolo, Pietro Pavan, and Francesco Vito.

The forerunner Luigi Taparelli d'Azeglio (1839) focused on the centrality of the category of social and personal *order*. He referred to social order as an equilibrium between people and associations at various levels, one which is appropriate to human nature, one which maximises human freedom to associate (solidarity) in the pursuit of private goods, while minimising interference in the direction of those private activities (subsidiarity) to the extent required by the common good. Social order is thus an important condition for everyone's personal order. This last is intended as a person's capacity of giving a proper value to

things, facts, and relations in the light of the ultimate truth of reality. A person is thus ordered whether he/she dominates his/her needs, emotions, sentiments, desires in an attempt of performing the maturity of his/her *personhood*. In sum, if human community maintains a set of ethical principles based on natural law, it will be able to properly act and to favour every person to do the same. According to Taparelli, we cannot separate economics from morality neither facts from values because only what is morally good can also be really economically useful. In the context of 'social question' caused by the industrial revolution Matteo Liberatore (1891), the ghost-writer of Pope Leo XIII's 1891 *Rerum Novarum* encyclical letter, stated that the workers must receive a wage sufficient to live decently. He also pointed out that the growth of human capital was desirable to improve the efficiency of labour activity, guarantee the stability of society, and mainly to give the possibility to every person of experiencing a good life. In fact, for social Catholicism economics is a branch of political science and it is characterised by a 'practical' approach in relation to the actual circumstances.

Some years later Giuseppe Toniolo (1898-1913) and Heinrich Pesch (1905-1926) tried to *orient* the application of the pure economic laws along moral channels. They believed that manufactures are legitimated to become always more competitive in markets but that they have also to articulate manpower's division of labour by taking account of people right to be treated as human assets and not material ones. As a consequence, they suggested a partnership between owners and workers by proposing the introduction of some measures of shared management of firms. Oswald von Nell-Breuning, the ghost-writer of Pope Pius XI's 1931 *Quadragesimo Anno* encyclical letter, argued that the improvement of the people's mind is more important than exploitation of the soil. He wrote (1937, p. 40) that "not he who creates and shapes material things, but he who shapes human beings and gives them their character is the real maker of history".

Finally, after the second World War Cardinal Pietro Pavan (1957) encouraged workers to empower their labour organizations not only to defend their material claims but even to participate to a community's life. He set forth that the nation's social architecture can significantly influence the growth of people human capital. His support for politi-

cal democracy was justified because this type of political system was the more suitable to valorise the importance of intermediate bodies in economic affairs. Pavan suggested an economic order grounded on the human dignity of every person and aimed to common good. Vito (1949) contributed in the same direction by introducing a series of economic practical instruments, such as the combination between the establishment of ever-more technological machines in the production process and the preservation of employment through the specialization of manpower. Vito (1962) also remembered the importance of educating persons to *reflect* on the sense of their life and to research the truth of reality. Otherwise, people risk to become similar to intelligent computers that carry out a task and nothing else. This could mean an increase in the total good of society (economic growth) but certainly would neglect the common good of society (human integral development).

5. Personalist Capital in North-American Personalism

The North-American personalist school was born in the sixties inside the Association for Social Economics and later it developed as an attempt to implement Pope John Paul II's anthropology of human life in economics (O'Boyle, 1998). These economists thus elaborated an original economic theory grounded on the paradigm of the *homo socio-oeconomicus et agens*. William Waters (1952) put forward the basis for an economic pattern as an alternative to mainstream economics as well as to civil economics and social Catholicism. In fact, his approach is related to Schumpeterian active conception of economic agency. As a consequence, Peter Danner proposed a microeconomic view of human capital. He focused on the person's moral dimension of managing his/her economic means to obtain his/her purposes than on the orientation of community's policy for attaining the common good (Marangoni, Solari, 2010). Although Danner agreed with the conception of the human integral development of people, he mainly highlighted the good or wicked morality *embedded* in the human actions of every economic actor. As Pope John Paul II stressed that the journey of man towards the meeting with the truth of Christ's person was possi-

ble through the Thomist 'static' method of exploring existing reality as well as through the phenomenological 'dynamic' method of knowing the essence of facts which occur, likewise Danner affirmed:

> *Individual values are also dynamic in that they are not only 'norms' for judging the goodness of an object ... but 'purposes' and 'goals' for overt action.* (2002, p. 22-23)

In this perspective economics is thus a *value-landed* science and a set of practical norms. The North-American personalist economics framework is constituted by the application of the Aristotelian golden mean and moral virtues of moderation, justice, and charity. This pattern was practically applied by Edward O'Boyle to the topic of human capital. He acknowledged that the principle of human dignity is decisive for the wide diffusion and practice of good habits and civic virtues in political and economic matters. In fact, O'Boyle believed that every person chooses to act either virtuously or viciously as a consequence of person's capacity of *self-control* and *self-determination*.

O'Boyle supported that human capital is accumulated by good actions as material capital is accumulated by the sum of productive means, but the former cannot be judged through instruments of economic analysis used for the latter. Human capital is not a transferable stock of wealth because it is not something distinct and separate from its owner. The moral virtues of beneficence, courage and creativity are basically related to the nature and upbringing of every person. In fact, human capital is embedded in every human being and cannot thus be sold or bought; so much that if we want to benefit from one's human capital we must employ him in our firm. As a consequence, O'Boyle rejected Becker's (1996) attempt of improving his famous microeconomic model grounded on a utility maximisation function by including the personal habits and addictions, peer pressure, parental influences on the tastes of children, advertising, love and sympathy and so forth. O'Boyle explained that Becker's anthropology *exclusively* contains actions of the first and second level. This is confirmed by the fact that Becker has again recently continued to use the concept of the individual and the paradigm of *homo oeconomicus* as well as to deny the relevance of the self-determination capacity in a person's actions that characte-

rise human participative liberty (action of the third level). For Becker the economy works best when optimality achieves Pareto and it maximises human freedom, rather for O'Boyle where it "enhances a human being as a human person and renders that person more effective and more highly valued as an economic agent." (2009, p. 263).

If we observe labour market functioning, we can draw –O'Boyle sustains– that no employer wants a worker who is not capable of limiting his drinking neither one who endeavours to steal. No one wants to work for an employer who pays too little his labour or with colleagues who do too little. No consumer likes a merchant who deliberately misrepresents the quality of the goods for sale or offers goods at a too expensive price. No merchant wants a customer who is late on payments or who insists on being served before everyone else. In general, employers prefer diligent worker to lazy worker, stand-up guy to whimper. Buyers favour the merchant who is always honest to one who is devious, the merchant who gives sound advice to one who simply doesn't know his/her product line or worse yet he/she cheats his/her customers. These preferences are expressed and the personalist capital of a specific economic agent is rewarded through *routine exchanges* in the product market where price, quality, and terms of service after the sale are determined and in the resource market where resources prices including wages are determined along with hours of work and working conditions.

6. Personalist Capital in North-American neo-Conservatorism

Michael Harrington, a socialist thinker, ironically described the Irving Kristol's group of intellectuals as 'neo-conservative' to distinguish it from Russell Kirk's traditional conservative one. Kristol (1972) argued that human values deriving from Biblical anthropology could never be connected to leftist ideologies[2]. In fact, for Kristol every socialist thought basically wants to build a perfectly equal community. But this constructivist dream is never realisable because society is constituted of human people who exercise an unpredictable freedom in

[2] As a consequence, Kristol abandoned the Democratic Party which he belonged to and he started to collaborate with the *American Enterprise Institute* think-thank of Washington D.C.

making their choices. Therefore, the only solution for attaining a right economic and political system is to educate people to practice *good customs* in a free society context. It was along these lines that Fr Richard Neuhaus, a Protestant priest who converted to Catholicism, wrote a column for many years called "The Naked Public Square: Religion and Democracy in America" in the review *First Things*. He explained that the American constitutional right to the search for happiness had to be made in reference to an *integral* conception of the human being, including his religious sense. Neuhaus identified the real and deep confront between people of different faith as the proper instrument of the peaceful development of society from all points of view. This dialogue had not only to deal with abstract themes but it also had to take place with regard to ethical, political and economic topics (Felice, 2005). In fact, the neo-conservative school has tried to combine the insights of thinkers like Jacques Maritain (1944) and John Courtney Murray (1960), representing a Thomist philosophical approach regarding the relation between Catholicism, democracy and a free market economy, with those of figures like Alexis de Tocqueville (1835-1840), Ludwig von Mises (1927) and Friederick von Hayek (1960) on the ethical foundation of liberalism.

In particular Michael Novak (1982) introduced an original *architecture* of society centred on the relationship between a society's shared ethics and a free market economy. He divided the social life into three spheres. The first is a free market economy where entrepreneurship is stimulated. This is connected to a person's economic freedom. The second is a political democracy as a series of procedures directed to guarantee civil rights and duties. This is connected to a person's political freedom. The third is the moral–cultural consensus among the set of common ethical values which might animate all human behaviours in society. This is connected to a person's cultural and religious freedom. This last component has always been indicated by Novak as the *hub* of the whole system because it shapes the informal rules of commercial trade. Therefore, human beings are conceived as creative, free and responsible people in a free social context. Moreover, in his 1996 *Business as a Calling* Novak stated that human capital is substantially based on:

- The practice of *civic virtues*, such as honesty, kindness, punctuality,

worthiness, trust, austerity, generosity, simplicity, gifts;
- The valorisation of the *mind's capacities*, such as creation, improvement, innovation, understanding how to get along with people, care for things, management of news;
- The fulfilment of a *working vocation* that everyone understands as being apt for his historical socio-economic conditions, his personal features and interests, and for his position within God's plan in the world.

Finally, in Novak's works emerges that the political and economic experience of the USA constituted the best example of development of people human capital. There, many residents and many immigrants have found a good job, they have received good wages, they have got on with their careers and they have also been able to cultivate the spiritual aspects of their life. However, Novak's proposal lacks valorisation of the *social aspects* of a person's nature. Novak has not highlighted the role of intermediate bodies in the integral upbringing of people. This hides an individualist version of personalist economics according to which a person participates in the community for some type of profit and he/she thus achieves from the community what he/she wants. Instead, experience proves that the input of a person to enter into an intermediate body is usually for self-interest or self-attraction -as Novak argues- but within community a person can change his/her purposes and, anyway, does not only influence the community's decisions but his/her behaviours are also influenced by community.

7. Conclusions

In this paper we have tried to illustrate the contribution of personalist economics to the analysis of human capital. While mainstream economics assumes a mathematical-statistical pattern and demonstrates empirical evidences from dataset elaboration, personalist economics highlights the complexity and the wide multi-dimensionality of people upbringing. The personalist outlook takes place through an *interdisciplinary* analysis which wisely mixes up economic observations with psychological, sociological, ethical, moral, and religious elements.

However, within personalist economics we can distinguish almost

four schools of thought. Civil economics stresses the strict connection between personalist capital and *social capital* and it advises that individual good is theoretically but not practically separable from the common good. Social Catholicism promotes an *organic* conception of society where the role of intermediate bodies is much emphasized. Here, a person learns to improve his/her talents, moderate his/her character, develop his/her personality, and mainly try to discover the ultimate end of reality. North-American Personalism points out that personalist capital consists in the practice of *virtuous actions* in economic and social relations. The morality embedded in every human act inevitably increases or diminishes the person's dignity and it indirectly affects the common good of whole society. North-American Conservatorism set forth that every person has a *working vocation* which he/she should perform in a creative and innovative way. To the person's exercise of freedom corresponds the person's responsibility of the consequences of his/her behaviours.

Finally, we must admit that the personalist economics is lack of an endowment of instruments of economic policy. Although we agree with the affirmation that to measure human capital is a *contradiction in terminis* because person is not something valuable but somebody characterised by an irreducible and inalienable dignity, we must recognise the risk that personalist capital remains an abstract concept if we are not capable of applying it in empirical studies. This means that the interesting and original framework of personalist economics needs a further practical development.

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A PRELIMINARY FRAMEWORK TO OVERCOME THE DICHOTOMY BETWEEN SPECIALIZATION AND DIVERSITY

Abstract

Two distinct approaches have been originated in the literature on industrial structures facing the match between knowledge externalities and economic growth: the former supports industrial specialization and is based on the Marshall-Arrow-Romer (MAR) externalities, while the latter is turned to sustain industrial diversity and refers to the Jacobs externalities. This paper attempts to overcome the existing dichotomy between the two approaches and proposes a preliminary framework, derived from the Lotka-Volterra equations, to investigate the complementary dynamics between specialization and diversity on the long-run.

JEL Classification: O18; R11

Keywords: Industrial Structure, Knowledge Externalities, Economic Growth, Ecological-Economic Model

1. Introduction

Since Marshall (1920) several scholars have been focusing on knowledge externalities as emergent phenomena of agglomeration economies and engine of growth. According to Audretsch and Feldman (1996), who provided a comprehensive literature review, knowledge externalities alimented an extraordinarily high number of studies dating back, at least, to Hoover (1936): inter alia, Romer (1986), Lucas (1988), Grossman and Helpman (1991, 1994), Glaeser et al. (1992).

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In literature there is consensus on the fact that geographic concentration boosts business interactions and the transmission and exchange of knowledge and ideas, skilled workers, products and processes, and so on. However, there is discrepancy on what are the specific patterns of knowledge externalities that bring economic growth. Most scholars investigating the link between knowledge externalities and growth adhere to two well distinct approaches: on one side, there are the specialization-driven models of Marshall (1920), Arrow (1962) and Romer (1986) or MAR externalities and, on the other, the studies on diversity and Jacobs externalities (Jacobs 1969, 1984). If both approaches converge on the role of knowledge as facilitator of innovation, these differ in a couple of key assumptions. In short, Marshall, Arrow and Romer suppose that knowledge externalities are relevant only for firms within the same industry (specialization), while Jacobs assumes that knowledge externalities take place among firms active in diverse and complementary industries (diversity).

Evidence on the impact of industrially specialized versus diverse patterns is mixed (see the overview provided by Beaudry and Schiffauerova 2009). Even though computational as well as methodological issues affect results (see Mameli et al. 2008 for a critical review), as a matter of fact it is not clear whether firms should locate in industrially specialized or rather diversified areas to grow faster.

In this paper we propose a preliminary framework to overcome the existing dichotomy between specialization and diversity and, hence, between MAR and Jacobs externalities. We attempt to deem the two approaches as two faces of the same medal. The paper is structured as follows. In Section 2 we put forward our research question. In Section 3 we present the classical prey-predator model and its logics. In Section 4 we focus on the assumptions and conjectures adopted to build our proposed framework. In Section 5 we conclude.

2. Our research question

Does a framework exist to investigate the interaction between specialization and diversity? To answer this question we move from an ecological approach. Georgescu-Roegen (1971), for example, argued

that to analyze the dynamics of complex socio-economic system it might be important to take inspiration from biology. This approach is not new to urban and regional economists (see, among others, Dendrinos and Mullally 1981, 1983, Gambarotto and Maggioni 1998, Nijkamp and Reggiani 1987, 1992, Sonis 1986 and Suarez-Villa 1993). Socio-economic systems, such as natural ones, exhibit the same properties of dissipative structures (Nicolis and Prigogine 1977) and are resilient, in the sense of their capacity to resist to internal and external perturbations (Holling 1973 and Perrings 1994, 1998). Moreover, biological analogies are useful to investigate spatial competition and interaction between several components of socio-economic systems.

At the same time, since the evolution of socio-economic structures is intrinsically complex, it is important to find out consistent pathways of non linear dynamic modelling (see, for example, the discussions in Bertuglia and Vaio 2009 and in Nijkamp and Reggiani 1998).

In our view the Lotka-Volterra prey-predator model provides a good interpretative point of departure to investigate the long-run evolution of socio-economic systems, in terms of interaction between industrial specialization and diversity. In this paper we concentrate on this specific interaction and emphasise the existence of underlying cyclical patterns.

To sum up our proposed framework takes into account a series of relevant elements: a multi-disciplinary focus; an emphasis on interactions, dynamics and nonlinear evolution trajectories; a reference to dissipative structures, multiple equilibria and resilience.

3. The prey-predator model and the logics behind

The prey-predator model shows the dynamic interactions between two species (in our case, the two species are specialization and diversity) by using a two difference equations system. The same equations were proposed by Volterra (1926) in a simple model for the predation of one species by another to explain the oscillatory levels of certain fish catches in the Adriatic sea and Lotka (1925) from a hypothetical chemical reaction which he said could exhibit periodic behaviour in the chemical concentrations.

The system of differential equations at the base of the model (Israel 2009) states three main hypothesis: (i) if the growth rate of one species decreases and the other increases, the species are in a predator–prey situation; (ii) if the growth rate of a species is inhibited by the more efficient one, it is a competitive situation; (iii) if each species grow, then we have a sort of mutualism.

If *N(t)* is the number of preys and *P(t)* is the number of predators at time *t*, the model is:

$$\begin{aligned} \frac{dN}{dt} &= N(a - bP) \\ \frac{dP}{dt} &= P(cN - d) \end{aligned} \qquad (1)$$

where *a, b, c* and *d* are constants. The logics is very simple and its assumption are: (i) the unbounded (in a Malthusian way) growth of prey in absence of any predator this is the *aN* term in (1); (ii) the negative feedback in case of predator presence, that is to reduce the prey's per capita growth rate by a term proportional to the prey and predator populations this is the *–bN P* term; (iii) the predator's death rate results in exponential decay, in diminishing of the prey that is, the *–dP* term in (1).

In a nutshell, the increase in the number of preys increases the growth rate of predators, but the increase in the latter generates a negative effect on the number of preys. In turn, a decrease in the number of preys reduces the number of predators, which in turn increases the number of preys and, hence, allows a new cycle to begin. As Murray (2002: 79) argues "*the NP terms can be thought of as representing the conversion of energy from one source to another: bN P is taken from the prey and cN P accrues to the predators*".

Starting from very simple mathematical equations it is possible to represent a very complex dynamics.

In urban and regional economics many studies made use of the Lotka-Volterra equations to describe several socio-economic phenomena. Dendrinos and Mullally (1981) focus on the interaction between a population (the predator) and their per-capita income (the prey). Orishi-

mo (1987) presents a model based on a divergent logics: population (N) is the prey and land price (r), used as a proxy for the intensity of land use, is the predator. Also, the Lotka-Volterra equations have been used to explain urban growth through the relative dynamics of profits (the prey) and land rents (the predator) on both a theoretical (Camagni 1992) and empirical level (Capello and Faggian 2002). Camagni (1985) and Sonis (1986) employ the same equations to represent the diffusion of innovations, Fortis and Maggioni (2002) and Bischi and Tramontana (2009) apply the model to describe interactions among industrial clusters.

4. A preliminary framework to overcome dichotomy

Our conjecture is based on the assumption that specialization can be meant as predators, while diversification as preys: each territorial unit in our dataset is classified as preys or predators on the basis of the observed degree of industrial specialization or diversity. More specifically, in our model the number of preys and predators is given by the number of employees in, respectively, diversified and specialised territorial units.

We use data on employment levels in 57 economic sectors in 103 provinces and measure their specialization/diversity over the period 1951-2001 by means of the so-called Shannon's entropy index, which measures industrial diversity against a uniform distribution of employment where the benchmark is an equi-proportional distribution of employees among all industries.

To distinguish specialized and diversified provinces we use the index below:

$$E(j,t) = \sum_{i=1}^{57} \frac{o_{i,j}}{T_j} \log_2 \left(\frac{T_j}{o_{i,j}} \right) \qquad (2)$$

where j indicates the j-th province, t is the observed time interval, o_{ij} is the number of employees in the i-th sector of the j-th province and T_j is the total number of employees in the j-th province.

If the resulting value in equation (2) is below a certain threshold, it indicates a specialized province. Otherwise, if the value of equation (2)

is higher we are in presence of a diversified province. To notice that, at each time interval t, between the two thresholds there is a certain number of provinces which do not classify as preys or predators: these provinces are in transition between the two species.

Following the discretization of *E(j,t)* in 100 points, we define two thresholds and calculate the total number of employees in specialized provinces, *x(t)*, and the total number of employees in diversified provinces, *y(t)*:

$$x(t) = \sum_{j \in P_t} \sum_{i=1}^{57} n_{t,i,j} \tag{3}$$

$$y(t) = \sum_{j \in Q_t} \sum_{i=1}^{57} n_{t,i,j} \tag{4}$$

where $\boldsymbol{P}_t$ indicates the ensemble of specialized provinces at time *t* (predators), $\boldsymbol{Q}_t$ indicates the ensemble of diversified provinces at time *t* (preys), $\boldsymbol{n}_{t,i,j}$ the number of employees at time of the *j*-th province in the *i*-th industry.

We start from the following system of differential equations:

$$\begin{cases} \dfrac{dx}{dt} = (a - by)x \\ \dfrac{dy}{dt} = (cx - d)y \end{cases} \tag{5}$$

where *x* is the total number of preys and *y* the total number of predators. In order to identify the Lotka-Volterra parameters (*a, b, c* and *d*), we transform the system in:

$$\begin{cases} \Delta x_{t,t+1} = (a - by_t)x \\ \Delta y_{t,t+1} = (cx_t - d_t)y_t \end{cases} \tag{6}$$

and define $\Delta x_{t,\,t+1}$ and $\Delta y_{t,\,t+1}$ as the preys' increment and predators' increment over time:

$$\Delta x_{t,t+1} = x_{t+1} - x_t \tag{7}$$

$$\Delta y_{t,t+1} = y_{t+1} - y_t \tag{8}$$

Next, by means of a linear regression, we estimate the optimal parameters (*a, b, c* and *d*) in the model:

$$\begin{cases} \dfrac{\Delta x_{t,t+1}}{x_t} = a - by_t \\ \dfrac{\Delta y_{t,t+1}}{y_t} = cx_t - d \end{cases} \tag{9}$$

under the assumption that:

$$R^2 = \frac{\sum_i (\bar{y}_i - \bar{y})^2}{\sum_i (y_i - \bar{y})^2} \tag{11}$$

where y_i represents the output of the linear regression and y the mean. For parameters *a* and *b* we attain $R^2 = 0.96$, while for parameters *c* and *d* $R^2 = 0.78$.

Finally, we choose the couple of regressions that maximises simultaneously the R^2 of preys and predators. Taking into account R^2_p and R^2_{pp} as, respectively, the R^2 of preys and predators, we maximize the function below:

$$\max_i \sqrt{\left(R^2_p(i)^2 + R^2_{pp}(i)^2\right)} \tag{12}$$

where *i* indicates the *i*-th couple of regressions.

So maximizing the (12) we obtain the parameters of the regression equations of the (9) as follows:

$a = 2.30$
$b = 3.06 * 10^{-7}$
$c = 9.48 * 10^{-8}$
$d = 0.28$.

The positive value of parameters support the existence of a prey-predator relationship between specialization and diversity. Parameter *a* shows that the birth rate of diversified provinces is high: that is, externalities *à la* Jacobs would be more incline to growth. Parameter *b* shows the degree of interaction between the two species and, more specifically, how diversity is preyed by specialization. Parameter *c* shows the degree of interaction between specialization and diversity, measuring how specialization increases in presence of diversity. To notice that *b* and *c* are very low and positive. Parameter *d* shows that the mortality rate of diversified provinces is low: specialization and MAR externalities would be less incline to decay over time.

We find that both species follow a cumulative pattern of growth, in line with the prey-predator model. In industrially diversified territorial units this pattern is robust to mean that these geographical areas might grow by reason of their degree of diversity. Instead, specialization exerts a relatively minor impact. To sum up, diversity grows up and self-fuels more than specialization. This finding is consistent with the value of parameter *c*, which is low and smaller than *b*.

5. Conclusions

In this paper we deem specialization and diversity (and, thus, MAR and Jacobs externalities) as not mutually exclusive. In this paper we propose a preliminary framework to link specialization and diversity. To do this, we moved from an ecological point of view. The paper was structured as follows. In Section 2 we put forward our research question. In Section 3 we presented the classical prey-predator model and its logics. In Section 4 we focused on assumptions and conjectures adopted to build our framework.

We proposed a model of conjoint dynamics. The study of the evolution of local socio-economic systems in terms of interacting specialization and diversity might represent a helpful benchmark. The next step is to offer a more robust empirical analysis to substantiate our proposed framework.

Further steps are towards a deeper investigation of the above mentioned cyclical pattern and oscillations of growth parameters. This can

be done under several points of view. For example, it might be interesting to study the cyclical pattern of returns of scale. We might assume that the prey-predator model could be set on to highlight the effect of returns to scale in explaining the evolving trade-off between specialization and diversity. The underlying economic logics is: if returns of scale decrease in a certain market, no more firms enter that sector and opt for another one, thus increasing the level of diversity in a certain geographic area. These new firms grow and, then, start to benefit from increasing returns of scale, which in turn increase the number of specialized activities in that area until returns of scale decrease.

Also, with regards to the self-organizing properties of complex socio-economic systems, the prey-predator model could be used to assess the specialization/diversity feedback mechanisms that ensure resilience. In this case to be prayed is the capacity of the system to adjust to exogenous changes: usually specialization, by means of less resilience, puts economic systems in a (more vulnerable) lock-in situation and, thus, could hinder growth, while diversity should be less likely to induce such a negative effect.

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In the latest centuries, generally speaking, history records the alternation of some important seasons which lend themselves to represent economic models, which are the bases of modern economic thought.

First of all, there is the age of *colonial economy* centered on the role of imperial states, together with the birth of monopolistic companies, in the management of trades with dominion areas.

Then, the age of *international economy* was lived, culminating in the second post war trade relation system. It was mainly founded on the functions of the national states and their authorities to support both national espansionary fiscal policy and exchange clearings, in their trade ratios with the rest of the world.

At last, in the latest years, *interglobal economy* took vehemently the lead through the modern electronic infrastructures of telematic and telecommunications.

As the former models, the *interglobal economy* too does not automatically assure either stable equilibrium or the overcoming of traditional crises.

It gives benefits and disadvantages too.

From the normative and positive points of view, one of the disadvantages which most drew the attention of researchers is the weakening and disappearance of national and subnational economic and monetary policy instruments.

Instead one of the benefits which most attracted interest might be located on the nature itself of the technological revolution in progress, foreboding new opportunities in the integration process of local economic systems, which might qualify themselves as network growth links (or growth poles?).

The Review has the aim to represent and to inquire the normative and positive profiles of the foundamentals which might characterize the thin and difficult frontier between globalization and economic localism.

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