

# The Role of Social Capital in Preventing Irregular Work in Italian Regions

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**Abstract** The issue of irregular work had been well known in Italy since the early seventies. The Italian National Institute of Statistics has developed a methodology in the vanguard to estimate the rate of irregular work and today we have time series long enough for a review of the phenomenon. When looking at regional rates of irregular work it's stunning how dissimilar they are and this dissimilarity is kept over time. This paper aims at understanding the reasons of this heterogeneous dynamics and to identify it's determinants, focusing in particular on the role of social capital. We use a dynamic panel model to measure the impact of social capital and of some other relevant variables on regional irregular work rates.

**Key words:** Irregular work, Dynamic panel model, Arellano-Bond estimator, Social capital

## 1 Introduction

Shadow economy is the part of an economy not declared for tax which typically involves exchange of goods and services which are paid for in cash. A lot of effects derive directly from shadow economy, mainly because it introduces important biases on: a) Equity: similar situation are treated differently from a fiscal perspective; b) Competition: those who don't pay taxes have an advantage because they reduce their costs; c) Tax systems: to fund public expenditure, tax are raised; d) Size of important economic variables (GNP, growth, tax burden, unemployment, productivity). One important aspect of shadow economy is irregular work, defined as (EU definition) *any paid activities that are lawful as regards their nature but not declared to the public authorities, taking into account differences in the regulatory systems of*

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*Member States.* This definition excludes criminal activities and work which does not have to be declared. Four main groups of undeclared workers can be identified: a) persons with more than one job; b) persons who are inactive (students, housewives, early retired people); c) unemployed; d) illegal immigrants. The Italian National Institute of Statistics (ISTAT in the following) have developed a method to estimate the rate of irregular work (IWR in the following) which is widely recognized to be in the vanguard. IWR is the ratio between the irregular and the total labor units. Regional IWR time series are available from 1995 to 2008. We followed economic literature (see [3] for more details and references) to select the independent variables. One of them is social capital<sup>1</sup>, which could be the key point to explain IW because it measures how economic agents interact. In section 2 we will present the data focusing especially on the construction of social capital index. In section 3 the model used and the results obtained are presented.

## 2 Data

The data used span from 1998 to 2008 ( $T = 11$ ) and are measured on the 20 Italian regions ( $N = 20$ ). The dependent variable is (a transformation of) IWR and the covariates are: unemployment rate (UnR), social capital index (SCI), capability to export (Exp), school drop-out rate (Drop), schooling (school), capability to innovate (Innov), bank credit intensity (Cred). From the inspection of line plots (not reported here for lack of space) two things are evident: first IWR are different from region to region and second it tend to remain stable over time.

All variables but the social capital index, are estimated by ISTAT and are readily available among the territorial indexes of development. The social capital index were measured using the approach defined in [1] which consists on focusing on the underlying concepts of social capital and to develop measures that are embedded in them. The main advantage of this method is that, since it focuses on all components of social capital, it gives an appropriate measure of it rather than emphasizing only one aspect. The proxy selected (table 1) are indicators of the level of: a) social behavior; b) social relationship; c) social engagement; d) civic responsibility; e) territorial characteristics.

As a first step of the social capital index derivation, each region were assigned a score from 0 to 1 through normalization. Region with the best value (highest or lowest, depending on the proxy) were scored 1. Afterward, within each of the five categories, a synthetic indicator was found by averaging the variables belonging to that category. The arithmetic mean was chosen to reflect the interchangeability among the variables. Finally the five category indexes have been pulled together through a geometric mean as it implies a lower interchangeability of categories. As a result of this process there is the overall social capital index.

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<sup>1</sup> according to the World Bank, social capital includes the institutions, the relationships, the attitudes and values that govern interactions among people and contribute to economic and social development.

**Table 1** Aspects of social capital and proxy variables selected

<b>Social behavior</b>
Violent crime (number of crimes per 10,000 inhabitants) <sup>a</sup>
Criminality risk perception (rate of families perceiving criminality risk strongly or very strongly) <sup>a</sup>
Common crime (as a % of all crimes) <sup>a</sup>
Number of protests per 10,000 inhabitants <sup>a</sup>
Number of fraud per 10,000 inhabitants <sup>a</sup>
Criminal association (number of crimes per 100,000 inhabitants) <sup>a</sup>
Mafia association (number of crimes per 100,000 inhabitants) <sup>a</sup>
<b>Social engagement</b>
Percentage of voluntary workers (at least 14 years old) in non-profit institutions <sup>a</sup>
<b>Social relationships</b>
Number of tickets sold for music and theater representations per 100 inhabitants <sup>a</sup>
Number of suicides per 100,000 inhabitants <sup>a</sup>
<b>Civic responsibility</b>
Number of television subscriptions per 100 families <sup>a</sup>
Percentage of voters at referendum <sup>b</sup>
<b>Territorial characteristics</b>
Percentage of resident population that moved out the region <sup>a</sup>
Percentage of resident population that moved in the region <sup>a</sup>
Resident population in the regional capital/resident population outside the regional capital <sup>a</sup>

Data sources: <sup>a</sup> Istat; <sup>b</sup> Home Office;

### 3 Model and results

Behavior of IWR (persistence and differences from region to region) suggests the use of a fixed effect dynamic panel model, where the dynamic part is on the dependent variable. The model to be estimated is:

$$\ln \frac{IWR_{it}}{100 - IWR_{it}} = IWR'_{it} = \sum_h \phi_h IWR'_{i(t-h)} + \sum_k \beta_k X_{i(t-k+1)} + \mu_i + \varepsilon_{it} \quad (1)$$

Several problems may arise from model estimation: 1) some regressors  $X$  might be endogenous (unemployment rate) because causality is very likely to run in both directions; 2) fixed effect may be correlated with explanatory variables; 3) lagged dependent variables give raise to residuals autocorrelation. To cope with all these problems and to take into account the fact that  $T = 11$  we used the Arellano-Bond estimator ([2, 3]). Results are given in table 2.

Results clearly show that: a) irregularity in work is a persistent phenomenon as emerge from the fact that lags of order 1 and 2 are both significant and the  $IWR_{t-1}$

**Table 2** Results of the Arellano-Bond estimator for the dynamic panel model

<i>IWR</i>	Coef.	Std. Err.	<i>z</i>	<i>P</i> > <i>z</i>	[95% Conf. Interval]	
<i>IWR</i> <sub><i>t</i>-1</sub>	.9610844	.0800395	12.01	0.000	.8042099	1.117959
<i>IWR</i> <sub><i>t</i>-2</sub>	-.2468815	.0778393	-3.17	0.002	-.3994437	-.0943194
<i>UnR</i> <sub><i>t</i>-1</sub>	.0137901	.0056181	2.45	0.014	.0027788	.0248014
<i>SCI</i> <sub><i>t</i></sub>	-.6398991	.289936	-2.21	0.027	-1.208163	-.0716351
<i>cons</i>	-.3732428	.1814735	-2.06	0.040	-.7289244	-.0175612
Instruments for first differences equation						
GMM-type (missing=0, separate instruments for each period unless collapsed)						
<i>(IWR</i> <sub><i>t</i>-1</sub> <i>IWR</i> <sub><i>t</i>-2</sub> <i>SCI</i> <sub><i>t</i></sub> <i>UnR</i> <sub><i>t</i>-1</sub> ) collapsed						
Arellano-Bond test for AR(1) in first differences: $z = -3.66$ $Pr > z = 0.000$						
Arellano-Bond test for AR(2) in first differences: $z = -0.08$ $Pr > z = 0.938$						
Sargan test of overid. restrictions: $\chi^2_7 = 10.56$ $Prob > chi2 = 0.159$						
Difference-in-Sargan tests of exogeneity of instrument subsets:						
GMM instruments for levels						
Sargan test excluding group: $\chi^2_3 = 5.69$ $Prob > chi2 = 0.127$						
Difference (null H = exogenous): $\chi^2_4 = 4.86$ $Prob > chi2 = 0.302$						

coefficient is the highest among all estimated coefficients; b) social capital has a protection effect meaning that the more a region is organized under a social point of view and the deeper is the social responsibility and engagement among inhabitants, the lower is the propensity to hire irregular workers and c) unemployment favors irregularity. The explanation of the late result is that for a firm is easier to hire a worker in an irregular position, and therefore with no protection or warranty, if the number of unemployed people is high.

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