MATCHING PROFIT AND NON-PROFIT NEEDS: HOW NPOs AND COOPERATIVES CONTRIBUTE TO GROWTH IN TIME OF CRISIS. A QUANTITATIVE APPROACH

by

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ABSTRACT: *We propose a microeconomic model aimed at describing, in a dual production process, the interaction between the formal and the informal sector. The adopted framework is characterized by the absence of information asymmetries. The latter assumption is motivated by the focus of the paper, which chooses a cooperative rather than a competitive interaction between the for-profit and not for profit sectors, as the non-profit sector offers services which enable and increase the labour productivity of the workers employed in the for profit sector. Specifically, the non-profit industry can lower the monetary costs of labour by paying a share of wages and dividends in real terms. As a result, at aggregate level, consumption expenditure decreases proportionally to the share of goods and services that are not bought on the market. In this scenario the non-profit sector can play an important role in elaborating a way out of the crisis, by: i) reducing the income inequality between the employed and the unemployed, ii) lowering labour costs, and iii) endowing workers with an alternative source of employment. The theoretical analysis, complemented by empirical evidence built on Italian data collected for the period 2005–2012, shows that the model is not yet applicable in the Italian context as the non-profit industry is growing, but it is still inadequate in size to complement the activities of the for profit sector. However, we claim that Italy should elaborate a way out of the crisis by empowering the Third Sector, and, more in general, a 'good informal economy' made of non-profit institutions.*

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Gewinnorientierter und gemeinnütziger Bedarf im Einklang: Wie NPO und Genossenschaften in Krisenzeiten zum Wachstum beitragen. Ein quantitativer Ansatz

Wir stellen ein mikroökonomisches Modell vor, das die Beschreibung des Zusammenwirkens zwischen dem formellen und dem informellen Sektor in einem dualen Produktionsprozess zum Ziel hat. Das angewandte Rahmenkonzept zeichnet sich durch das Nichtvorhandensein von Informationsasymmetrien aus. Letztere Annahme wird durch das Ziel dieses Papers begründet, das den Fokus auf einen vielmehr kooperativen als konkurrierenden Umgang zwischen profitorientierten und nicht profitorientierten Branchen legt, da der gemeinnützige Sektor die Arbeitsproduktivität der Angestellten durch das Anbieten von Dienstleistungen in den profitorientierten Branchen ermöglicht und fördert. Insbesondere kann die gemeinnützige Industrie die monetären Kosten der Arbeit senken, indem sie für die reale Bezahlung von Lohn- und Dividendenanteilen aufkommt. Daraus ergibt sich auf aggregierter Ebene eine proportionale Verringerung der Konsumausgaben im Verhältnis zu den Waren- und Dienstleistungsanteilen, die auf dem Markt nicht erworben werden. In diesem Szenario kann der gemeinnützige Sektor in der Ausarbeitung einer Möglichkeit aus der Krise eine wichtige Rolle spielen, und zwar durch: i) ein Ausgleichen des Einkommensgefälles zwischen Erwerbstätigen und Erwerbslosen, ii) die Herabsetzung der Arbeitskosten und iii) das Anbieten einer alternativen Einnahmequelle für die Erwerbstätigen. Die theoretische Analyse basiert auf italienischen Daten im Zeitraum von 2005–2012 sowie auf empirischer Evidenz und zeigt, dass die Anwendung dieses Modells im italienischen Kontext noch nicht möglich ist, obgleich das Wachstum der gemeinnützigen Industrie steigt. Zur Ergänzung der Aktivitäten des gewinnorientierten Sektors erweist sich das Modell in seinem Umfang noch als unzureichend. Es wird hier jedoch behauptet, dass Italien durch die Stärkung des Tertiären Sektors und im Allgemeinen durch die Förderung einer „guten informellen Wirtschaft" bestehend aus gemeinnützigen Einrichtungen einen Weg aus der Krise erarbeiten soll.

Asociar las necesidades lucrativas y no lucrativas: cómo las organizaciones sin fines lucrativos y las cooperativas contribuyen al crecimiento en tiempos de crisis. Un enfoque cuantitativo

Los autores proponen un modelo microeconómico encaminado a regular, en un proceso de doble producción, la interacción entre el sector formal y el informal. El sistema adoptado está caracterizado por la ausencia de información discontinua. Esta última hipótesis se explica por el tema central del artículo, que escoge una interacción cooperativa antes que competitiva entre los sectores lucrativo y no lucrativo, pues el sector no lucrativo ofrece servicios que favorecen y aumentan la productividad de los trabajadores empleados en el sector lucrativo. El sector no lucrativo puede bajar los costes monetarios del trabajo, pagando una parte de los salarios y de los dividendos en términos reales. Consecuentemente, a nivel global, los gastos de consumo disminuyen proporcionalmente a la parte de los bienes y servicios que no son adquiridos en el mercado. En este caso figurativo, el sector no lucrativo puede jugar un importante papel elaborando una escapatoria a la crisis: (i) reduciendo las desigualdades de rentas entre los empleados y los parados, (ii) disminuyendo los costes del trabajo y (iii) proporcionando a los trabajadores una fuente de empleo alternativa. El análisis teórico, completado por otro empírico con datos italianos relativos al período 2005–2012, pone de manifiesto que el modelo no es todavía aplicable en el contexto italiano, cuando el sector no lucrativo está en crecimiento, pero no ha alcanzado todavía la dimensión para completar las actividades del sector lucrativo. Sin embargo, los autores afirman que Italia debería encontrar

una salida a la crisis prestando una mayor atención al "tercer sector" y, más ampliamente, a un adecuado sector económico informal compuesto por organizaciones sin ánimo de lucro.

Associer les besoins lucratifs et non lucratifs : comment les organisations sans but lucratif et les coopératives contribuent-elles à la croissance en temps de crise ? Une approche quantitative

Les auteurs proposent un modèle microéconomique visant à réguler, dans un processus de production double, l'interaction entre le secteur formel et informel. Le système adopté est caractérisé par l'absence d'asymétries d'information. Cette dernière hypothèse est motivée par le sujet central de l'article qui opte pour une interaction coopérative plutôt que concurrentielle entre les secteurs à but lucratif et à but non lucratif, puisque le secteur à but non lucratif offre des services qui favorisent et augmentent la productivité des travailleurs employés dans le secteur à but lucratif. Précisément, le secteur sans but lucratif peut réduire les coûts monétaires du travail en payant une partie des salaires et dividendes en termes réels. Par conséquent, au niveau agrégé, les dépenses de consommation diminuent proportionnellement à la part des biens et services qui ne sont pas achetés sur le marché. Dans ce cas de figure, le secteur à but non lucratif peut jouer un rôle important en élaborant une échappatoire à la crise en, (i) réduisant les inégalités de revenus entre les employés et les sans-emplois, (ii) diminuant les coûts du travail et (iii) dotant les travailleurs d'une source d'emplois alternative. L'analyse théorique, en complément de l'exploitation empirique de données italiennes recueillies durant la période 2005–2012, montre que le modèle n'est pas encore applicable dans le contexte italien car le secteur à but non lucratif croît mais n'a pas encore atteint de dimension suffisante pour compléter les activités du secteur à but lucratif. Cependant, les auteurs affirment que l'Italie devrait trouver une issue à la crise en donnant procuration au Tiers Secteur et, plus généralement, à un bon secteur économique informel composé d'organisations sans but lucratif.

Introduction

The new economy posits a demand of social and welfare services that nowadays cannot be satisfied by the public government alone, due to the severe budget constraints imposed by the Great Recession started in 2007. On the other hand, a large share of the production and distribution of goods and services is in charge to non-profit institutions (NPOs) (Salamon 2010), to cooperatives, and to NGOs for what concern foreign aids (Werker and Ahmed 2008). As the nature of the welfare goods and services provided by NPOs, NGOs and partially cooperatives falls into the informal sector, which has been largely invisible in official economic statistics (Salamon 2010, Salamon et al. 2011), it is difficult to evaluate and monitor the activities of these institutions and their economic contribution to growth, development and economic well-being. The broad category of the informal economy includes also the work provided by volunteers, accounting for nearly 1 billion people around the world, whose efforts contributes in an extraordinary measure to the quality of life of societies in which they operate (Salamon et al. 2011).

Given these premises, the paper sketches a model aimed at describing the interaction between the formal and the informal sector. The model suggests that a higher level of well-being of individuals and of economic stability can be reached by operating at microeconomic level, facilitating the involvement of citizens and firms in the non-profit

sector. The key feature of the model is that of assuming the existence of n non-profit activities (voluntary workers, community's associations, household production) and organizations operating in the labour market (cooperation and NPOs) that might, at the same time, provide an additional revenue (in monetary or in real terms) and reduce the cost of consumption by reducing the share of goods and services bought on the market. Similarly, there might be several collateral investments that associate to a monetary dividend a 'real dividend' paid in terms of consumption goods.

We believe that a theoretical model can contribute to highlight several relevant issues, providing a set of testable implications that can be verified through descriptive statistical analysis. The main theoretical and empirical issues stressed during the research provide answers to the following questions: first, the peculiarity of the production process allows distinguishing what are the more suitable governance mechanisms and institutions for the non-profit sector in comparison with the profit and the public sector. Secondly, focusing specifically on NPOs and cooperatives, the mechanisms and institutions of governance depend on the 'social' nature of the goods and services provided. Their social nature influences their awareness for intrinsic motivated workers and investors (Becchetti et al. 2012). Third, information asymmetries can be reduced through the development of instruments and tools such as registries of non-profit institutions (NPOs, cooperatives, community's association etc.) providing social and welfare services, and facilitating the matching process between firms´ demand of such services and the non-profit supply.

The paper is divided into four sections. In the first section we review the relevant literature, while the second section provides a description of the theoretical model. Specifically we analyse households' behaviour, discuss firms´ choice between integration and outsourcing in a dual process, and summarize the main features of the model in order to highlight testable hypotheses. The third section describes the data collected for Italy on the Istat data warehouse, while the fourth section concludes.

1   A literature overview

The analytical framework developed aims at integrating several strands of literature, usually unrelated. Specifically, we focus on the individual supply of labour (including voluntary work), cooperatives' and firms' behaviour during crises, and the role of the public sector in stimulating social innovation mechanisms.

First, we want to point out how volunteering, even if it is often undertaken in leisure time, can be considered as a work. 'Pursued for no monetary compensation, it nevertheless produces both tangible and intangible benefits for its beneficiaries and for the volunteers' (Salamon 2010). The lack of official data on volunteering, together with the difficulty of measurement, determines a lack of visibility of this social phenomenon, thus producing an underestimation of its economic value. A large part of the work of NPOs, partially cooperatives and civil society organizations (CSOs) has been 'buried in statistics on other sectors or not picked up anywhere because of their informal character and reliance on uncounted volunteer workers' (Salamon 2010). It means that societies cannot make the 'most effective use of precious human resources', and that volunteers are not fully appreciated for their contributions as their economic value is not perceived

(Salamon et al. 2011). If voluntary work constitutes an 'upper bound' in ethical terms, it is worth noticing also how a consistent strand of literature investigates the differences between for profit and not for profit workers according to different aspects: intrinsic motivated workers, largely working in NPOs, CSOs and NGOs, are willing to exchange monetary incentives for relational, social or altruistic benefits (Freeman 1997, Deci and Ryan 2000, Becchetti et al. 2012) and to accept lower monetary wages (Frey 1997, Leete 2000, Borzaga and Tortia 2006, Narcy 2009, Becchetti et al. 2013).

As regards production, worker-owned cooperatives' objective is to maximize workers´ revenues and to ensure workers' employment rather than increase firms' profit.[1] During the crisis, if the capital-intensive firms tend to reduce working hours or to fire employees, the cooperatives reduce monetary wages and maintain employment's stability (Pencavel et al. 2006, Burdin and Dean 2009, Clemente et al. 2012, Delbono and Reggiani 2013). As a result, NPOs and cooperatives can produce welfare services at lower monetary costs than firms. On the other hand, during crises firms might decide to outsource the production of non-core activities in order to minimize production costs and raise shareholders' profits (Vining and Globerman 1999, Cachon and Harker 2002). However, firms' outsourcing opens a conflict of interests between the property and the dismissed workers, as the latter lose their job and their wage. More in general, firms' outsourcing reduces the demand of workers operating in profit-oriented firms, raising unemployment and social vulnerability. Following Keuschnigg and Ribi (2009), we assume that the risk of wage reduction and unemployment falls on 'non-profit workers' (workers operating in the welfare sector), while profits are concentrated on shareholders and management ('qualified workers') (Preston 1989). The claim is that outsourcing in a flexible labour market depresses the income of specific groups of workers (namely, the non-profit workers) raising inequality and social exclusion, but the existence of a non-profit sector and of ad hoc redistribution policies might contribute to promote non-profit workers' participation in the labour market, or, in the worst cases, to make household production more convenient (Chiappori 1997, Burda and Hamermesh 2009).

The last body of literature regards the welfare states transformations and the new roles covered by the public sector in charge for the welfare policies (Esping-Andersen 2002, 2006, Brugnoli and Vittadini 2009, Accorinti 2011, Gori 2012). Different experiences in Europe speak in favour of the adoption of the subsidiarity approach by the government, thus intervening at the level of the institutional structure by changing the usual setting, implementing quasi-market policies in the field of welfare services and emphasizing the need for a more coherent and proactive partnership between the regional authorities and CSOs, NGOs and the third sector (Salamon 2002).

In our framework, the role of the public sector, instead of being directly involved in the provision of welfare services, is be that of:

- screening the '*hybrid activities*', meaning with hybrid that they offer a return partially financial and partially real;
- ranking them according to a set of strategic variables of interest;

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1   In the model we assume that non-profit firms maximize profit, however, as they operate in perfect competition, their profit is equal to zero (See paragraph 2).

- using budgetary policies to drive households' preferences towards those activities that can maximize social welfare and guarantee the stability of the system by improving its resilience.

The framework assumes the absence of financial intermediaries (specifically, of a central bank), and of the rest of the world (we operate in a closed economy), as the focus remains on the interactions between households, firms and the public sector.

2   The theoretical model: the individual labour supply, the structure of the production process and the role of the public sector

2.1   Preliminary issues

In this paragraph, we present a simple static microeconomic model to illustrate the functioning of an economic system that we define 'resilient', as it allows for the existence of alternative sources of production, employment and public expenditure that might compensate the output of the formal economic activities.

As regards the individual labour supply, the standard microeconomic framework states that households choose how to allocate their daily endowment of time T between labour (L) and leisure (R), according to a utility maximization algorithm based on the idea that the consumption C and R are (not necessarily) imperfect substitutes. The maximization algorithm is bounded by a budget constraint, which keeps the overall expenditure (cost of consumption plus opportunity cost of leisure, measured in terms of labour income lost while enjoying leisure) below the level of potential income (maximum labour income affordable plus other non-labour incomes). We modify this framework by adding a threshold to the maximum amount of labour that can be supplied, and an additional source of employment for which households obtain a unitary nominal wage w' plus additional non-monetary benefits measured in terms of additional consumption.

As regards production, we assume that the economic system is made of a profit and of a non-profit sector. For simplicity, we assume that in the profit sector (industry A) operates a single firm, while the non-profit sector (industry B) is made of numerous firms that operate in perfect competition. Industry A sells a qualitatively differentiated product Y_A, that is obtained by combining social and qualified activities, which are imperfect substitutes. On the other hand, industry B sells only welfare services Y_B, that are bought directly by households as final consumption goods or by the profit-oriented firm and used as intermediate outputs in substitution of non-profit workers' activities.[2] In terms of consumption, we assume that a unit of Y_A is equal to a unit of C_A, while a unit of Y_B is equal to a unit of C_B, but this assumption can be easily relaxed.

As regards the public sector, government balance is defined as the algebraic sum of the lump sum taxes and subsidies plus the income-proportional taxes and subsidies applied on wages and household production's activities. We assume that government balance (GB) can be split in two parts, one regarding industry A's activities (GB_1), and one inherent industry B's activities and household production (GB_2). During recessions,

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2   When Y_B is used as an intermediate good it is a substitute of N.

GB_2 can be set in deficit (more subsidies than taxes) to facilitate the research of resilient activities in industry B and in household production, while GB_1 can be set in surplus (more taxes than subsidies) to keep GB in equilibrium. Similarly, in periods of expansion, GB_1 can be set in deficit in order to incentivize participation in industry A's activities, while GB_2 can be set in surplus to maintain GB in equilibrium. Then, in the short run, the public sector can influence the productive sectorial *mix* (profit and non-profit) through an *ad hoc* choice of fiscal policy instruments. In the following paragraphs, we explain more in detail how each part of the model works.

2.2   The labour market

We assume the existence of N 'non-profit workers' plus Q 'qualified workers'.[3] As already pointed out, if employed in the profit sector, non-profit workers receive a fixed nominal wage w, while if they are employed in the non-profit sector receive a monetary wage w' plus a real wage that includes non-monetary benefits measured in terms of consumption good C_B. On the other hand, qualified workers are always employed, and receive a nominal wage equal to w plus an average share of the profits ($D = \Pi/Q$). Then, qualified workers maximize the utility belonging from consumption and leisure, given an income provided by a high wage and an average share of profits. On the other hand, non-profit workers maximize the utility belonging from consumption and leisure, given a high monetary wage if employed in industry A or a low monetary wage plus additional benefits if employed in industry B, and household production if unemployed or partially employed.[4] We define p_A and p_B the prices of the consumption goods C_A and C_B, and c and $E(c)$ respectively the additional non-monetary benefits that workers obtain for a hour of work in the alternative employment and the expected additional non-monetary benefits obtained for each hour of household production. Specifically, non-profit workers solve

$$maxU(C, R) \tag{1}$$

$$s.t. \; p_A C_A + p_B C_B + max\{w, (w' + p_B c), p_B E(c)\}R = max\{w, (w' + p_B c), p_B E(c)\}T$$

while qualified workers solve

$$maxU(C, R) \tag{2}$$

$$s.t. \; p_A C_A + p_B C_B + wR = wT + D.$$

Therefore, in our model non-profit workers can substitute their primary job with other activities in order to obtain additional sources of income and consumption with respect to the costly consumption C and the primary income w. To simplify the framework,

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3   In order to establish a correct wording of the two categories in use, with nonprofit workers we mean workers endowed with welfare skills and social concerns. On the other hand, 'qualified workers' are workers endowed with technical and managerial skills and an attitude to work in a for profit context.

4   Specifically, we consider that households can always self-employ themselves in household production activities, earning an expected non-monetary income measured in terms of C_B.
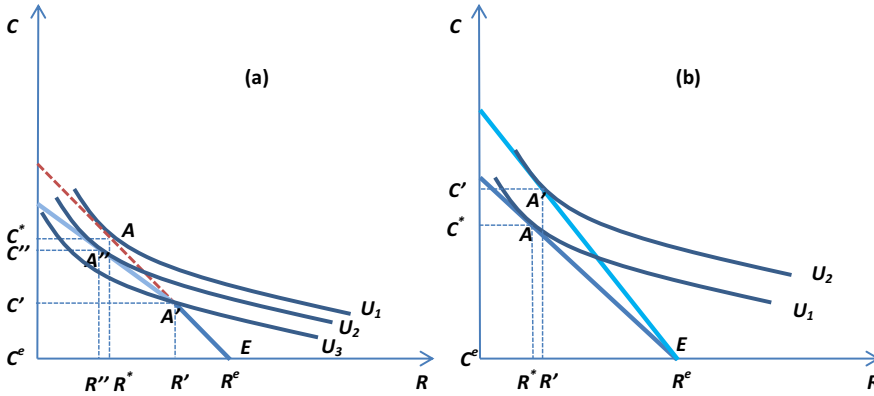
Figure 1 – The resilient activity as a complement (a) or a substitute (b) of the primary job.

we have assumed that only one alternative source of income exists, but this assumption can be relaxed.

It is worth noticing how the existence of an alternative source of employment might allow non-profit workers to buy bundles that could not be reached only with the primary labour income. Therefore, households involved in the non-profit sector might reach a higher level of utility, especially in presence of working time constraints. Specifically, if the working time is bounded by a constraint like L = (T-R) ≤ L, households with strong preferences for consumption might decide to invest part of their free time (T-L) in other rewarding activities. Moreover, if returns on the resilient activity are higher than those ones offered by the primary employment, workers might decide to shift their primary job to this new source of employment. Then, a resilient activity might be either a complement, or a substitute of the primary job, as illustrated in Figure 1a and 1b.

Figure 1a illustrates how, due to the assumptions made, non-profit workers have no additional non-labour income, then their initial level of C is zero (they are endowed only with time T). If they do not suffer any additional constraint, they combine a level of leisure R^* with a level of consumption C^* and they reach the point A, that corresponds to the maximum (optimal) level of utility that they can obtain given their budget constraint. But if there is a threshold that limits the maximum number of hours of work to $(T - R' = L' < L^*)$, the level of consumption that households can reach in the absence of other sources of income or credit is C', and this level is associated to a (suboptimal) level of leisure equal to R'. Therefore, households' expenditure is summarized in the point A', that corresponds to a lower (and suboptimal) level of utility $U_3 < U_1$. Finally, when an additional source of employment exists, and there is a threshold that limits the working time, households can invest part of their exceeding time in the alternative job, and afford a level of consumption C'', associated to a level of leisure R''. Therefore they reach a second best level of utility U_2, such that $U_3 < U_2 < U_1$.

Figure 1b, instead, illustrates what happens when $w' + p_B c_B > w$. Specifically, households substitute their primary job with the alternative source of employment, reaching a higher level of utility. In this case, therefore, $U_2 > U_1$.

2.3   The production process

We assume that industry A's production function exhibits decreasing returns to scale, due to the presence of a fixed factor K. Moreover, we assume that industry B's production function uses only labour N, where N indicates the activity of non-profit workers.[5]

Given the substitutability between Y_B and N as previously stated in [2.1], industry A chooses a mix of integration and outsourcing of welfare activities. Specifically, industry A's production process is a function of the amount of the fixed factor K, of the Q qualified workers employed, and of the amount of labour L used, where L is obtained as a combination of non-profit workers and Y_B. In brief,

$$Y_A = f(K, Q, L) = aL^a, \quad a = K^\beta \bar{Q}^\gamma, \quad L = YB^\nu N^\nu. \tag{3}$$

Industry A's total cost function can be derived from [3]. Consequently, industry A maximizes profit Π by solving the following algorithm:

$$max\,\Pi = p_A(Y_A)Y_A | TC(Y_A) \quad TC(Y_A) = cY_A^{\frac{1}{\upsilon+\nu}} + w\bar{Q} + f, \tag{4}$$

where f is the fixed cost of K. When industry A acts as a *price taker*, $p_A(Y_A) = p_A$ and profit maximization yields to $p_A\,MPN = w$, with $\Pi = 0$, where MPN is the marginal productivity of labour. There is not involuntary unemployment, N_A* workers are employed and they all receive a wage equal to w.

On the other hand, industry B operates in perfect competition and we assume that it does not incur fixed costs, as its operative mechanisms are based on flexibility and contingency.[6] Specifically, industry B solves

$$max\,\Pi = p_BY_B | (w + p_Bc)N \quad s.t. \ Y_B = N^\delta, \quad 0 < \delta < 1, \tag{5}$$

where $YB = N\delta$ defines the production process. Recall that industry B cannot be price maker due to the assumption of perfect competition. We make this assumption because it would not be socially efficient in the provision of welfare services to cut the quantity exchanged in order to obtain a positive profit.[7] Then, industry B pays $w' = (MPN' - c)p_B$ and hires all the workers that want to work for that wage.

Given this simple framework, it is worth noticing how industry B pays a monetary wage that is lower than the marginal productivity of labour. Moreover, when industry A uses her market power to raise profits, Y_A, and consequently N_A^*, fall, w

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5   To stress the diversity between qualified and non-profit activities, we refer to the number of non-profit workers (N) and to the number of qualified workers (Q) instead of referring to the number of hours worked by non-profit workers (L_N) and to the number of hours worked by qualified workers (L_Q).

6   Indeed, due to its non-profit nature, its main aim is to find adaptive solutions in the short-term, consequently fixed inputs would reduce its effectiveness.

7   Implicitly, we assume that a welfare function that refers only to welfare services must be a function of consumer surplus only. Then, it is not socially desirable to allow for market equilibria different from the perfectly competitive one.
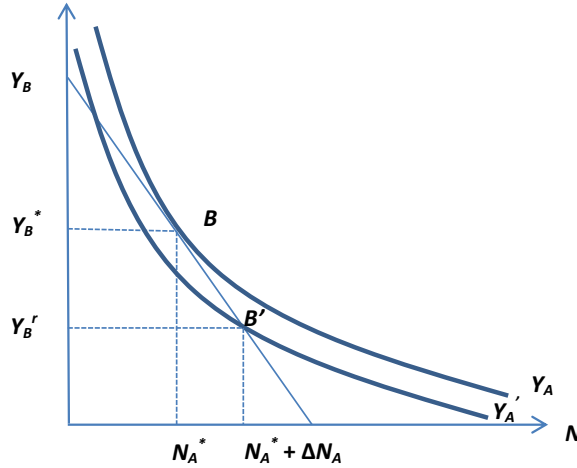
Figure 2 – Industry A's production when Y_B is rationed.

might decrease, while p_A and R increase. On the other hand, industry B's labour supply $(N - N_A^*)$ increases, while w' remains constant.

Second, in this framework industry A outsources a share of social activities to industry B. If $\upsilon = 0$, industry A does not assign Y_B an economic value in terms of productivity. If, instead, $1 > \upsilon > 0$ and Y_B is rationed, industry A incurs in higher costs due to the inefficient mix of Y_B and N. In this case, assuming that the share of welfare services internalized by industry A is proportional to a parameter δ, industry A maximizes profits when δ goes to 0. Figure 2 illustrates this issue. When industry A assigns a positive value to Y_B in the production process and Y_B is rationed, industry A's input bundle shifts from B to B', while production shifts to a lower isoquant. It is worth noticing how in B industry A is forced to compensate with a higher (and inefficient) level of N the lower level of Y_B.

Then, when industry A cannot outsource the optimal level of welfare services, the average monetary value of labour compensation is

$$\omega(w, w') = w(Q + NA^* + \Delta N_A),$$

where $\Delta N_A = (\delta p_B Y_B)/w$, that is ΔN_A is bought using the amount that could not be spent to buy $(Y_B - Y_B^r)$. Finally, $\omega(w, w')$ tends to $w(Q + N_A^*)$ as a lower bound when δ goes to 0.

2.4   The role of the public sector

Government balance is defined as

$$GB = \left[T_0 + t_0 w \left(T - R - N_B - l\right) + t_1 w' N_B\right] - \left[S_0 + s_0 w \left(T - R - N_B - l\right) + s_1 w' N_B\right], \quad (6)$$

where T and S indicate, respectively, a lump sum tax and a lump sum subsidy, while s and t indicate a proportional income tax and a proportional income subsidy, and l is the

time dedicated to household production. To guarantee the sustainability of the public finances, it must be that

$$GB = T_0 - S_0 + (t_0 - s_0)\,w\left(Q + N_A^* + DN_A\right) + (t_1 - s_1)\,w'N_B 0. \tag{7}$$

Now, consider GB_1 and GB_2, where

$$GB_1 = \theta\left(T_0 - S_0\right) + (t_0 - s_0)\,w\left(Q + N_A^* + \Delta N_A^*\right), \tag{8}$$

$$GB_2 = (1 - \theta)\left(T_0 - S_0\right) + (t_1 - s_1)\,w'l^* \tag{9}$$

and θ is a parameter that indicates the share of lump sum taxes and subsidies directed to industry A. In periods of recession, GB_2 can be set in deficit to facilitate the implementation of resilient activities in industry B and in household production, while GB_1 can be set in surplus to keep the GB in equilibrium. Similarly, in periods of expansion, GB_1 can go in deficit penalizing household production and social activities to support growth, while GB_2 can go in surplus in order to restore the equilibrium of GB.

In the short run, government can influence the equilibrium by setting $\{\boldsymbol{t}, \boldsymbol{s}, T_0, S_0\}$. Specifically, government can redistribute from workers employed in industry A to workers employed in industry B and unemployed non-profit workers by rising the (net) marginal tax rate t_0 to finance a tax cut or a transfer to low income individuals. The main purpose of T, instead, is that of boosting labour market participation among non-profit workers by widening the income differential between workers and unemployed. Finally, during crises, when industry A's labour demand is low, an increase of S might be of the utmost importance to guarantee some sort of welfare and making household production economically sustainable.

2.5 The main features of the model: concluding remarks and testable implications

The model accounts for three classes of agents: households, firms, and the public sector. Households are classified into two subgroups according to their ability of endowing firms with either qualified or non-profit work. All firms but one are involved in industry B (the non-profit sector), while industry A coincides with the activity of a single profit-oriented firm. The public sector is not directly involved in the production process, but acts through incentives and penalty schemes (taxes and subsidies) in order to facilitate economic growth, social development and citizens' resilience.

The main innovation introduced in the model regards the existence of a non-profit sector that can lower the monetary costs of labour and capital by paying a share of wages in real terms. Moreover, it facilitates workers in reallocating their working time either at quantitative and qualitative level.

As a share of the good and services produced is not exchanged on the market, the model introduces the existence of an 'informal economy', that has been added to the market economy in order to assess the non-monetary benefits associated to a job in the non-profit sector. Specifically, to highlight industries and citizens' budget constraints and productive linkages, an upgraded input-output table (market plus non-market economy) is necessary. According to the model built, many of the terms of this

extended input-output table might exhibit some sort of direct or inverse correlation. These interdependencies can be used to draw the following testable implications:

(1) Qualified workers have an interest in obtaining positive profits, as $D > 0$ only when $\Pi > 0$. Then, when industry A uses her market power to obtain positive profits, we expect lower output, higher prices and less non-profit workers employed in industry A.

(2) Industry A is more exposed to macroeconomic shocks than industry B, as it requires a fixed factor that might be subject to specific additional shocks (as an example, consider technological obsolescence) with respect to the generic shocks that might affect the production process as a whole (Industry A plus Industry B).

(3) When $MPN' > MPN$, and consequently, $(w' + p_B c_B) > w$, in the absence of rigidities, workers should move from industry A to industry B, and vice versa.

(4) Industry B operates in perfect competition, then $\Pi = 0$ by construction. Therefore, positive mark-ups might suggest the existence of other costs not explicitly accounted in this model (as an example, consider energy costs). Finally, the higher is the non-monetary share of the wage paid in Industry B, the lower is the monetary cost of labour in the same industry, and the higher is the share of the non-market economy over the market economy.

(5) Finally, the underdevelopment of the non-profit sector and an insufficient level of household production might have as a counterpart a lower level of productivity (see Figure 2) and a high level of Industry A's taxation needed to finance Industry B's development and growth.

3   A descriptive analysis

In this paragraph, we present several stylized facts that might be used to reinforce or reject the propositions indicated above. The paragraph is made of three sections: the formal economy (industry A), the non-profit sector (industry B) and household production. The analysis of the public sector (specifically, disentangling the activities referring to its role of 'regulator' from those ones inherent its major involvement in the provision of collective services) goes beyond the scope of this research.

3.1   The formal economy

Due to the scarce relevance, in monetary terms, of the non-profit sector in Italy, industry A's production (Y_A) might be approximated to the whole GDP. If this association holds, it can be noticed how from 2007 to 2012 industry A left on the ground almost the 7% of GDP measured at constant prices (the base year is 2005).

In the same period, the level of prices increased by more than 12,5 percentage points. Then, in the time-lapse 2008–2009 and in 2012, data highlight a drop in the real GDP level associated to a positive change in the level of prices. The increment in the level of prices is below the average in 2009 (the year associated with the most consistent drop in the real GDP level), but in 2008 and in 2012 is above the average. Then, data might suggest, for 2008 and 2012, an increase in industry A's mark-ups, partially supporting our first testable implication.
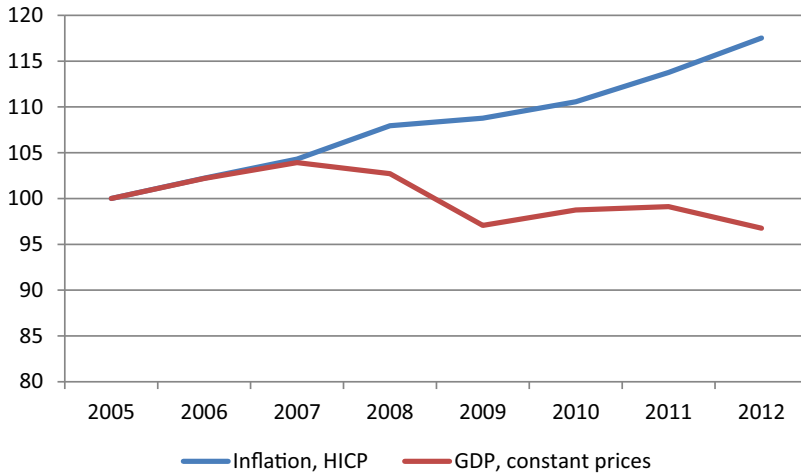
Graph 1 – GDP and HICP trends (2005 = 100).
*Source:* IMF (2013).

To build some empirical evidence in support of a lower presence of non-profit workers in Industry A, we analyse the main aggregates that describe the Italian labour market. We recall that qualified workers are always employed in our model, and we highlight how the number of employees decreased sharply from 2007, except that in 2011, and the same happened to the number of hours worked per employee (38 until 2008, then 37 in the interval 2009–2011, and 36 in 2012).[8] These trends are even more significant when compared with the increasing demographic trend (see Graph 2), and confirm that in the period under inquiry the level of employment dropped.

However, in our model we considered only labour costs, but an increase in mark-ups might depend also on an increase of non-labour costs (as an example, consider energy costs) rather than on the achievement of positive profits. Specifically, we illustrate in Graph 3 how the oil price almost doubled since 2005. Then, even if the quantity imported significantly decreased along the whole period of observation, the value of oil imports increased sharply in the period 2005–2008 and 2009–2012. If the value of oil imports can be considered as a good proxy of energy costs, we might have found a stylized fact highlighting how firms' mark-ups rose during the crisis due to an increment in non-labour costs rather than due to higher profits.

In brief in the last decade in Italy the fall in the level of employment might have been determined by an increase in non-labour costs (specifically, energy costs), through a substitution mechanism that can be explained in terms of an increase of firms' mark-ups, measured considering only labour costs.

In [2.4] we observed how Industry A is more exposed to macroeconomic shocks than industry B, as it requires a fixed factor that might be subject to specific additional shocks, therefore we analysed data regarding the gross fixed capital formation. In Graph 4 we

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8   This fact might partially explain nominal wages' drop in presence of collective agreements: it means that hourly wages remain the same, but as the number of hours worked falls, the wage per employee decreases.
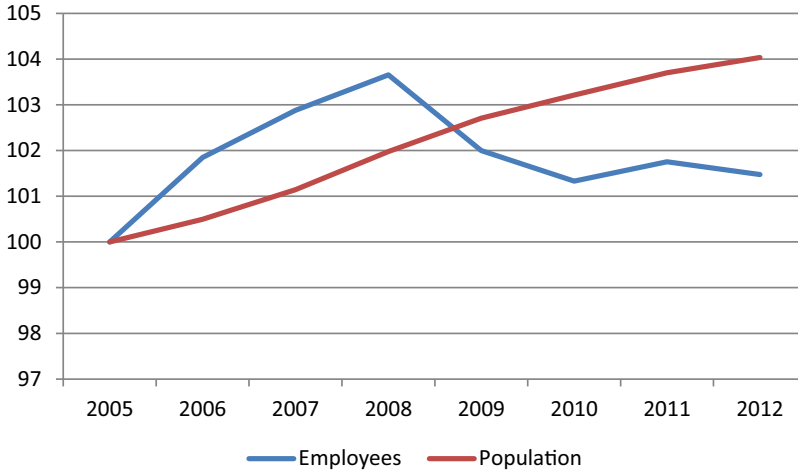
Graph 2 – Total population (in red) and number of employees (in blue) in Italy (2005 = 100).
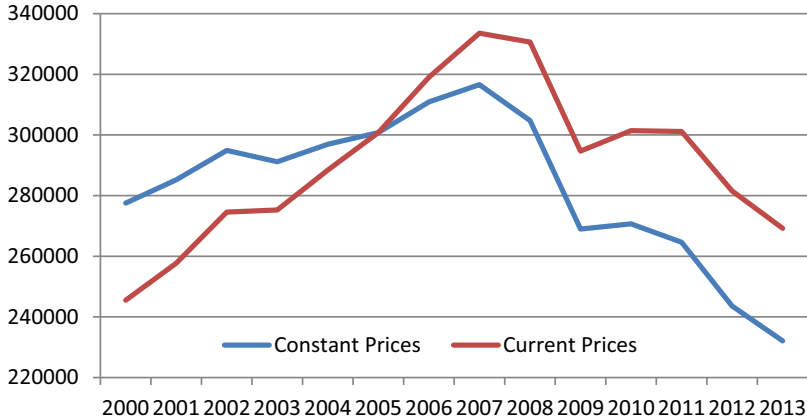*Source:* our elaboration on MISE data (2013).
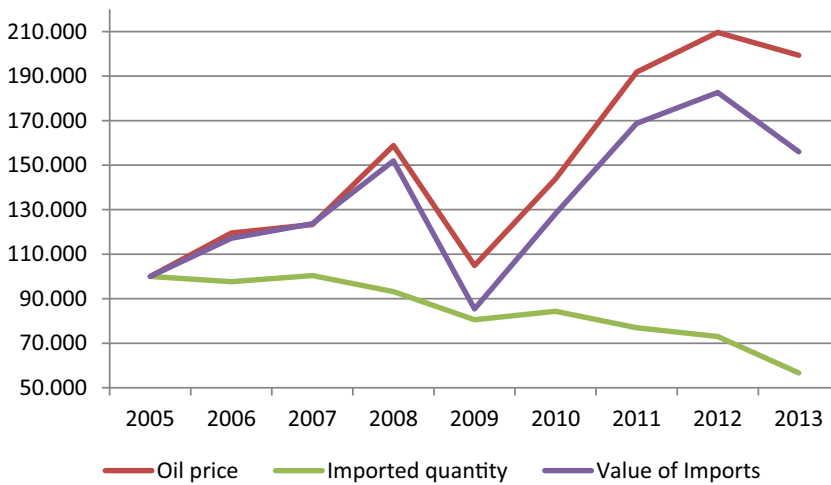
**Graph 3 – Oil price and value of oil imports (2005 = 100).**
Source: our elaboration on ISTAT data (2013).

highlight how the Great Recession had a negative impact also on the level of investments, determining a drop in this aggregate since 2008. Measured at current prices, the impact of the crisis on the level of investments might be underestimated: indeed, measured at constant prices the impact is more significant, as the level of investments fall below the level measured for 2000 in only two years. This evidence supports the second testable implication that we stated in the previous paragraph: indeed, Industry *A* seems to have been heavily exposed to the effects of the Great Recession.

In addition to the statistical evidence collected in support to the testable implications, we want to stress how data highlight a drop in nominal wages and salaries both

Graph 4 – Gross Fixed Capital Formation in Italy.
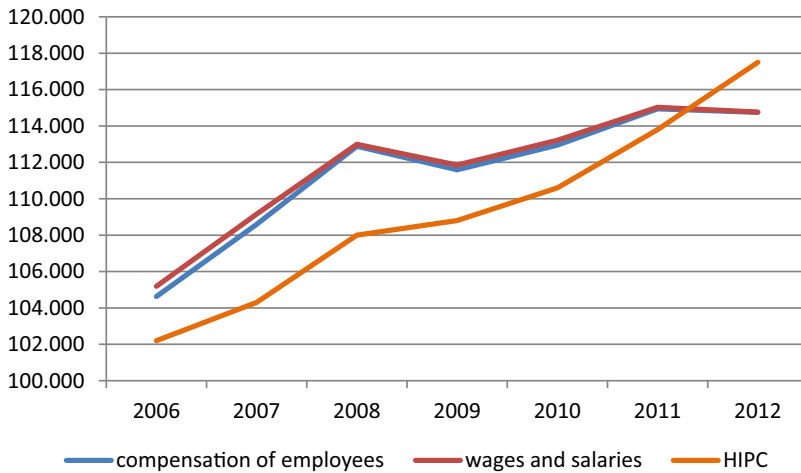
Graph 5 – Labour compensation, wage and salaries, and HICP (2005 = 100).
Source: our elaboration on ISTAT (2013).

in 2009 and in 2012. Even if the drop in 2012 is lower than the negative change in 2009, the former is associated to a sharper increment of the Harmonized Index of Consumer Prices (HICP). Then, real labour compensation decreased in both years under inquiry, while labour compensation growth decelerated from 2007 and became negative in 2012 (see Graph 4).

Therefore, the rise of energy costs (and the consequent rise of firm's mark-ups) determined a contraction of the national disposable income, which decreased in absolute values since 2008, while in percent of GDP it decreased in the whole period of observation as illustrated in Graph 5. On the other hand, the national final consumption expenditure rose in absolute values until 2011, and only in 2012 had a negative change. Consequently, while in the previous years the balance between disposable income and expenditure was
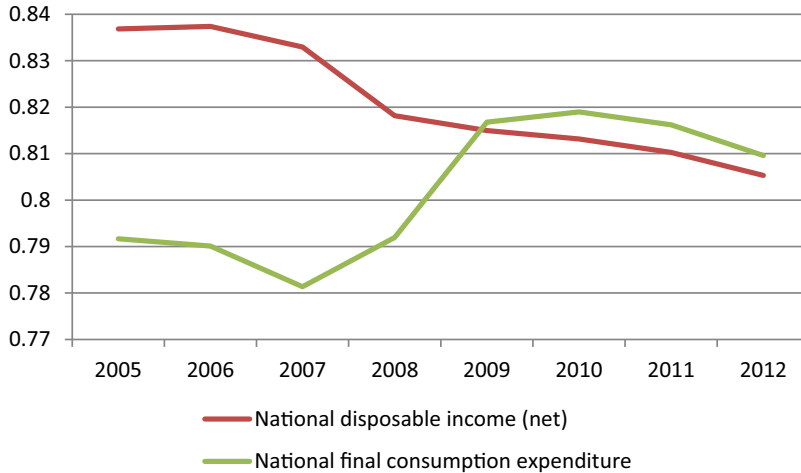
Graph 6 – National disposable income and final consumption expenditure (% of GDP).
Source: our elaboration on ISTAT (2014).

positive, from 2009 households are experiencing a negative balance between disposable income and expenditure, as illustrated in Graph 6.

3.2   The non-profit sector: a mosaic of institutions, paid workers and volunteers

Even if from the beginning of 2000 the non-profit sector, including cooperatives, is having an increasing importance, its economic relevance, in monetary terms, is still scarce. Nonetheless, its capability in providing social services and creating new sources of employment is substantial. As it has been documented by the Census of Industry and Services (ISTAT 2013), in 2011 301.191 non-profit institutions were active in Italy (+28% since 2001). In relative terms, they constitute the 6,4% of the active units, and employ the 3,4% of the human resources. In specific sectors (arts, sports, recreational activities and entertainment), the non-profit institutions are more numerous than profit-oriented firms and public institutions, but also in the healthcare and social assistance sector their importance is highly significant. In terms of employment, 243.482 non-profit institutions (80,8% of the active units) make use of voluntary work, while 41.744 non-profit institutions (13,9% of the active units) make use of paid workers.

By comparing the available data on human resources collected with the Second and the Third Census on Non-Profit Institutions, it emerges how the non-profit sector (Industry B) constitutes an alternative source of employment with respect to Industry *A* for an increasing number of workers. Specifically, the number of employees grew from 488.523 in 2001 to 680.811 individuals in 2011. Moreover, the number of external workers increased from 100.525 in 2001 to 270.769 in 2011, while in the same years temporary workers increased from 3.743 to 5.544. Finally, volunteers rose from 3.315.327 to 4.758.622.

Therefore, statistical evidence seems to support the third testable implication: specifically, probably due to a higher labour productivity, a share of the non-profit

Table 1 – Non-profit sector's human resources 2001–2011 growth rates

	Employees	External workers	Temporary workers	Volunteeers
Italy	+39%	+169%	+48%	+44%

Source: ISTAT (2013).

Table 2 – Summary statistics on the use of time for Italy (%)

	Women		Men	
	1988	2002	1988	2002
Personal care	49.1	48.4	50.4	48.3
Work paid	5.6	5.8	14.1	13.5
Domestic work	20.4	18.8	4.9	6.1
Study	3.9	3.5	4.4	3.6
Free Time	18.0	18.6	21.2	22.0
Travels	2.9	4.9	5.1	6.3

Source: ISTAT (2008).

Table 3 – Summary statistics on the use of time for Italy for employed workers (%, 2002)

	Personal care	Work paid	Domestic work	Study	Free time	Travels
Women	44.7	18.9	16.5	0.5	13.2	6.2
Men	45.2	25.5	5.1	0.1	16.7	7.1

Source: ISTAT (2008).

workers might have shifted their primary source of employment from industry *A* to industry *B*, while others might have found in the non-profit sector a complementary source of employment with respect to their primary occupation.

3.3   Household production

The ISTAT survey '*Time use in daily life*' (ISTAT 2008) illustrates how individuals spend their time and in which activities people engage in and for how long. Therefore, it provides useful insights on how individuals use their time, in terms of paid work, household work and leisure. The next table summarizes the main data provided by ISTAT regarding daily life in Italy, referring to the whole population aged three and over. It allows drawing the evolution of the share of time used for paid work and domestic work that we use as a proxy for household production. It can be noticed how, both in 1988 and in 2002, men spent more time than women in professional activities, but, considering also domestic work, women are more involved than men in productive activities (26% in 1988 and 24,6% in 2002, against 19% in 1988 and 19,6% in 2002).

Similarly as regards the employed workers, it can be noticed how men dedicate 30.6% of their average day to working activities, while women dedicate the 35.4%. Specifically, domestic work is still more relevant in women's daily life rather than in men's (16.5% against 5.1%).

It is out of the present research to consider the question of the gender inequality and gender pay gap, but we want to stress how the household production, specifically associated with domestic work, can play a major role in the production process, as it influences significantly the participation rates of men and women to the labour market.

Moreover, non-labour activities have a significant economic value, even if it is difficult to provide a precise and shared measure for it. Specifically, in February 2014 ISTAT made public the first estimate of the economic value of the stock of human capital considering 2008 as year of reference and looking at an active population between 15 and 64 years old. In this first evaluation are also included the so-called 'informal activities', or non-market based activities, such as the domestic work and the leisure activities. The estimate is around the 16.000 billion Euros (almost 10.2 times the GDP) divided into 6.000 billion Euros to be attributed to domestic work, and the 10.000 billion left used for leisure activities. This is a first sign of a trend inversion at an official statistical level, as it begins to reconsider the real value of the total stock of human capital on the GDP.

4   Concluding remarks

In this paper, we have sketched the matching process between profit and not for profit needs and the role that NPOs, CSOs and cooperatives can play in time of crisis. Specifically, we have built a theoretical model, defined its peculiar features and tested some implications using stylized facts highlighted in the statistical analysis of ISTAT data. As expected, although the recent ISTAT data give a first idea of the perimeter of the 'informal economy', the lack of more specific data, e.g. differentiating domestic work, volunteer work and not-paid work, makes it difficult to provide a precise estimate of the economic value produced in a certain period.

Specifically, the GDP accounts mainly for the formal economy, while the complementary contribution of the informal sector is not necessarily proportional to it. Then, there might be countries with a high GDP and a limited informal sector, and countries with a low GDP associated to a highly developed informal sector.

At theoretical level, the main innovation introduced in the model is to account both for the formal and the informal economy highlighting how, to assess the input-output relations that define the whole productive structure, it's necessary to consider also a share of production, Y_B, which is not necessarily exchanged on the market (e.g. household production and partially non-profit sector), that has a relevant weight in the value added chains of the economic system.

We support the theoretical model with the stylized facts reported in the statistical analysis. Specifically, as regards the first testable implication, we notice how data on real GDP level and on the level of prices for 2008 and 2012 might suggest an increase in industry A's mark-ups. We highlight also how in the period under inquiry the level of employment significantly dropped. Finally, the increasing value of oil imports might explain how firms' mark-ups rose during the crisis due to an increment in non-labour costs, and not because of an increment of profits.

As regards the second testable implication, we have observed for Italy a consistent drop in the level of investments. Measured at current prices, the impact of the crisis is even more significant, as the level of investments fall below the level measured for 2000 just two years after 2008.

As regards the third testable implication, in [3.2] we noticed how data on the Italian non-profit institutions indicate a consistent increment in the number of employees and volunteers, suggesting how a share of the non-profit workers might have shifted their primary source of employment from industry A to industry B, while others might have found in the non-profit sector a complementary source of employment with respect to their primary occupation.

As regards the last two testable implications, due to the current lack of publicly available data on the informal economy we could not provide a proper statistical support. This aspect constitutes a future research's frontier. However in this respect, in [3.1] we illustrated how since 2009 households are experiencing a negative balance between disposable income and expenditure, and we stressed how in this scenario the non-profit sector, and more in general the non-market economy, can play an important role in elaborating a way out of the crisis by: i) reducing the income inequality between the employed and the unemployed, ii) lowering labour costs, and iii) representing a concrete alternative source of employment.

Finally, as regards the informal economy, in [3.3] we showed how household production, specifically associated with domestic work, can play a major role in the production process, as: i) it influences the participation rates of men and women to the labour market; ii) it has a significant economic value, even if it is still difficult to measure. As a response to the statistical evidence provided by ISTAT, we suggest how the underdevelopment of the Italian informal economy might depend mostly on a conflictual relationship with the formal economy, rather than on a quantitative inconsistence.

Laying on these considerations, the main theoretical and empirical issues stressed during the research provide several highlights on the functioning of the profit and of the non-profit sector. Firstly, the peculiarity of the production process allows distinguishing what are the more suitable governance mechanisms and institutions for the non-profit sector in comparison with the profit and the public sector. The first difference lays in the social vs profit orientation. Specifically, during crisis, while the profit sector tends for its nature to use its market power to obtain extra profits and finance new investments, the non-profit sector lays on its informal nature and on a more flexible management system to reduce endowments' costs and improve adaptive strategies. The governance mechanism that seems more suitable to drive a successful non-profit or cooperative organization is the multi-stakeholdership (Sacchetti and Tortia 2014), a flat governance based on participation of patrons and members in the decision processes, promoting a higher level of individuals' agency. This mechanism features those organizations that are collectively handled and opened to the inclusion of stakeholders. On the contrary, the more rigid and hierarchical governance of rent seeking firms, whose principal stakeholders are investors, is generally oriented to investors' control and excludes the possibility of an inclusive governance. In the non-profit sector, the multi-stakeholdership internalizes contractual effects and partially solves the contractual imperfections that characterize their activities, while profit oriented firms generally choose the standard competitive framework. In this respect, the vast literature on Corporate Social Responsibility shows how also profit oriented firms can change internal governance mechanism towards inclusion and agency, specifically when they establish an ethical or social goal leading the whole organization.

The public sector governance, instead, is generally based on institutional settings aimed at regulating the relations between different stakeholders. In our paper, the public sector facilitates the exchange of human resources and welfare services between the profit and non-profit sector by screening the quality of the services providers and by incentivizing those ones that are more coherent with people's evolving needs. The shift of the public administrations towards the subsidiarity paradigm determines the emergence of public sector's role of mediator among for profit and non-profit issues. For what concerns specifically the welfare services, this paradigm implies an innovative institutional and policy design aimed at empowering the local communities, by involving the not for profit and the third sector as partners of the PA (i.e. – participative welfare).

Second, focusing specifically on NPOs and cooperatives, it emerges how the mechanisms and institutions of governance strictly depend on the 'social' nature of the goods and services provided. Specifically, at organizational level a perfectly competitive market maximizes the impact of third sector activities in terms of social welfare, as profits are null by construction, at least in the long run. Moreover intrinsic motivated workers are not just willing to accept lower wages, but they can choose the non-profit sector as a workplace for several reasons, including not economic ones: a flexible working place where people are highly involved in deliberation and decision processes gives individuals the opportunity to experience an entrepreneurial activity and valorises the recognition of multiple perspectives, inducing individuals to improve their competences and knowledge (Sacchetti and Tortia 2014). Involvement and participation activate positive effects: mastering of abilities, renewal and acquisition of competences; autonomy and relatedness in a group (Deci and Ryan 2000). In brief, the non-profit sector is a flexible working place where individuals can improve their competences and their level of participation and agency.

Finally, as regards the organizational mechanisms for the governance of NPOs and cooperatives, we believe that one major problem is that of the information asymmetries. To reduce this problem and to overcome contractual failures, it is important to facilitate the matching process between firms´ demand and the non-profit supply. Specifically, the co-determination of profit and non-profit institutions, under the supervision of the public sector, works as an efficiency-enhancing mechanism, as it improves the overall level of information on the effective supply of the non-profit sector, discourages rent-seeking activities and enables the diffusion of best practices and innovations that might narrow the existing gap in terms of quality among market and non-market activities.

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