Are flexible workers more insecure?
An integrated approach based on micro-data

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Abstract
In this paper we identify three main dimensions of (objective) worker insecurity: (i) employment discontinuity, (ii) inadequate wages, (iii) limited access to social protection. We then propose an overall measure which evaluates in the medium run the three elements described above through a single monetary metric, attributing to each worker an income made up of the received wage as well as of any benefits provided by the social protection system. This measure combines empirical elements (labor market dynamics, which determine a worker's income, career and actual enjoyment of social protection benefits) and elements concerning the regulatory framework (eligibility to access the social protection system, the impact of the progressive fiscal system). Once the concept of worker insecurity is defined on the basis of this monetary metric, we provide an empirical assessment, based on individual micro-data for Italy, of the connection between non-standard contracts and precariousness. In particular, and differently from the economic literature which mainly focuses on the effects of social protection on labor supply, we focus on the effects of working careers on social protection coverage. We show that insurance-based Bismarckian welfare systems – of which the Italian system is representative – absent universal provision, or a layer of generalized social assistance might fail to provide security when most needed.

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1. Introduction

Aiming at reducing unemployment rates and recovering competitiveness [Oecd 1994; Imf 1999], in the last decades many European countries have undertaken reforms in the labor market in order to increase flexibility. This has been mainly done "at the margin", i.e. by easing the conditions under which a worker can be hired with non-standard work arrangements. In the period 1990-2008, the Oecd EPL index for temporary workers has indeed been reduced in thirteen out of twenty-six countries, remaining stable in eight and increasing in only five[1], while the same index for permanent workers kept almost unchanged; as a likely consequence, the share of workers employed with a contract of limited duration reached 13.5% in the EU27 in 2009 – it was almost 15% before the ongoing economic crisis – and topped 25% in Spain, 22% in Portugal and 26% in Poland. The share of part-time workers, in turn, reached 18.8% (21.6%) in the EU27 (EU15) in 2009, with a spike in the Netherlands (48.3%) and many countries well over 20%[2].

This strategy puts forward a potential problem of (increasing) worker (in)security, in as much as many temporary jobs simply substituted more protected positions [Kahn 2010], and involuntary part-time work is high in many countries, with a worrying increasing trend (18.9% in the EU15 in 2009 up from 12.8% in 2000, with numbers as high as 28.7% in France, 29.2% in Greece, 34.0% in Italy, 46.8% in Spain). Moreover, risk-averse workers, for any given present value of their future earnings, strictly prefer more stable career patterns, so that temporary workers usually feel less secure than their standard colleagues [Clark and Postel-Vinay 2009]. Not surprisingly, therefore, the empirical evidence suggests that non-standard workers are less secure according to both objective and subjective measures [Pacelli et al. 2008].

Our focus is on the causal mechanisms linking non-standard working arrangements and objective worker security. It is now widely recognized that worker security is a multidimensional object, extending beyond simple job security – the retention of the same job with the same employer – towards broader *employment security*, i.e. the expectation of continued employment, although not necessarily with the same employer and in spite of brief and sporadic periods of unemployment [EC 2006]. This notion has taken on a crucial role within the debate on *flexicurity*, which advocates a combination of active and passive labor market policies to counteract the detrimental effects of flexibility on job security. Active policies, by facilitating out-of-

[1] Own elaborations on Oecd data. The group of countries respectively are: Belgium, Denmark, Finland, Germany, Greece, Italy, Japan, Korea, the Netherlands, Norway, Portugal, Spain and Sweden; Australia, Austria, Canada, France, Mexico, Switzerland, Turkey and the US; Hungary, Ireland, New Zealand, Poland and the UK.

[2] Namely: Belgium, Denmark, Germany, Ireland, Austria, Sweden, the UK, Iceland and Norway; Switzerland is at 34.6%.

unemployment transitions, are meant to foster employment security, while passive policies – namely income maintenance schemes – are meant to guarantee *income security*, by substituting *wage security* with *social security* during transitions from one job to the other [Wilthagen and Tros 2004].

These dimensions of worker security show a high degree of complementary: as an example, a low level of wage security, which prevents precautionary savings during the employment spells, can be balanced by access to social protection during non-employment, or by a high level of employment security reducing the number and duration of the unemployment spells.

However, in the literature on worker (in)security a trade-off between the number of dimensions taken into account and the capability to assess causal relationships seems to emerge. Economists usually aim to identify the causal effect of holding a non-standard working arrangement on subsequent career perspectives – for instance by testing the capability of a temporary job to represent a stepping stone into open-ended employment [Addison et al. 2009; Booth et al. 2002; De Graaf-Zijl et al. forthcoming; Gagliarducci 2005; Jahn and Rosholm 2010; Ichino et al. 2008] – or to estimate wage gaps between standard and non-standard workers [Addison and Surfield 2007; Oecd 2008; Comi and Grasseni 2010]. They generally abstract from social protection, but for a strand of the literature that takes social protection as an input and looks at the effects on labor supply (see, for instance, Schmieder et al. [2010]). Their results, despite causality being explicitly modelled, are therefore not decisive in assessing the impact of flexible work arrangements. On the other hand political scientists and social policy scholars try to depict the broader picture taking interactions between all the dimensions into account, but the empirical evidence they provide is only at the macro level, somewhat failing to assess causal mechanisms [Häusermann and Schwander 2010].

This paper provides an empirical assessment of the relative importance of employment security, wage security and social security in reducing workers' insecurity in Italy. In particular, it investigates the ability of social protection to reduce insecurity in a country characterized by a Bismarckian welfare system. Given that the eligibility requirements for social benefits are either conditional on the contract type – excluding *a priori* important forms of non-standard work arrangements – or linked to employment continuity and minimum contribution accumulation, we show how social security fails in complementing employment security and wage security. In addition to having a pure insurance-based social protection system, Italy constitutes a relevant case for studying the relationship between the deregulation of the labor markets and worker security for two reasons: (i) Italy ranks first among the Oecd countries with respect to the reduction of restrictions to the use of temporary contracts in the last twenty years, and ranks second with respect

to the degree of compliance to the Oecd Jobs Strategy; (ii), Italy has, as we have seen, one of the highest percentage of involuntary part-time workers in the EU.

The rest of the paper is structured as follows. Section 2 frames our contribution in the current debate on flexicurity. Section 3 defines the concepts of flexibility and security in the labor market, and discusses on the basis of the theoretical literature the relationship between them. Section 4 provides a description of the data we use. Section 5 offers some insights of the relationship between work arrangements and the three dimensions of work insecurity, each taken separately. Section 6 introduces our overall measure of worker insecurity, based on the total income a worker receives from his/her participation in the labor market. Section 7 presents some descriptive results about the distribution of this measure, both cross-section and over time, exploiting the longitudinal dimension of our panel data. Section 8 investigates, in a multivariate setting, the overall impact of non-standard work contracts on our measure of worker insecurity and on its changes over time. [Section 9 identifies, for the whole sample of workers, the contribution of the social protection system in decreasing inequalities. In particular, relying on our measure of total income, we are able to test at an individual level whether social security is or would have been decisive for granting worker security - TBW]. Section 10 offers our conclusions.

2. The debate on flexicurity

The interest in *flexicurity*, defined as an «integrated strategy for simultaneously enhancing flexibility and security in the labor market» [EC 2007, 5][3] seems to be related to several factors. Firstly, above all within the European debate, the focus on *flexicurity* mirrors the presumed success of the two models for national labor markets reforms which have come closest to the idea of a virtuous combination between flexibility and security, i.e. the Danish model and the Dutch model[4]. Secondly, the debate on *flexicurity* seems to be in line with the new labor policy trends promoted by the OECD, which are also in tune with the positions expressed by the European Commission for over a decade. The OECD partially revised the views it had expressed in its *Jobs Study* [OECD

[3] For an overview of the by now substantial literature on flexicurity, see Viebrock and Clasen [2009].

[4] In the early 1990s, in order to face a strong increase in unemployment, Denmark implemented a fundamental labor market reform, based mostly on decentralizing employment policies, on granting work leaves, and on reviewing the regulations concerning the granting of unemployment benefits [Madsen 2004, 2005; Oecd 2004]. Holland has earned the title of main *flexicurity* country after adopting the *Flexibility and Security Act* in 1999, which modified some of the regulations concerning non-standard work contracts [van Oorschot 2004; Wilthagen and Tros 2004; van Voss 2000]. There is, however, a large amount of criticism regarding the actual impact of the Danish and Dutch reforms and

1994], which urged the deregulation of labor markets to try and curb high levels of unemployment and, at the same time, underlined the negative effects of income-maintenance schemes in case of non employment. In fact, the OECD has recently reasserted the need to reform the employment protection legislation (EPL) in several countries, but within a more considerate framework, capable of balancing the workers' need for security and the employers' need for flexibility [OECD 2006; Stiglbauer 2006][5]. Hence, the OECD's position has now come closer to that of the European Commission, which, since the late 1990s, has made the balancing of work flexibility and worker security a key topic in its reasoning on the modernization of social and labor policies. The European Commission's main actions in this regard have been the publishing of the Green Paper on the New Organization of Work [EC 1997a], the conceptualization of social protection as a productive factor [EC 1997b], the launch of the European Employment Strategy [EES][6] in 1998, and, finally, the explicit adoption of the flexicurity reference framework as a keystone in the Community policy discourse on labor policies [EC 2007], with the approval of eight 'Common Principles of Flexicurity' by the Council of Ministers in December 2007 [Council of Ministers 2007][7].

More generally, in Europe and elsewhere, trying to reach a balance between flexibility and security can be seen as an update to the strategy, which characterized the golden age of industrial capitalism, of protecting workers from risks – or of compensating them for losses – deriving from the internationalization of the markets. This strategy was the basis of the embedded liberalism regime during the post-war era [Ruggie 1982], in which the support for an international trade regime given by the citizens of advanced capitalist polities rested on the provision of social and economic security by their domestic governments[8]. Then, a new competitive context developed and characterized the international political economy from the 1980s onward, after the end of the golden age and the periods of turbulence that came as a consequence of the oil shocks. Despite the fact that

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their ability to act as models for other countries [Algan and Cahuc, 2006; Campbell *et al*. 2006; Keune and Jepsen 2007; Larsen 2006; Grünell 1999].

[5] In its *Jobs Study* of 1994 the OECD underlined that countries with more limited EPL usually displayed good performance in terms of employment; this was the reason for the central role taken on by the deregulation of labor markets in the OECD's policy recommendations. Ten years later, the OECD partially reconsidered its position in light of two main considerations [Oecd 2004, 2006]. On the one hand, it acknowledged the impossibility to reach univocal conclusions concerning the net impact of EPL on the aggregate level of unemployment. On the other hand, it pointed out that the progressive shift of European countries towards a reduction in EPL levels, mainly due to lower restrictions on recruitment through fixed-term contracts, caused an increase in inequalities between workers who are protected and workers who are scarcely protected.

[6] The European Employment Strategy consists in the coordination of labor policies pursued by the member states of the European Union around a set of common policy objectives defined at a supranational level. For a more thorough analysis, see Zeitlin and Pochet [2005] and Zeitlin and Heidenreich [2009]. The need for a balance between flexibility and security is explicitly mentioned within the EES context as early as 2001, as part of the so-called Employment Guidelines, which the member states have to comply with when drawing up their national employment policy plans.

[7] As for the reasons behind the European Commission's promotion of the flexicurity reference framework, see Keune and Jepsen [2007].

some successful cases, such as that of Japan, seemed to point at alternative routes, based on flexibility arrangements within the firm [Dore 1986], the solution provided by experts and international institutions was the one epitomized by the OECD's Jobs Study: in the world market, the competitiveness of enterprises, and of an economic system as a whole, can be achieved through the deregulation of labor markets and the introduction of a high degree of labor flexibility, which essentially means that a firm is able to adjust its manpower (and related cost) quickly and without limitations, to the trends in the demand for its products[9]. Given this premise, the strategy of complementing flexibility with security seems to be a 're-embedding' attempt, aimed at securing the social prerequisites of competitiveness in an open trade system, providing workers affected by flexibility with guarantees against the risks deriving from it, in order to earn their support for the opening of the markets and to avoid any possible protectionist backlashes[10].

Although the strategy of complementing flexibility with security has several well-known precedents in the recent history of advanced capitalist countries (among which, the most famous is the labor policy in the Rehn-Meidner model[11]), the *flexicurity* approach does not seem to command unanimous approval, not even in Europe [Auer 2010]. On the one hand, a large portion of the trade unions fears that it might be a Trojan Horse of mere flexibility with no security. On the other hand, several experts are increasingly dissatisfied with the ambiguity of the *flexicurity* concept. Such ambiguity is certainly useful from a political point of view to hold together very different understandings of the combination between flexibility and security. However, it almost inevitably leads to a high degree of vagueness in relation to the empirical referents of *flexicurity*, thus increasing the risk of resurfacing tensions in the policy implementation phase among different

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[8] For an early investigation of this topic, see the seminal works by Cameron [1978] and Katzenstein [1985]; more recently, see Garrett [1998] and Rodrik [1998].

[9] This interpretation has remained influential throughout the 2000s: Auer [2006] notes that the World Economic Outlook 2003 by the IMF urges Europe to adopt labor market institutions based on the US model, in order to achieve higher growth and levels of employment; Rodgers [2007] observes that the World Development Report 2006 by the World Bank recommends labor market deregulation on the grounds that it would improve the investment climate.

[10] Recent evidence in favor of the 'embedded liberalism' argument, whereby the support for free trade and market liberalization increases with public spending and social protection, is provided by Scheve and Slaughter [2004] at the country level and by Hays et al [2006] and Mayda et al [2007] at the individual level.

[11] The Rehn-Meidner model was at the basis of the system that regulated the Swedish economy from the 1950s until, at least, the 1980s. Geared towards macroeconomic stability and efficiency rather than equality, it rested on Schumpeterian 'creative destruction' premises [Moene and Wallerstein 1999], and was actually based on a restrictive macroeconomic policy coupled with a solidaristic bargaining policy and mobility-enhancing labor market policies [Erixon 2010]. It is in this context that active labor market policies were introduced, aimed at facilitating the re-employment of workers dismissed due to obsolete plants being shut down and to less competitive firms being pushed out of the market [Swenson 1989]. In particular, in Rehn's interpretation the 'security of wings' (what would now be called 'employment security', as we will see) was superior to the 'security under shells' (the nowadays much-maligned 'job security').

interests (above all, those of workers and employers), that had been swept under the carpet in the agenda setting and policy formulation phases[12].

However, an analysis of the different meanings of *flexicurity* per se, and of the various ways the concept is commonly used both in policy and in academic circles, is not strictly relevant to this work. It is far more important to clearly define the field and scope of our investigation, analyzing how worker security might be affected by the specific flexibility strategy adopted in several OECD member countries, among which Italy, in the last twenty years, which is based on progressively eliminating restrictions on the use of non-standard work contracts. As we will see, from an analytical point of view there are no elements that might lead to believe that the widespread adoption of flexibility will necessarily imply a reduction in security, or even that flexibility equates with insecurity. Not even economic theory provides any guidance in this regard, as it is unable to establish univocal relations between flexibility achieved through non-standard contracts and the elements that determine worker security. Consequently, the relationship between flexibility and security is an empirical issue and, in order to investigate it, choices concerning the research strategy must be made.

3. The relationship between flexibility and security

3.1 Flexibility in labor relationships

Within the public debate, the term 'flexibility' is probably most commonly understood and interpreted as reduced employment protection. Flexible labor markets are those in which there are fewer restrictions on the (individual or collective) dismissal of workers and fewer restrictions on their recruitment by means of fixed-term contracts. Nevertheless, identifying flexibility exclusively with the formal regulations of the labor market provides an incomplete overview of the phenomenon and prevents the detection of other ways in which flexibility might manifest itself. The consequence of this is that one might come to the hasty conclusion that a country whose labor market is considered rigid (for instance, on the basis of its employment protection index) is necessarily also a country in which employment relationships are not very flexible.

Conversely, a more promising perspective is geared towards understanding the many-faceted nature of labor flexibility, looking at the multiplicity of its forms and meanings [Regini

[12] Following the interpretation by Sartori [1984], the ambiguity of a concept is a pathology that affects the relationship between the term attributed to the concept and its meaning, whereas vagueness is a pathology that affects the relationship between the meaning of the concept and the class of its empirical referents.

2000; Tangian 2009]. From this point of view, labor flexibility can be understood as *the ability to adapt various aspects of labor relationships – and not only their duration – to the needs of both the workers and the employer*. Based on this definition, we can thus identify the different dimensions of flexibility, depending on the components of the labor relationship subject to exceptions or variations from the expected standards. More specifically – although this list is far from being comprehensive –, some types of flexibility can be identified depending on the dimensions that each of them emphasizes the most[13]:

a. *numerical flexibility*, which refers to adjustments in the number of workers employed. This adjustment is facilitated by resorting to work contracts with fixed duration, by individual and collective dismissal procedures that are less onerous for the employers, and lastly by the opportunity given to companies to outsource some activities (by means of temp agency work contracts, by putting tasks out to tender, or even by detaching certain business divisions from the firm);
b. *temporal flexibility*, which concerns adjustments to an individual's working hours, i.e. an increase or reduction in the number of hours worked in comparison to the standard number of working hours (through overtime, resorting to part-time contracts or leaves and sabbaticals, or short-time work schemes). Temporal flexibility might also regard adjustments to an individual's working times (working on Sundays, changing shifts) or a redistribution of working hours over different periods of time (workers might have the opportunity to choose when to start and leave work or plan their schedule on a multi-week basis);
c. *wage flexibility*, which relates to measures concerning the variable components of an individual's wage (such as, for instance, incentives and production bonuses, profit-sharing schemes and share ownership by employees), or, more generally, to the fact that wage adjustment policies can be adopted at the national, local, and company level;
d. *organizational flexibility*, which concerns the internal organization of labor and is achieved by adjusting the content of the employees' work duties (functions and tasks assigned to them). The most common examples of this type of flexibility are the measures that aim at facilitating internal mobility or simply at supporting a certain degree of rotation of the duties assigned to each worker;
e. *spatial flexibility*, which relates to the physical place where professional activities are carried out and implies that the employees' work duties can be performed at different locations (for example, by means of the so-called teleworking);

[13] An alternative approach consists in sparingly identifying some dimensions of flexibility that are analytically unrelated to one another and then cross-referencing them, in order to create a range of typologies; see, for example, Lesckhe et al. [2006].

f. *flexibility regarding the procedures for employment start authorizations and the recruitment of workers*, which refers to the administrative liberalization and simplification measures for the placement of workers.

Given flexibility policies or, more generally, given flexibility strategies will usually involve more than one dimension; therefore, they will be made up of a mix of some – or even all of – the abovementioned types of flexibility.

In the last twenty years, many advanced countries have adopted strategies aimed at introducing a higher degree of flexibility in labor relationships. This has been done by reducing restrictions on the hiring of workers with fixed-term contracts. Although the OECD's employment protection index has well-known limitations (above all, the fact that it essentially considers only the formal aspects of the way in which labor relationships are regulated), the significant consequences of this deregulation can be immediately understood by looking at the figures displayed below. They illustrate how the EPL index changed between 1990 and 2008, exclusively for what concerns workers with open-ended contracts and exclusively for what concerns workers with fixed-term contracts. A further dimension of the employment protection legislation, which regulates collective dismissal procedures, has been measured by the OECD through a dedicated index only since 1998.

[Figure 1 about here]

Figure 1 illustrate variations in the employment protection index between 1990 and 2008, in the OECD member countries for which data are available, and refers exclusively to workers with open-ended contracts.

In figure 1, most of the countries are situated along the diagonal or close to it. The diagonal is the locus that represents the absence of changes in the employment protection legislation for workers with open-ended contracts, whereas the countries located below the diagonal display a decrease in the EPL index. In 10 of the 28 countries analyzed no changes occurred. In 8 countries the EPL index grew – although the increase was small –, which indicates that their level of employment protection was higher in 2008 than in 1990. Conversely, in 10 of the countries under investigation the index decreased, with the most relevant changes taking place in Portugal (which still has the highest EPL index among the OECD member countries) and Korea, but also in Australia and Finland.

In comparison to the rather small changes made to the employment protection legislation for workers with open-ended contracts, in the last twenty years most OECD member countries have

witnessed a reduction in legislative restrictions concerning the recruitment of workers through fixed-term contracts. As figure 2 clearly shows, a majority of countries (15 out of 28) are located below the diagonal, whereas 7 of them display no variations in the EPL index for fixed-term contracts between 1990 and 2008. Lastly, the index increased in 6 of the 28 countries. The index decreased much more markedly in 8 of the countries under investigation and in particular in Belgium, Germany, Sweden and Italy. Italy is actually the country in which legislative restrictions on the employment of workers with fixed-term contracts were reduced to the highest extent.

[Figure 2 about here]

As mentioned above, the component of the OECD's EPL index concerning collective dismissal regulations has been available only since 1998 and, in the majority of cases, this component has undergone no changes in the last ten years (figure 3)[14].

[Figure 3 about here]

In conclusion, in the last twenty years the evolution of the employment legislation in most advanced capitalist countries has been characterized by decreasing restrictions on the employment of workers through fixed-term contracts. This strategy involves several dimensions of flexibility, thus implying a mix of the types of flexibility identified above, and not only numerical flexibility. In some cases, such as that of independent contractors in Italy and, in general, of the so-called 'quasi-subordinate' workers, all the types of flexibility are actually involved. Besides the advantages provided by reducing (or eliminating) the restrictions on the employment of non-standard workers, the use of non-standard contracts is often also supported through monetary incentives, such as reduced social contributions to be paid by the employer[15].

Within the public debate, this strategy aimed at achieving higher flexibility (of the various types explained above) via a reduction in restrictions on hiring workers through fixed-term contracts, alongside the increasing share of such workers, is all too often portrayed as a form of *precarization* of the workforce, and workers with fixed-term contracts or, more generally, non-standard contracts are usually classed as precarious. In other words, flexibility (at least in the forms

[14] Portugal, Denmark, and Poland have witnessed a reduction in legislative restrictions on collective dismissal; in Finland and in the Slovak Republic there have been minor changes, while Turkey is the only country in which the level of legislative protection has increased.

[15] The reduced contributions paid by the employer can be offset by the public authorities through state-paid contributions financed out of general taxation, or they may cause workers to enjoy lower accrued contributions, mainly for pensions.

implemented through this strategy) is analytically equated with the insecurity or precariousness of the workers affected by it. Believing that all of the above is true means postulating an overall negative effect of flexibility on worker security, which, as the next sections will illustrate, can only be ascertained empirically and, obviously, only after having defined what worker security truly means.

3.2 Worker security

Also the concept of worker security, meant as stabilization of an individual's life chances through his/her participation in the labor market, refers to a very wide range of factors and situations. Among the risks linked to participating in the labor market that might negatively affect security, the following are particularly relevant: economic risks, consisting in a drastic or progressive reduction of an individual's earning capacity; physical health risks, such as accidents in the workplace, a higher incidence of diseases or a higher mortality rate; mental health risks, related, for instance, to stress or depression deriving from failed personal fulfillment; and, lastly, social risks, caused by the weakening of social cohesion due to growing tensions within the family and, more generally, to increasingly lower chances of establishing lasting relations within an individual's professional environment. It can be concluded that several elements contribute to worker security, among which:

a) *employment continuity*, understood as the reasonable expectation of continued employment;
b) *adequate earnings* to meet one's needs, i.e. capable of ensuring a free and dignified life;
c) *access to an adequate level of social protection*, which enables a worker to support him/herself while looking for a new job or during periods in which his/her professional activity has ended or been suspended;
d) *guarantee of good working conditions*, which is ensured mainly by regulations and procedures that prevent the risk of occupational diseases or accidents in the workplace;
e) *access to opportunities for the production and reproduction of skills and for the recognition of acquired skills*. This factor is often referred to as «employability», i.e. a worker's ability to preserve or improve his/her job position or to find a new job thanks to the skills he/she has developed;
f) *representation of own interests and protection of rights*. Collective representation is a very important security factor, since it enables workers both to influence decisions concerning their rights (production of rights) and to make sure that those rights are actually exerted (enforcement of rights);

g) *access to opportunities to balance professional and private life* and, above all, to attend family duties. Such opportunities influence a worker in choosing whether to work or to continue working and how much to work (part-time or full-time). They derive from the availability of specific services (crèches, services for the care of family members who are not self-sufficient), from economic support measures (in the form of direct aid or fiscal relief), and from the way in which one's job is organized, i.e. measures aimed at modifying – based on individual needs – the times and places in which a worker carries out his/her duties.

Among the various aspects mentioned above, particular emphasis has always been placed on the issue of employment continuity, on the organizations and regulations intended to ensure it, and on the types of security connected to it. In the 1970s, the concept of employment continuity was narrower and it referred to a worker's chances of preserving the same job, within the same occupation and the same employer [Doeringer and Piore 1971]. This notion of employment continuity was, therefore, associated to an idea of security meant as *job* (or even occupation, or task) *security*. Also thanks to the success of the Japanese organizational model of flexible factory, from the 1980s onward a different idea of employment continuity gained popularity. It was still linked to the preservation of one's job within the same company but it implied a certain degree of flexibility in the way the work was organized and possible changes in the duties assigned to each worker [Auer 2006]. In more recent times, a new concept of employment continuity has asserted itself. It is now understood as the expectation of continued employment, although not necessarily with the same employer and in spite of brief and sporadic periods of unemployment. It is associated to the notion of *employment security*, seen as security deriving from a worker's attachment to the labor market [EC 2006; Wilthagen and Tros 2004][16].

The notion of employment security has taken on a crucial role within the debate on *flexicurity*, in which the need is often reasserted to move from the traditional idea of defending each individual's job to the more modern concept of worker protection within the labor market. This debate and the academic writings that have influenced it (see for instance Wilthagen and Tros [2004]) frequently address the issues of job and employment security together with that of *income*

[16] Coherently with the described historical evolution and with the transitional labor markets approach, Auer [2010] uses the term 'employment security' to indicate the security associated with the preservation of one's job with the same employer, though with different duties, while he recommends the adoption of 'labor market security' to define 'a combination of employment contracts with one (and over the life course several) employer plus periods of non-work such as unemployment, family duties or training, or partial work such as part-time and short-time work, during which income and employability are at least partially maintained' [p. 381]. It is clear that this notion of labor market security is broader than that associated with the use, commonly adopted within the academic and policy debate, of the expression 'employment security' to refer to the reasonable expectation of continued employment, although not necessarily with the same employer and in spite of brief periods of unemployment between jobs (which Auer calls

security, which refers to maintaining one's income while moving from one job to the next or during periods of unemployment (hence, a form of social protection), and that of combination security, which essentially concerns the ability to combine one's professional and family duties. As their description clearly shows, these notions include some, but not all, of the elements listed above.

Similarly, the notion of worker security adopted in this paper emphasizes some of the elements described above and, in particular, those referring to employment continuity, to attaining adequate earnings, and to being able to access adequate resources provided by the social protection system during periods of unemployment (items a) to c) in the above list). In other words, in this paper the concept of security is based on the stabilization of a worker's *material* life chances through his/her participation in the labor market[17]. Therefore, we believe that worker security can be defined as *an individual's ability to maintain an adequate standard of living by participating in the labor market or by accessing public (or publicly mandated) income-maintenance schemes that are made available by the social protection system*.

Worker security is thus made up of three dimensions: *employment security*, *wage security*, and *social security*. In other words, within income security we explicitly identify the component concerning work income adequacy, when the worker is employed, and the component regarding the availability and adequacy of income-maintenance measures during periods of unemployment (or measures such as in-work benefits and low income top-ups, when available), which are provided by the social protection system. According to this approach, the concept of worker security is a family resemblance concept, in which the properties making up its intension are substitutable and interchangeable to a certain degree. In fact, worker security is composed of three properties, none of which is individually necessary and each of which can contribute to guaranteeing the worker's ability to secure an adequate standard of living, in combination with or as a replacement for the other properties[18]. Interruptions in a worker's professional career do not necessarily lead to insecurity, provided that, while being employed, a worker earns a high enough wage to allow for the setting aside of precautionary savings, or provided that the availability of income-maintenance schemes during periods of unemployment makes the worker able to enjoy an adequate standard of living[19].

Intuitively, thus, flexibility does not necessarily entail precariousness: one can be continuously employed through a succession of fixed-term contracts, or be paid at a premium while

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'employability security'). In this volume we will adopt the latter, nowadays widespread, meaning of employment security.

[17] For a different approach to worker security, see the study by Pacelli et al [2008].

[18] On the topic of family resemblance concepts, see Goertz [2008].

[19] We, therefore, believe our approach to be compatible with the basic analytical aspects of the Transitional Labor Markets approach [Schmid and Gazier 2002].

working so as to be able to compensate for periods of non work, or be rescued by an adequate safety net while not in work. Equating workers holding non-standard contracts with precarious workers is therefore an unwarranted operation, from the analytical standpoint. One could well expect that many non-standard workers are able to secure an adequate living standard for a reasonably long period of time, therefore not being precarious. By the same token, there might be standard (i.e. full-time open-ended) workers that must be classified as precarious according to our definition, due to low wages for instance, or to the fact that they lose their job as a consequence of the firm going bust, while not meeting the eligibility requirements to qualify for income support.

Therefore it seems clear that assessing worker security is an empirical matter that cannot be solved analytically, deriving a worker's condition of precariousness from the type of contract she is hired with. It may be useful however to consult the economic theory to try and identify, at an analytical level, any existing causal relations between the flexibility strategy via the reduction of restrictions on the use of non-standard contracts and worker security, as a means to inform the subsequent analysis with theoretical expectations, if this should be possible.

3.3 Insights from the economic theory

As seen above, the reduction in restrictions on the use of fixed-term contracts has been legitimized by the recommendations contained in the OECD's Jobs Study, which pointed at the rigidity of the labor market as the main cause leading to the lack of competitiveness of European economies in the early 1990s. The idea underlying these recommendations was that a deregulated labor market would produce higher employment. If it were so, workers would have higher chances of employment, which would result in a higher level of security, at least for what concerns the employment security component. However, a closer look reveals that the economic theory does not provide univocal indications about the expected effects on employment security deriving from labor market reforms; as a consequence, also the general effects on worker security are a priori undecidable[20].

In fact, the economic theory classifies non-standard work contracts, and fixed-term contracts in particular, on the basis of the cost differentials implied – in comparison to standard contracts – for the employers that use them. These contracts usually have two main advantages: lower dismissal

[20] Also empirical analyses suggest that the role played by labor market reforms should be scaled down; see the reviews by Baker et al. [2005] and by De Graaf-Zijl [2005]. Kahn [2010] proves that, as far as Europe is concerned, there is actually no empirical evidence that labor market reforms have indeed caused an increase in the level of employment. Their effect seems to have been that of replacing open-ended contract jobs with fixed-term contract jobs. Similarly, Schmitt and Wadsworth [2002] ascribe the growth in employment in the US and the UK during the 1990s to macroeconomic policies, while they state that the type of flexibility endorsed by the OECD's Jobs Study contributed to increasing income inequality.

costs and lower unit costs, the latter due to lower wages often paid to the workers and, in some countries and for some contract types, lower social contributions[21].

3.3.1 The link between labor costs and demand

In theory, the most obvious effect of a reduction in unit labor cost is an increase in labor demand. In fact, according to the neoclassical model, a reduction in labor cost generates an increase in employment, thus making even the least productive workers profitable. Hence, the average productivity of the system decreases, whereas employment and overall production increase. As a consequence, even in a context of stagnating or decreasing demand on the goods market, a reduction in labor cost might still have a positive effect on employment through the replacement, in the medium or long term, of other production factors with labor. Nevertheless, from a theoretical point of view, it is not indisputable that labor cost reductions necessarily result in a higher rate of employment. So far we have referred to the neoclassical theory, which assumes that individual enterprises do not have the power to influence wage levels and that they recruit workers as long as the productivity of the new recruits is higher than their remuneration; going beyond this would imply a decrease in profits. Conversely, the *efficiency wages* theory [Solow 1979] states that, when a company is able to set the wage level and when there is a positive causal relation between wage and individual production, then the link between remuneration and labor demand might cease to exist. In other words, a company will tend to increase salaries in so far as their increase is more than fully made up for by productivity increases, and only after having established the optimal wage level will the company also set the amount of labor force it needs to employ. This happens because higher wages might generate an "employees' commitment" effect [Akerlof 1982; 1984]: workers who benefit from a higher pay embrace the company's goals and increase their commitment – hence, their productivity – in order to achieve such goals. Moreover, this state of things makes the possible loss of his/her job even more costly for a worker, who will consequently be induced to make the greatest possible efforts to try and preserve it [Shapiro and Stiglitz 1984]. So, a company might decide to simultaneously recruit new workers and increase wages or, conversely, it might decide to cut down both on the level of wages and on the amount of workforce employed.

Within our analytical framework, these arguments aim at proving that a reduction in the labor cost – achieved by reducing remunerations and social contributions – leads to lower income security (if we exclude counterbalancing actions, borne by the collectivity), which is not necessarily

[21] Raitano [2010] provides evidence that in all the EU-15 member states, with the exception of the UK (and Denmark, due to lack of data), workers with fixed-term contracts receive lower hourly wages than workers in the same occupations employed with open-ended contracts.

offset by higher employment security, determined by an increase in the employment rate and, hence, by a lower likelihood of being unemployed. On the other hand, the use of non-standard contracts does not always result in reduced individual wages and social contributions. However, as far as fixed-term contracts are concerned, what invariably occurs is that dismissal costs and employment protection regulations are reduced. The characteristics and implications of this phenomenon will be investigated in the next section.

3.3.2 The effects of reducing dismissal costs

Dismissal costs are included in the costs borne to replace the firm's workforce (turnover costs). The economic literature breaks down turnover costs into recruitment costs (looking for and selecting suitable workers), training costs (providing firm-specific training), and the above-mentioned dismissal costs. While the first two types of costs are inherent in the nature of labor relationships (for instance, more or less specialized), dismissal costs are more closely linked to legislative regulations. Nevertheless, these three aspects are not unrelated to one another; as we will see, although non-standard contracts – of the fixed-term type – have the direct effect of eliminating the costs to be borne in order to break off a labor relationship (as it will suffice to wait for the end of the contract), they also have indirect consequences related to the start of the labor relationship, above all for what concerns the training phase.

From a theoretical point of view, a reduction in dismissal costs has a very clear effect, i.e. an increase in *turnover* but not necessarily in the average level of employment [Bertola 1990]. In fact, low dismissal costs push up the number of both dismissals and recruitments. Knowing that they can dispose of surplus workers if they need to, companies are consequently far less reluctant to recruit them when the demand calls for it, which enables them to boost their profits. Conversely, the effect on average employment in the medium term remains uncertain. These theoretical results are mostly confirmed by the findings of the empirical literature.

From the employers' point of view, the advantage deriving from a higher turnover is instantly identifiable: it enables them to make higher profits. Yet, from the point of view of worker security, is it desirable to increase the turnover of workers on a given number of jobs if the actual average employment rate does not increase? A reduction in turnover costs directly influences employment security and it presents both positive and negative aspects. On one hand, as the flow of hiring grows, the duration of unemployment periods is reduced [Berton 2008; Bover and Gomez 2004; De Graaf-Zijl et al. 2004; Van Ours and Vodopivec 2006] and a *port of entry* onto the labor market is opened for young people, both because looking for first-time employment becomes easier

and because the accumulation of work experience and the creation of professional networks might make it easier to move towards better job positions (see chapter 4). On the other hand, however, a drop in dismissal costs reduces the duration of labor relationships, which in turn discourages employers from investing in their workers' human capital [Bassanini et al. 2007] and causes workers to gain work experience that is less profitably usable on the labor market. Furthermore, the higher sensitivity of employment to the economic cycle leaves workers more exposed to the risk of unemployment at exactly the time when the situation of the labor market is at its most difficult. The net effect of lower dismissal costs on *employment security* is therefore a priori ambiguous. Instead, as far as *income security* is concerned, a lower level of employment protection lessens the workers' bargaining power and, consequently, their ability to demand higher wages, thus reducing their wage security. However, this negative effect could be compensated for by implementing suitable income-maintenance or income-integration schemes during periods of reduced professional activity or unemployment[22].

A decrease in labor costs as well as a reduction in dismissal costs affect worker security in a way that cannot be determined a priori. In other words, ascertaining what type of connection exists between flexibility of labor relationships and worker security is a matter that must be dealt with at the empirical level, within a given economic system, by looking at the way in which the labor market and the social protection system work together.

4. The data

In order to work our empirical strategy out we make use of a number of data sources. The most relevant of them is the *Work Histories Italian Panel* (WHIP). WHIP is an employer-employee linked database of individual work histories built up by LABORatorio R. Revelli from the social security administration (INPS) archives. The reference population includes all employees of the private sector, temporary workers from the public administration, craftsmen, traders, collaborators, professionals without an autonomous security fund and benefit recipients (unemployment, collective dismissals, short-time, maternity and sickness allowances). WHIP data however do not allow to distinguish between unsupported unemployment, non-participation and unobserved employment spells (basically, permanent civil servants and, by definition, irregular work). Careers

[22] Yet, if the ability of a social group or of a risk category to receive social entitlements and to make sure that they are kept at an appropriate level depends on the ability to exert pressure on public decision makers, it might be rightly supposed that a reduction in the workers' bargaining power, deriving from lower employment protection, will deprive workers of crucial power resources also in the political arena and, consequently, reduce their chances of acquiring security through social protection.

are observed monthly, with a sampling rate of workers of about 1:90. The observed series at the time of our analysis covers the period 1985 – 2003, although all the details of the contractual arrangements are observed since 1998 only. We therefore focus on the period 1998-2003. These data are further narrowed down in order to reduce the inclusion of workers whose career is only partially observed in WHIP[23]. In particular, we exclude from the sample the individuals about whom – during the six years under investigation – no information is available for a total period of over 36 months. By doing so, we automatically excluded all the individuals who only occasionally participated in the labor market or the individuals who spent most of that period working with a contract type that cannot be observed through WHIP.

With respect to our purposes the main advantage in using WHIP is that working careers, wages earned and the benefits received are observed in details and without measurement errors or recall biases. This comes at the cost of a limited number of observables, which are basically restricted to demographic characteristics (gender, age, region of birth), characteristics of the firm (sector, dimension, region, age) and characteristics of the contract (type of contract, start and end of the contract, qualification, wage, number of days and weeks worked, area of work, social contributions paid and benefits received). Fewer information are available for independent contractors (see below).

5. The three dimensions of work insecurity

Results are neat. Workers with contracts of limited duration – with respect to standard workers – enjoy employment spells the shorter duration of which is not compensated either by more frequent job-to-job transition rates or by shorter unemployment spells. The probability to get an open-ended job is on average higher with respect to unemployed workers. However, as pointed out in a related research [Berton et al. 2009a], this port-of-entry effect seems to be completely explained by within-firm transitions; in other words, temporary jobs – probably due to low investments in human capital [Bassanini et al. 2007] – do not represent a valuable asset in cross-firm transitions, and thus to a large extent for employment security. We also confirm in our data a large and persistent wage penalty for some forms of non-standard work. In the Italian insurance-based social protection system, these two empirical findings mirror also into a poorer access to income-maintenance

[23] This might happen for instance because a worker finds a job as a permanent employee in the public sector (not covered by the same Social Security Administration), or because she leaves the (national) labor market, for whatever reason.

schemes, including unemployment benefits, maternity and sickness allowances[24]. For each individual, we check whether eligibility criteria are met, and offer a quantification of the relative importance of employment discontinuity vs. low wage and contribution accumulation.

5.1 Employment continuity

The issue of employment continuity is mainly relevant for temporary contracts, as the dynamics of open ended contracts does not differ much with respect to the full time/part-time time regime – hence, non-standard open ended contracts are not at a disadvantage on this issue. Temporary contracts do not imply bumpier careers per se, for two reasons: first, the duration of a temporary contract is not necessarily shorter than that of an open-ended one; second, fixed-term contracts may either follow one another in uninterrupted sequences, or represent stepping stones into open-ended contracts.

Since employment discontinuity could be an intrinsic characteristic of the initial phase of an individual's work career and cease to exist at later stages, we split the sample on two specific age groups of workers: those who entered the labor market in 1998-99 and were aged between 16 and 35, and those who in 1998 were aged between 36 and 50. For the sake of readability we discuss the results obtained for entrants only, being those for older workers comparable in their overall interpretation[25]. A number of steps of analysis are necessary to address the issue.

The *first* step focuses on the duration of work contracts and leads to two key results: a large portion of standard contracts expires within a short period of time; yet, the duration of fixed-term contracts is even shorter. Once it has been established that standard contracts usually imply greater contract continuity, it is necessary to understand if this leads to higher employment continuity. In order to do so, in the *second* step we compare the frequency with which standard workers and workers with fixed-term contracts become non-employed when their contracts expire. It emerges that the frequency of transitions toward non employment at the end of a contract is generally high. In the case of young workers, however, some forms of non-standard work are associated with a lower frequency of transitions toward non employment, in comparison to what happens to standard

[24] While working part time does not imply more employment and wage insecurity with respect to full-time work, it leads to less social security, since the contributions paid during one's working career are proportional to the total – and not unitary – wage.

[25] Workers are called *entrants* if their careers were never observed in the first part of the series, i.e. from 1985 to 1998-99. We only consider workers entering the labor market in 1998-99 in order to be able to analyze the evolution of their careers for at least 4 years. Text, tables and figures refer to full-time workers only, figures for part-timers not differing much, conditional on the type of contract. Results for this group are available from the authors upon request.

workers. These results are confirmed when medium-term transitions are examined[26]. The *third* step deals with the duration of non employment. From this point of view, in the case of both young and older workers, there are very small differences between the duration of non employment after a standard contract and after a fixed-term contract. These differences do not appear to be relevant enough to alter the differentials determined by the duration of contracts and by the job-to-job transition rates. However, in order to determine if higher contract discontinuity leads to higher employment discontinuity two more steps must be taken. The *fourth* step consists in understanding if, over a medium period of time, workers actually manage to offset the lower duration of their (non-standard) contracts with higher job-to-job transition rates. In this regard, an analysis of how much of their work careers workers employed with different types of contracts spend in a state of non employment clearly shows that this offsetting process does not occur. The *fifth* and final step consists in ascertaining to what extent the port-of-entry mechanism allows us to consider non-standard work as a mere transition phase that leads to standard work. We will see that this assumption too is disproved; in fact, access to standard contracts is easier for those already working with full-time open-ended contracts.

5.1.1 Duration of contracts

Only 33.4% of workers entering the labor market in 1998-99 started their work career with an open-ended contract. A very large portion (25.8%) entered the labor market as apprentices, 11.1% as trainees, 8.4% as direct hire temps, and 6.3% as wage and salary independent contractors. Seasonal and temp agency workers as well as other types of independent contractors (self-employed independent contractors) each account for between around 1% and 2% of the total, while the remaining entrants started self-employed businesses as craftspeople or tradespeople[27]. To conclude, as early as the late 1990s, more than 63% of workers observed by WHIP entered the labor market with a non-standard contract (table 1).

[Table 1 about here]

Overall, almost 43% of the contracts referring to this group of entrants expired within the first 12 months, while 63% of the contracts ended within the first two years[28]. More specifically,

[26] On the contrary, when older workers are considered, the figures referring to standard workers and workers with fixed-term contracts are comparable and occasionally higher for the second group.

[27] Until 2003, trainee contracts were the most widespread method to select and appoint clerical staff members; this contract type was characterized by high rates of transition to open-ended contracts and high employment continuity. However, trainee contracts were abolished in 2003 and this is why we report no results for this group.

[28] For a correct interpretation of these elaborations, it should be kept in mind that in the WHIP data it is not possible to identify two subsequent identical contracts within the same firm if they are not separated by an intermediate

focusing on full-time contracts, within the first 12 months expired: 32% of open-ended contracts, 41% of apprenticeship contracts, 85% of temp agency contracts[29], 82% of direct hire temporary contracts, and 67% of independent contractors' contracts. Within the first two years expired: 47% of open-ended contracts, 62% of apprenticeship contracts, 96% of temp agency contracts, 95% of direct hire temporary contracts, and 85% of independent contractors' contracts (figure 4[30]).

[Figure 4 about here]

Two facts thus clearly emerge: a) contrary to what is generally believed about the Italian labor market at both the national and international level, standard contracts are also subject to a high *turnover*; b) nonetheless, the duration of fixed-term contracts is markedly shorter than that of standard contracts. So, it can be concluded that workers hired through fixed-term contracts are affected by higher contract discontinuity. In order to determine if this also implies higher employment discontinuity, the next step is to understand what happens when a work contract expires.

5.1.2 Transitions between contracts

Although workers hired with fixed-term contracts are subject to higher contract discontinuity in comparison to standard workers, they would not be affected by higher employment discontinuity if the job-to-job transition rates were able to offset the shorter duration of contracts.

If all the job-to-job transitions made by entrants between 1998 and 2003 are considered, it emerges that the expiration of a contract leads to a period of non employment in 45% of the cases. This percentage grows to 48% if standard contracts are looked at. Apprentices (46%) display rates of transition to non employment similar to those of workers hired with open-ended contracts, whereas temp agency workers (40%) and direct hire temps (41%) display lower rates of transition

spell of non employment. So, for instance, two part-time fixed-term contracts lasting five months and seven months respectively, entered into by the same worker within the same firm, are observed as a single contract lasting twelve months. It is rather unlikely for a firm to offer more than one open-ended contract with the same amount of working hours to the same worker; hence, the duration of fixed-term contracts in comparison to that of standard contracts might well be overestimated.

[29] We refer here to the duration of temp agency work *contracts* – i.e. to the length of the relationship between a worker and an intermediation agency dealing with the hiring of temporary workers – and not to the duration of the *assignments* that temporary agency workers perform in the firms to which they are sent.

[30] Figure 4 shows the cumulative frequency of work contracts having a shorter duration than that displayed along the horizontal axis. In other words, the height of the curve at the «11-12 months» value in figure 4 corresponds to the percentage of contracts with duration equal to or shorter than 12 months. Therefore, the higher the curves, the lower the duration of the contracts. Similarly, in figure 5, the higher the curves the lower the duration of non employment periods.

toward non employment. Conversely, once a contract has expired, independent contractors become non-employed much more often than standard workers, and precisely in 66% of the cases (table 2).

[Table 2 about here]

So, for younger workers hired through non-standard contracts, the evidence about the capability of the job-to-job transition rate to offset the (shorter) duration of contracts is mixed. However, the analysis of an individual's employment status immediately after the expiration of a work contract presents two main drawbacks: *i*) it provides little information – above all for what concerns young workers – about the evolution of the individual's work career: achieving a state of stabilization in the labor market at the end of a contract might well require more than one transition, and *ii*) it is distorted, because it implicitly selects, within the reference timeframe, only the contracts that expire or are interrupted, excluding those that, although active, do not undergo any variations.

In order to gain a more comprehensive understanding of the evolution of work careers and to overcome the limitations mentioned under item *i* above, we now analyze the employment status *four years after* the expiration of a contract (table 3)[31]. In our sample of entrants, non employment is the outcome in 8% of the cases. When compared to this indicator, workers who are non-employed after a standard contract (7.6%), an apprenticeship contract (8.1%), a direct hire temporary contract (7.9%), or an independent contractors' contract (8.5%) are essentially in line with the average, while in the case of temp agency workers the rate of non employment is 4.7%.

[Table 3 about here]

However, these results might be affected by the distortion mention in item *ii* above: by selecting only the contracts that *ended* within a given timeframe, all the contracts that remain active are automatically excluded from the sample. Since the problem of distortion increases as the average duration of contracts becomes longer – the longer a contract, the less likely it is to observe its interruption within a given period of time – contracts characterized on average by longer durations are negatively selected in the sample. Said differently, the standard contracts included in the sample are more likely to be drawn from the left tail of the duration distribution then non-standard contracts.

In order to compensate for this second drawback, instead of considering the contracts that ended within a reference timeframe, we focus on the contracts that were active at a given date (table

4)[32]. Four years after the given date, 8% of workers were non-employed. When looking at the type of contract with which they entered the labor market, 11% of standard workers did not have a job, and the same figure applies to those who entered with a full-time apprenticeship contract. Non employment also affected 10% of full-time direct hire temporary workers and 22% of independent contractors.

[Table 4 about here]

Hence, in the case of young workers, some contract types are characterized by lower rates of transition toward non employment than those observed when looking at workers hired with full-time open-ended contracts. Before determining if this is enough to offset the shorter duration of contracts, it is necessary to investigate how long the periods of non employment last.

5.1.3 Duration of non-employment

Figure 5 describes the duration of non employment periods started between 1998 and 2001. This figure is to be interpreted in the same way as the previous one: higher curves correspond to shorter periods of non employment. The various curves refer to the different types of contracts leading up to non employment periods. In our sample, non employment episodes ended within six months for 52% of workers hired with a standard, open-ended contract, against 65% of independent contractors, 64% of temp agency workers, 61% of direct hire temps, and 48% of apprentices. If we look at what happened after 12 months, 81% of those previously hired with a standard, open-ended contract got a new job, against 90% of temp agency workers, 86% of apprentices, 84% of direct hire temps, and 83% of independent contractors. After two years spent looking for a new job, the share of those who found it approximates 100% regardless of the type of contract previously held. We can thus assert that standard, open-ended contracts are characterized by longer times needed to re-enter the labor market, especially in the first few months of job search.

[Figure 5 about here]

In conclusion, besides displaying higher rates of direct transition toward new jobs, workers hired through temporary contracts also experience, on average, slightly shorter periods of non

[31] This obviously implies that the observations must be limited to those contracts that expired within the end of 1999.

[32] In more technical terms, we will use the *stock* sampling method rather than the *flow* sampling method. It should be noted, however, that this strategy is not completely free from drawbacks, because it tends to underestimate the number of contracts with a short duration.

employment[33]. In order to determine if this is enough to offset the shorter duration of these contracts, i.e. whether or not non-standard workers experience, in the medium term, higher or lower employment discontinuity in comparison to standard workers, the next subsection will investigate the relationship between the contract type through which an individual is hired at a given moment in time and the share of work career he/she has spent in a state of non employment, over the medium term.

5.1.4 Overall effect

Table 5 shows the percentage of work career spent by the workers in our sample in a state of non employment, during the six years under investigation and in relation to the first and last employment status observed during the period[34]. Non-standard contracts are associated with longer portions of work career spent in a state of non employment, in comparison to what happens to individuals working with full-time open-ended contracts. So, even when non-standard contracts are characterized by higher job-to-job transition rates and shorter non employment periods in comparison to standard contracts, this is not enough to offset their shorter duration.

[Table 5 about here]

At least from a descriptive point of view, the higher turnover that affects non-standard workers leads to greater employment discontinuity and, consequently, to lower *employment security*. Hence, the chances of moving to a full-time open-ended contract become extremely important. However, tables 2, 3, and 4 seem to indicate that it is standard workers who display higher rates of transition to standard contracts.

The picture depicted so far is of course only descriptive. It might well be the case that it is disadvantaging individual characteristics both to sort the workers into temporary jobs and determine the bumpier careers we observed. In order to disentangle the effect of individual heterogeneity from the specific one due to the specific work arrangement, Berton et al [2009a] use a multinomial logit model with repeated observations and fixed effects [Magnac 2000] on a sample very similar to the one we used. They find that individual heterogeneity actually matters for a large share of transition

[33] As discussed below, non-standard workers find it more difficult, in comparison to standard workers, to access income-maintenance schemes during periods of non employment; hence, they are more strongly motivated to keep their periods of non employment as short as possible. One of the most effective ways to do so is to accept another non-standard contract (more precisely: a fixed-term contract) also because, thanks to the lower costs implied, these contracts are more easily offered by firms (for a theoretical discussion on the effects of budget constraints on job contract types, see Alonso-Borrego et al. [2005]).

[34] Actually the first employment status observed corresponds to the contract through which they entered the labor market. The percentage of career spent in a state of non employment is thus calculated over that portion of their career observed from when they entered the labor market to the end of the observation period (December 2003).

probabilities; nonetheless it does not explain everything and the work arrangement bears a non-negligible effect on subsequent career dynamics. More precisely, they find that i) temporary jobs are better than unemployment in order to find an open-ended job, in this sense representing a port of entry into standard employment; ii) nonetheless, other things being equal, the most likely destination state after a temporary job (and possibly after the subsequent unemployment period) is another job with the same type of contract held before. In other words temporary contracts increase persistence in temporary employment. Why? In order to answer this question Berton et al [2009a] compare the transitions within the same firm to transitions occurring across firms, and find that most of the stepping stone effect and of the trap one is taken over by transitions within the same firm. This means that firms retain the workers under temporary agreements as long as they can – and far beyond a reasonable screening period – eventually hiring them under an open-ended contract[35]. The only contracts that represent a port of entry into standard employment across firms are open-ended contracts themselves. These results are easily interpretable in the light of the low investment in human capital affecting temporary workers all over Europe [Bassanini et al. 2005].

We can thus conclude that temporary jobs negatively affect working career continuity. In our analytical framework, this does not lead per se to insecurity, as far as wages earned during the employment spells or access to income-maintenance schemes can compensate for that. Next section is about wages.

5.2 Wages

A preliminary analysis of the data shows a pay gap to the disadvantage of non-standard workers, especially in certain categories. In 2003 the annual average gross wage of standard workers was above 24,000 euros, while that of workers on training contracts was around 20,000 euros. That of direct hire temps amounted to just over 17,000 euros, but apprentices earned a mere 14,000 euros. Independent contractors received an annual average gross wage very close to that of standard workers, around 22,900 euros (table 6).

[Table 6 about here]

This aggregate information should obviously be differentiated. For example, raw comparisons do not account for the fact that many non-standard workers, also excluding part-

[35] The same interpretation is given by Güell and Petrongolo [2007] of Spanish labor market dynamics.

timers, work fewer hours per week than full-time employees[36]. Hence, if we were to look at hourly wage rates, the differences shown in Table 6 would be less marked. But even when the varying amounts of hours worked are taken into account, it is incorrect to attribute the wage differences displayed in the table solely to the type of contract. Wages depend primarily on the nature of the job performed and on the worker's characteristics. Unfortunately, the WHIP data lack significant information about certain job characteristics, especially the quantity of work performed, and have only a small amount of information on personal worker characteristics, such as their level of education. On the other hand, they are of good quality, in particular with respect to the wage paid to the worker (an information that is often missing or misreported in survey data), have a panel structure and have a large sample size. We exploit these characteristics and estimate a fixed effect model, thus removing any bias related to constant unobserved heterogeneity.

Overall, the sample we use consists of almost 420,000 work episodes involving 104,595 individuals in the six years between 1998 and 2003.

We estimate the determinants of the equivalent annual average full-time gross wage separately for two groups. The first group comprises all the workers selected (extended sample), whereas the second one includes only workers who worked continuously for an entire year (restricted sample). Our hypothesis is that the workers in the restricted sample are more homogeneous and that the problem of unobserved heterogeneity is therefore less significant.

The control variables used are: type of contract, age, geographical area, and occupation. The pay differentials for the various types of contract are reported in the first two columns of table 7. The wage penalty for independent contractors and apprentices is around 30% if all the episodes selected (extended sample) are considered, while it drops to around 10% and around 15% respectively when considering only work episodes lasting an entire year (restricted sample)[37]. Differentials for trainees, direct hire temps, and temp agency workers are substantially nil.

To test the robustness of these estimates, a further selection on the sample is performed, retaining only blue-collar and white-collar workers, which make up groups that can be considered more homogeneous and therefore more easily comparable. The results (not reported here) are very similar to those described above: for example, the negative differential for independent contractors slightly decreases when only episodes lasting at least an entire year are considered (-8.3%), while it slightly increases when all (uninterrupted) episodes are considered (-31.8%).

[36] The wages of part-time employees on open-ended and fixed-term contracts should be taken as their full-time equivalents. The data on contracts for trainees, temp agency workers, apprentices and independent contractors do not distinguish between part-time and full-time arrangements. Hence, the pay rates are not corrected for the intensity of work.

[37] Both here and in the analysis of the other two datasets we consider only single-employer independent contractors.

The greater similarity in pay between independent contractors and standard workers in the case of jobs for which wages are paid every month in the year can be explained by the fact that, in this case, independent contractors are often 'disguised employees'. The pay differential, however, is always significantly negative.

[Table 7 about here]

As a comparison, we also estimate wage differentials using PLUS (Participation, Labor, Unemployment Survey), a nationally representative sample survey conducted by ISFOL on the basis of telephone interviews [ISFOL 2006]. The main merit of this survey, in comparison to WHIP, is that it collects information on hours worked as well as a large set of socio-economic variables – from qualifications to family composition – so that we can include important control factors. One drawback of the PLUS survey is its cross-sectional design (i.e., it provides only a 'snapshot' of the sample at a given moment in time). Consequently, fixed-effects estimations cannot be performed to take further unobserved heterogeneity among subjects into account, as was done with the WHIP data instead. Moreover, some types of non-standard employment relationships (contracts with training content – e.g. apprenticeships – and 'minor' non-standard contracts, such as job-sharing or work-on-call) are grouped into a single residual category. Finally, being a survey, information on wages is not certified, as is the case with the WHIP data, constructed from administrative source.

To preserve uniformity with the previous analyses, we consider only individuals working as employees and independent contractors[38], thus obtaining a sample of 13,981 workers. The PLUS interviewees were asked about their gross monthly pay (in the case of independent contractors) and net monthly pay (in the case of employees). These figures are adjusted to the gross salary by adding the contributions and taxes required by law in 2005.

We then estimate the determinants of the equivalent annual full-time gross wage by looking first at all the workers (extended sample) and then only at the workers with contracts of a duration equal to or greater than one year (restricted sample).

The main control variables introduced are statistically significant, have the expected sign, and do not differ greatly between the two samples[39]. When looking at the wage differential of

[38] In this case, too, we considered only single-employer independent contractors, not registered with another social security scheme and not retired.

[39] Wages grow with age and experience, and they are on average around 10% higher in the North than in the South. Wide differentials are ascribed to qualifications. In comparison to workers with an upper-secondary diploma, wages are on average 20% higher for graduates and 11% lower for respondents with at most a lower secondary certificate. Consistently with the findings in the literature, the gender gap is rather wide: women suffer a 17%-18% penalty on their gross wage.

standard workers, we see that there is no appreciable penalty for direct hire temps, temp agency workers and leased workers (columns 3 and 4 in Table 7). The hourly wage of part-time workers is on average 6.7% higher than that of their full-time colleagues[40]. Finally, independent contractors are markedly penalized in this dataset, too: within the extended sample their wages are, on average, 27% lower. If we look at those independent contractors who are more 'similar' to standard workers – having one-year contracts, at least –, the penalty decreases but still amounts to 24%, which means that their wage is almost one quarter less than that of standard workers with similar characteristics. These estimates are roughly in lines with other results in the literature (e.g. [Picchio 2007, Barbieri and Cutuli 2009]).

Hence, we can conclude that non-standard workers – in particular apprentices and (wage and salary) independent contractors – have access to contracts with lower average gross pay as compared to standard workers, even controlling for worker and job characteristics[41].

5.3 Social protection

In this paper we focus our analysis on the most important income-maintenance scheme in a labor market, unemployment compensation[42]. Italy features an unemployment compensation system exclusively centred on social insurance, accompanied by neither unemployment assistance nor any generalized social assistance scheme. Three different types of unemployment benefits exist. The most generous one is called *indennità di mobilità* and concerns workers with open-ended contracts in large firms of the manufacturing sector; whether an unemployed worker with such characteristics can enjoy the benefit is subject to the government's discretionary rule and a bargaining process between unions and firms. Therefore, *indennità di mobilità* does not constitute an entitlement for the worker. Consistently with our approach, thus, we disregard it. At a medium-generosity level, Italian workers may enjoy an unemployment benefit *with full requirements* (FUB); it pays a decreasing share of the previous wage – from 60% to 30% – for a period of 8 to 12 months (if the recipient is over 50). Finally, at the lowest level we find the unemployment benefit *with reduced requirements* (RUB); during the year following the unemployment spell – and whatever the current labor market state of the worker – it pays a lump sum proportional (35% to 40%) to the relevant

[40] As mentioned above, when considering the PLUS data, apprentices cannot be analyzed separately because they are placed in a residual category for which, on aggregate, there are no significant differences in terms of gross wage.

[41] In addition, the pay packets of independent contractors – an important category of non-standard workers – are worth less than those of standard workers. In fact, contractual gross pay is only a part of a worker's overall remuneration, which includes additional components set by law, thus producing different treatments according to the type of contract.

[42] Unreported results on access to pensions, sickness, maternity and family allowances are qualitatively the same: see Berton et al [2009b].

daily wage, multiplied by the number of days worked in the year in which unemployment occurred, up to a maximum of 180. Both the FUB and the RUB represent entitlements – in the sense that their provision is not subject to discretionary rule – and are subject to both formal entitlement and eligibility rules (see Table 8). Our analysis must therefore take both into account:

- self-employed workers (including independent contrractors, often used in lieu of dependent workers as a cost-reduction device) and apprentices are not entitled either to the FUB or to the RUB; however, the days worked as apprentice (but not as self-employed) can be taken into account in order to fulfil the continuity requirement, as long as the seniority one is matched thanks to another previous working relationship (see the eligibility rules below);
- provided a worker is formally entitled to one of the benefits, she must fulfil two requirements: an insurance-seniority (minimum vesting period) requirement, and a requirement hinging upon the claimant's attachment to the labor market in the period preceding the unemployment spell (let us call it continuity requirement). For the FUB, she must have paid one weekly contribution to the social insurance against unemployment at least two years before the event (minimum vesting period requirement); on top of that, she must have paid at least 52 weekly contributions in the two years preceding the unemployment spell (continuity requirement). As for the RUB, a similar minimum vesting period requirement holds; the continuity requirement is instead far less binding, requiring only 76 worked days (including holidays, sickness leaves and so on) in the year in which unemployment occurs.

[Tab. 8 about here]

How well do the two general UB schemes, granting automatic and individual rights to a benefit upon fulfilment of requirements on the part of the worker, fare in covering those who become unemployed in Italy? In other terms, how many workers, if become unemployed, can expect to get UB, based on their own contribution record? This clearly is a distinct piece of information from the one given by coverage rates, defined as the share of the current unemployed who are receiving a benefit. Effective eligibility to a scheme subject to contributory requirements can only be assessed by looking at the individual contribution record of the claimant, as the administrative agencies in charge of managing the schemes do.

It is by now clear that non-standard workers, other things being equal, are less likely to get access to an unemployment benefit, for two reasons: first of all, some of them are not entitled to the benefits by the law (independent contractors); second, because of the poorer career dynamics that we depicted before, in which the type of contract plays a role: a negative one if the contract is

temporary. Moreover, further discrimination comes from rules that govern actual contribution accrual, calibrated on full-time, continuous employment relationship but utterly ill-suited for non standard ones. Overall, far from compensating for bumpier careers and lower wages, social insurance benefits tend to replicate them, as this translates in lower effective eligibility to the benefits. Table 9 shows this by applying the various rules governing eligibility to the WHIP sample of the individual work and contribution histories of all the Italian private sector employees since 1985.

[Table 9 about here]

The second column (No UB) in Table 9 can be read as follows: if, at a given point in time, 100 workers employed under one of the contracts listed in the first column lost their job, how many of them would not be eligible to any UB compensation, for failing to fulfil the requirements? The third and fourth columns show how many are eligible to the more generous FUB, and how many must fall back on the RUB compensation[43]. As it can be easily seen, if 9 standard workers (i.e. full-time open-ended) out of 100 are not eligible to any kind of UB, mainly due to the insurance-seniority requirement, this share goes up dramatically when considering non-standard workers: almost 4 direct hire temps out of 10, and 5 temp agency workers out of 10 would not be eligible to any kind of UB compensation, if they lost their job. Such figures increase further for part-time workers (and even among those with an open-ended contract 2 part timers out of 10 would be unable to collect any UB). As it could be expected, almost 8 apprentices out of 10 could not even claim the only benefit they can, given particular circumstances, be eligible to[44].

The importance of such figures comes in full magnitude when it is recalled that UB is the only income maintenance scheme available to any worker who lose their job (except independent contractors and, for FUB, apprentices), as mobility allowance is a discretionary scheme applying only in very particular circumstances, and reserved to open-ended workers. This means that those excluded from UB will get nothing whatsoever from the Italian welfare state, as there is no unemployment assistance scheme, or minimum income scheme (in place in all EU-27 countries, but for Italy, Hungary and Greece)[45].

[43] The chosen point in time at which to assess eligibility was December 2003, due to data availability. Eligibility rules have not changed since then.

[44] The non-null figure in the FUB column for apprentices is only due to how job-to-job transitions were classified. Indipendent contractors are listed for the sake of completeness.

[45] A minimum income scheme was introduced in an experimental fashion in 1998 (*Reddito minimo di inserimento, RMI*), but was discontinued in 2002. See Sacchi and Bastagli [2005] on the RMI and on Italy's anti-poverty policies more in general.

6. An overall measure of worker insecurity

As already anticipated, our measure of worker insecurity evaluates all the three basic dimensions (career, wages, social protection) through a single monetary metric, attributing to each worker an income made up of the received wage as well as of any benefits provided by the social protection system. Thus, we include all the income an individual gets from the labor market and the social protection system, excluding pensions, other sources of income as wealth, or intergenerational transfers, or resource pooling within the family[46]. Given the possibility of intertemporal income smoothing, moreover, insecurity is to be assessed over the medium run: therefore our measure of overall income is calculated over a mid-length period. The overall income we look at comprises:

a. wage, net of social and pension contributions;
b. allowances received, net of any contributions paid: unemployment benefit, sickness allowance, maternity allowance, as well as the special unemployment allowance a worker may receive (*indennità di mobilità*) and ordinary and extraordinary short-time work benefits (*cassa integrazione guadagni*)[47];
c. the amount set aside every year for the end-of-service allowance.

In order to compute our measure, we select the careers of Italian workers aged between 25 and 50 in 1998. Overall incomes are calculated, for each individual, over the period from 1998 to 2003[48]. The fiscal and social protection regulations in force in 2008 are then applied[49]. We then define insecure (or precarious) workers those individuals who earn an overall income that is 60% lower than the median of its distribution. The choice of a dichotomous precariousness indicator might seem reductive, but it is coherent with the common practice adopted in studies on poverty. Also the 60% threshold of the median of income distribution mirrors the definition of relative poverty adopted within the European Union. Our investigation on precariousness differs from

[46] As in Italy neither social insurance benefits nor the tax system take into account the household, this can be disregarded in calculations of the overall income. In other countries the household is considered in the calculation of the amount of benefits or of the tax liability. In such systems, the household should be taken into account accordingly.

[47] As there is no generalized social assistance in Italy, those able to work who do not qualify for social insurance do not get any other type of cash transfers from the Italian welfare state. If applied to other systems, our measure of overall income should consider, at least, unemployment assistance.

[48] All the monetary values are discounted to 2008 values by using the price index provided by ISTAT, Italy's statistical office.

[49] The adoption of the 2008 regulations is due to the fact that some benefits (for example, unemployment benefit with full requirements) changed during the period under investigation, becoming much more generous. Therefore, the application of coeval «historical» regulations would not provide sufficient indications about the diffusion of precariousness at the end of the period in question. However, one should not overlook the fact that labor market participation choices might depend, at least partially, on how generous social benefits are. Therefore, the analysis was repeated using the regulations in force in the 1998-2003 period, but the results (not displayed here) turned out to be very similar to those obtained using the 2008 regulations. It is, therefore, plausible that the mistake made by not taking into account behavioral reactions to the changes in regulations, if it exists at all, is extremely slight.

standard relative poverty analyses for what concerns the adopted unit of analysis (the individual and not the family) and the period during which the income is measured (up to 6 years, instead of just one year).

The inclusion of part-time work in our study on precariousness is subject to conflicting interpretations. In fact, part-time workers usually have lower remunerations than standard workers, proportional to the lower number of hours worked. In our framework of analysis, such lower remunerations lead, *ceteris paribus*, to a higher risk of precariousness. Some might object that working part-time is often a choice made by the worker and not an imposition. Nevertheless, intentionality is not in itself a guarantee that, should the need arise, this choice will be reversible, nor does it mean that it is a desirable choice. Let us consider the case of a single mother with limited financial resources and no one to look after her children while she is at work: she will voluntarily choose a part-time job, seeing it as a lesser evil, but her choice will have to be classified within the condition of work precariousness. Hence, there are some good arguments in favor of including part-time workers in our analysis, but there are some equally good arguments in favor of their exclusion. To be on the safe side, we have opted for the more conservative approach – i.e. the exclusion of part-time workers from our investigation. We have therefore removed all individuals who are reported as having worked part-time in at least one period, but the tables also report separate figures pertaining to the larger sample which includes part-time. The restricted sample comprises 58,857 observations, representative of around 5.4 million individual work careers. 25.8% of the individuals observed are women, while, as for the workers' age, 27.1% of the sample is between 25 and 30, 42.7% between 31 and 40, and the remaining 30.2% between 41 and 50. During the 72 months observed in total, both men and women spent 5 months, on average, being unemployed; men worked another 62 months as standard workers (60 months for women) and the remaining 5 months as non-standard workers (7 months for women).

If part-time workers are included, our sample grows to a total of 68,872 observations, representative of around 6.3 million people.

7. Descriptive statistics

Based on the quantification strategy described above, 9.3% of the workers included in our sample are precarious, a percentage equal to around 550,000 people in Italy's labor market. The insecurity or precariousness threshold is 91,414 Euros (we recall that our measure of overall income is cumulated over six years). If the sample were to include also individuals who do not appear in the

data for more than 36 months, the number of precarious workers would rise to over 1,350,000, equal to 21.2% of the sample. Figure 6 shows the overall income distribution for the narrower sample, based on the 2008 regulations.

[Figure 6 about here]

Including part-timers, over 950,000 people, equal to 13.9% of the sample, are precarious workers. If the sample were to also include those who do not show up in WHIP data for more than 36 months out of 72 worked, almost 2 million workers would be precarious, i.e. 25.7% of all the observed individuals[50].

The condition of precariousness is not evenly distributed across the various subgroups of the labor force. On the contrary, its incidence varies depending on the worker's gender and age and on the sector and size of the firm where the individual works; but, above all, the incidence of precariousness varies depending on the contract type. Firstly, precariousness affects 13.6% of women, versus 7.8% of men; hence, gender differences are very substantial. Conversely, differences among age groups are less considerable than we expected: the incidence of precariousness in 1998 was 12.3% in the 25-30 age group, 9.2% in the 31-40 age bracket, and 6.7% if workers over 40 years of age are considered. It is true that precariousness increases by over 80% among younger workers in comparison to older ones, but the value remains high also in the above-40 age group.

By analyzing only those dependent workers who had a job in December 2003 (within this group of workers the level of precariousness was 6.1%), it is possible to draw information on the rate of precariousness in relation to firm sector and size. For what concerns the firm sector, in the extraction (section C, according to the NACE rev. 1 classification), manufacturing (section D), trade (section G), and financial intermediation (section J) sectors, the rate of precariousness is not very far from the overall average: 6.3%, 4.5%, 4.4% and 6.7% respectively. The amount of precarious workers is considerably higher in the hotel (section H) and transportation (section I) sectors and in other services (section O), with precariousness percentages of 10.7% in section H and 10.5% in the other two sections. The sector with the highest rate of precariousness is that of construction (section F), with almost 14% precarious workers, more than twice the overall average for dependent

[50] The threshold of precariousness, calculated as 60% of the median of the overall income distribution, drops to 86,585 Euro of 2008 if part-time workers are included but individuals with unobserved working periods of more than 36 months are excluded; it decreases even more if the latter are included too.

employees. Lastly, the rate of precarious workers is very low in real estate activities (section K: 3.4%) and close to zero in the energy sector (section E: 0.3%).

Additionally, the rate of precariousness considerably decreases as the size of the firm increases. Looking at dependent workers in the private sector, the figure is 12.8% in businesses with 5 or fewer employees, 8.3% in companies with 6-15 employees, 6.1% in firms with 16-50 employees, and only 5% in businesses with 51-250 employees; also, the rate of precariousness is much lower in still larger companies (1.9%).

It is interesting to analyze the rate of precariousness in relation to the type of contract with which a worker is employed at a given point in time. As for the situation observed in December 2003 (Table 10), precariousness affects 5.7% of standard workers working with a full-time open-ended contract. The rate of precariousness, however, is much higher among workers with non-standard contracts and, more specifically, it is equal to 23.1% among direct hire temporary workers and temp agency workers, 9.9% among apprentices and trainees, and 40.3% among independent contractors[51].

[Table 10 around here]

These figures confirm the limits that an analytical approach equating non-standard work contracts with precariousness would have. Besides (many) precarious non-standard workers, there are numerous non-standard workers who are not precarious, as well as standard workers who work in a condition of precariousness. Nevertheless, the overlap between non-standard work and precariousness is very evident from an empirical point of view. Out of a total of 72 months observed in our work histories, a precarious worker spends, on average, only 42 months working with a standard contract, 21 months unemployed, and 9 months as a non-standard employee, whereas a non-precarious workers spends, on average, 65 months (more than 5 years) as a standard worker, 3 months as a non-standard worker and 4 months as unemployed. Hence, when assessing the impact of unemployment on worker insecurity, it is important to note that the correlation between the number of months a worker spends being unemployed and the number of months spent working with a non-standard contract is positive (the correlation coefficient is equal to 0.2), while the correlation between months of unemployment and months spent working with a standard contract is negative (- 0.8). In other words, unemployment affects non-standard workers more than standard ones.

[51] Both this table and the following tables and graphs also display the results obtained by including *part-time* workers. For an in-depth analysis of part-time work, see the next section.

Table 10 also indicates the reason why the rate of precariousness is higher when part-timers are included: despite the fact that the precariousness threshold is lower, the rate of precariousness among part-time workers with open-ended contracts reaches almost 50% (precisely 49.8%). Since part-time jobs are mostly taken by women, the rate of insecurity among women is the figure that increases the most, reaching 25.4%, whereas among men there is just a slight increase, to 8.1%. The rate of precariousness rises to 17.2% among younger workers, those within the 25-30 age bracket, while it is 14.2% among workers aged between 31 and 40 and it is still higher than 10% (10.3%) among workers who are above 40 years of age.

Also firm sector differences are influenced by the heterogeneous tendencies to use part-time work across the various sectors: those with a higher rate of precarious workers are at present the hotel sector, real estate activities, and other services (the figures are 27.9%, 19.7% and 28.8% respectively).

7.1 Persistence of precariousness and volatility of total income

We now restrict our temporal horizon in the definition of precariousness by looking at the total income over a 3 year period. This allows us to compute changes in insecurity status from the initial period (1998-2000) to the final one (2001-2003). Table 11 summarizes this measure of persistence. Persistence in both statuses is quite high; moreover, it is easier to exit from the state of precariousness than to enter it – the latter reflecting the fact that our individuals grow older (and the likelihood of being precarious decreases with age, as we have seen). As expected, the probability to exit precariousness decreases with age, and is much lower for females than for males. The opposite is true for the probability to enter the state. Finally, individuals whose more frequent status is working with a standard contract have twice the probability of exiting the state than individuals who predominantly worked with a non-standard contract; moreover, the risk of entering the state is higher for the latter than for those predominantly non-employed.

[Table 11 about here]

The higher transitions rates from one side to the other of the precariousness threshold for non-standard workers origin from a higher individual variability in total income for this group. This is shown in table 12, where total income is computed annually, and its coefficient of variation in the 6-year period is reported. The latter figure is computed on an individual basis and not cross-

sectionally: it is therefore a measure of income volatility, and not of individual heterogeneity. Individuals who spent most of their time with a standard contract earned on average almost 22,000 €, with a coefficient of variation of .11. Individuals who spend most of their time with a non-standard contract earn little more than a half (13,000 €), but have a coefficient of variation which is almost triple (.30).

[Table 12 about here]

The data show a negative relationship between total income and its volatility, which is described in figure 7 and is summarized by a negative correlation coefficient (-0.1682).

[Figure 7 about here]

If individuals are risk averse, there should be a trade-off between a higher total income and a lower volatility. Since non-standard workers have both a lower total income and a higher volatility than standard ones, they are definitely worse off.

8. Multivariate analysis

The empirical overlap between non-standard contracts and precariousness documented in the previous section might, however, be spurious and ascribable to the behavior of some individuals who, due to their characteristics, are more likely to enter into occasional employment relationships, which are relatively less well-paid, as well as to be employed with non-standard contracts. This situation is particularly common among young people and women. Partly because some of them are still studying and because they are generally at the beginning of their career, young workers are able to participate only occasionally in the labor market and they receive overall lower wages[52]. Women are likely to be in a similar situation, both because they are still affected by a negative gender wage gap and because they are often chiefly responsible for looking after the family, which limits the time and resources they can devote to their career.

In order to better control for these factors, we estimate a logistic model of the probability of being precarious (defined over the whole 6-year period) on the predominant state of employment during the six years under observation. The individuals who spent most of those six years working

with non-standard contracts run a risk of being precarious which is more than four times higher than the risk run by those who spent most of those six years as standard workers (this risk is over eight times higher if part-time is also considered, see Table 13).

[Table 13 about here]

To take into account unobserved heterogeneity, the same model is estimated with fixed effects. This implies to switch from a definition of precariousness over the whole period to an yearly definition, in order to allow for changes in status. For the purpose of comparability, table 14 reports the estimates of the yearly model with and without fixed effects (for full time workers only).

[Table 13 about here]

On an yearly basis, the effects of the most frequent employment status are of course higher. Controlling for unobserved heterogeneity reduces the coefficients, but they still remain highly significant: being mostly employed with a non-standard contract still increases the odds of being precarious, on an yearly basis, of about four times.

9. Distributional effects of social protection

[TBW]

10. Conclusions

[STILL VERY SKETCHY]

In this paper we obtained two main results:

- full-time open-ended contracts do not prevent a worker from being insecure, as well as non-standard arrangements do not imply insecurity per se. This buttresses the stance we have taken in refusing to overlap contracts and outcomes in terms of security at the analytical level, as this should be an empirical matter;
- nonetheless, non-standard jobs, ceteris paribus, increase the risk of insecurity in the labor market.

[52] Although the minimum age of 25 adopted for the selection of the sample should already greatly reduce the

In the perspective of the debate on *flexicurity*, Italy is a particularly apt case. Despite a rather flexible – albeit segmented – labor market already in the early nineties, Italy displayed a thorough compliance to the labor market policy recommendations of the Oecd Jobs Study, calling for more flexibility in the European labor markets. However, income-maintenance schemes – insurance-based access rules in particular – have remained unchanged for decades. This has led to an increasing inconsistency between the actual labor market dynamics on the one hand and the social protection system on the other, resulting today in a large number of unemployed workers who are not eligible to any form of unemployment compensation.

Policies aimed at increasing security in the labor market may in principle operate on any of the three determinants of (in)security that we have identified: employment continuity, wages, and social protection. Practical and political considerations, however, lead us to think that increasing security – of temporary workers in particular – through wages and employment continuity is harder than through appropriate income-maintenance schemes, as:

- forcing the employers to retain temporary workers under permanent agreements is not possible in practical terms and in any case would result in less turnover, but not in more average employment; on the other hand, giving the employers incentives to retain the workers or supporting active labor market policies are proved to be of little effect; more in general, the capability to accommodate for the changing levels of the demand on the market of goods through the level of the employed workforce is assumed to be a device that cannot be renounced in a globalized and competitive economy;.
- increasing the wage of temporary workers – if ever possible – may harm labor demand; the evidence quoted in the paper shows that temporary workers are often used as a cost reduction device.

Improving the coverage of income-maintenance schemes may instead be easier, for instance because its cost can be shared among the whole society (workers, employers, taxpayers). In this perspective what one learns from the case of Italy is that simply loosening the requirements to be eligible to social insurance schemes is not enough when careers are bumpy; many people remain uncovered and since (short spells of) unemployment became an increasingly inevitable occurrence during one's working career, it is necessary to depart from employment-based schemes and parallel social insurance with a generous tier of social assistance, or move towards universal unemployment benefits, rendered as a matter of citizenship right.

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problem.

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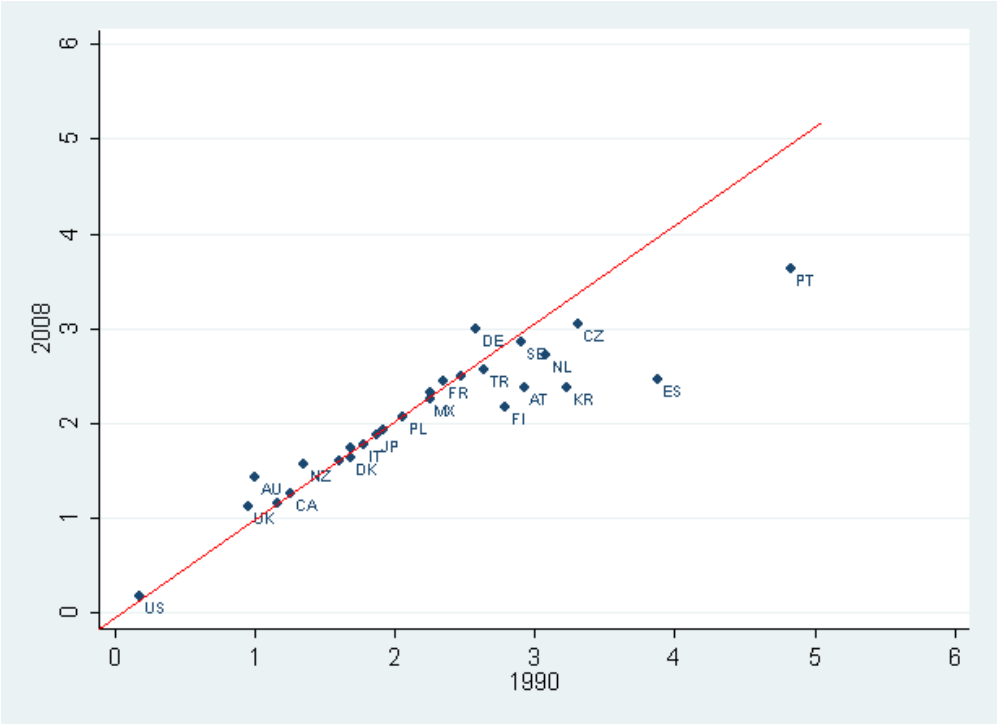
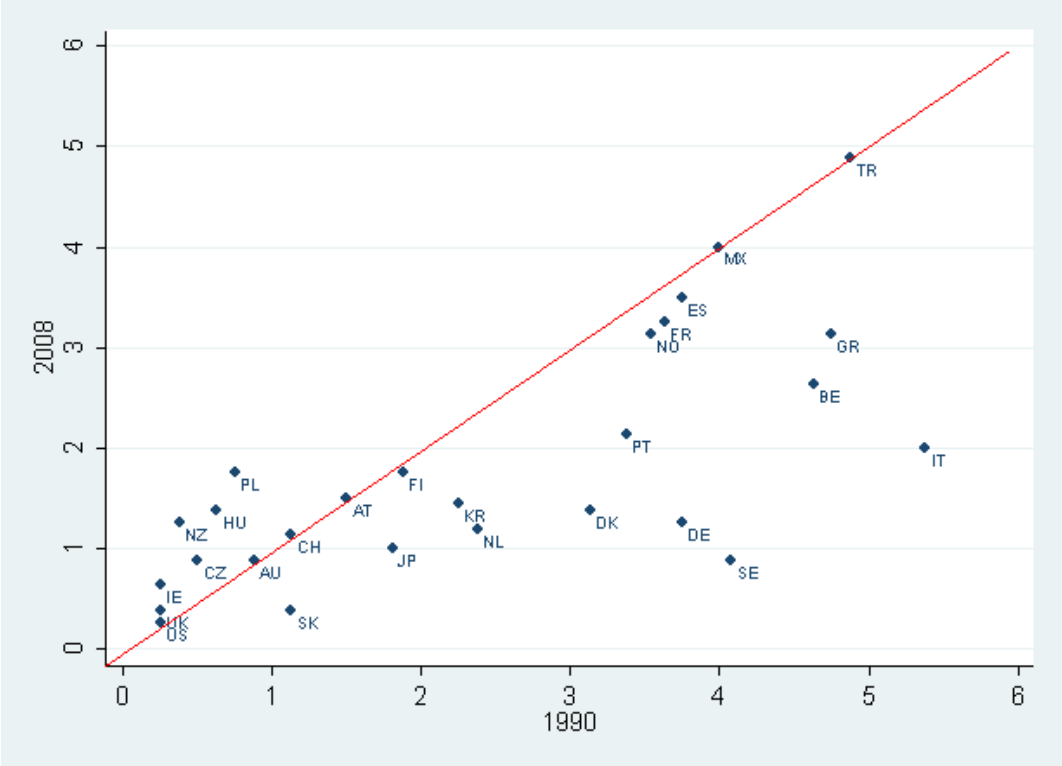
Figure 1. EPL index for open-ended workers, 1990-2008 (0 = minimum protection, 6= maximal protection)



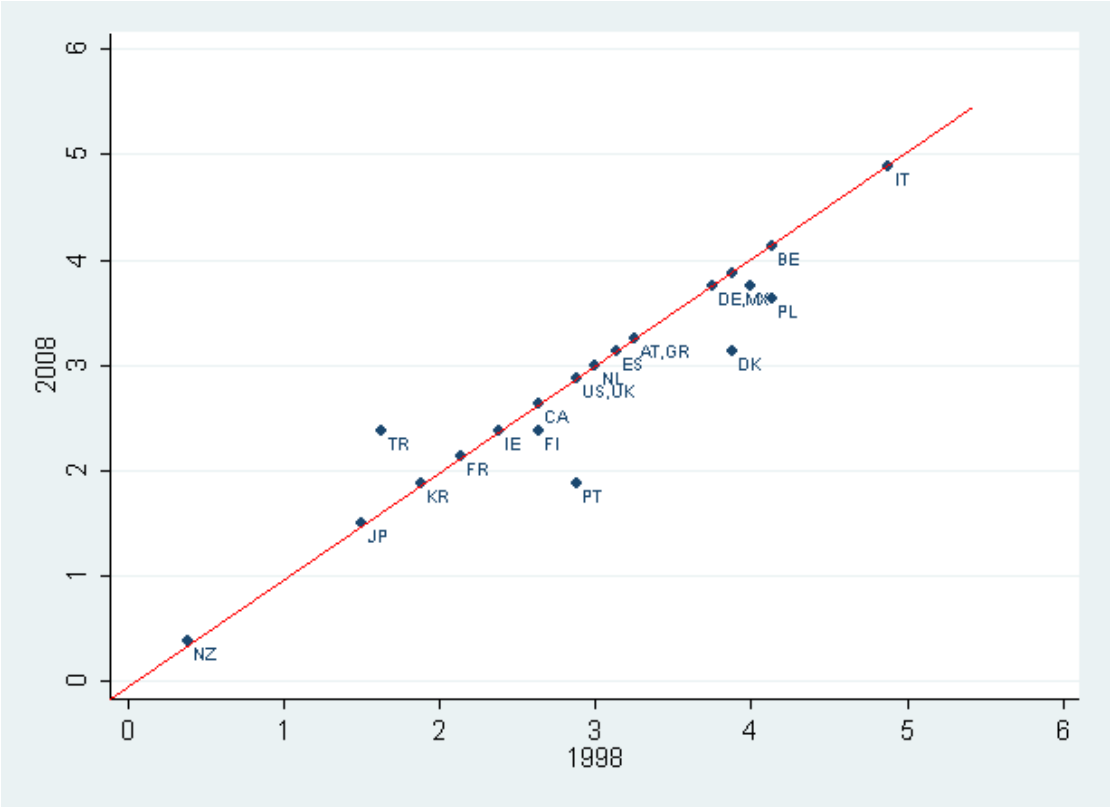
Source: OECD EPL database

Figure 2. EPL index for fixed-term workers, 1990-2008 (0 = least constraints to hiring, 6= maximal constraints to hiring)



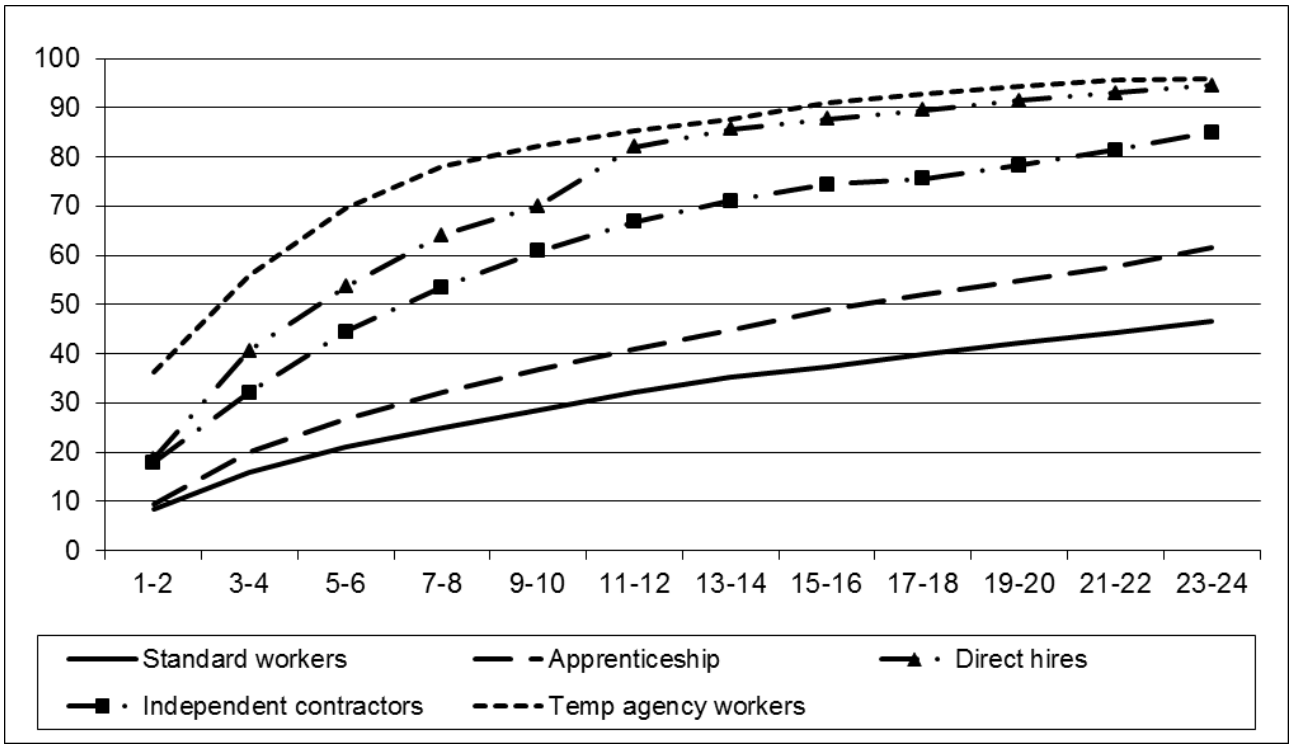
Source: OECD EPL database

Figure 3. EPL index for collective dismissals, 1990-2008 (0 = minimum protection, 6= maximal protection)



Source: OECD EPL database

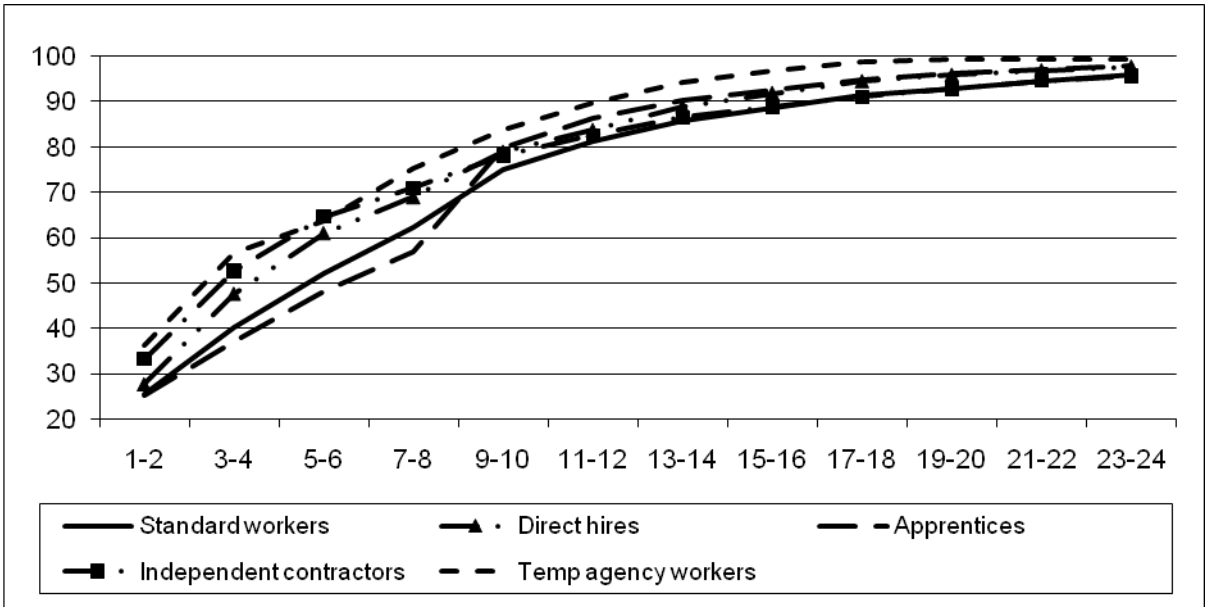
Figure 4. Duration of work contracts, entrants.



Note: higher curves refer to contracts with shorter duration.

Source: own elaborations on WHIP data.

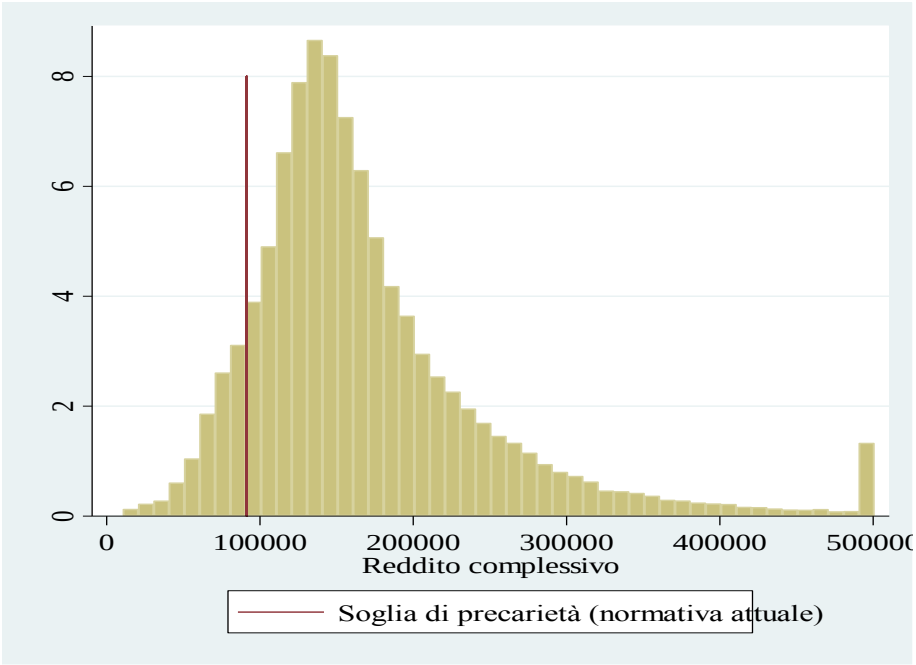
Figure 5. Duration of non employment, entrants.



Note: higher curves refer to contracts with shorter duration.

Source: own elaboration on WHIP data.

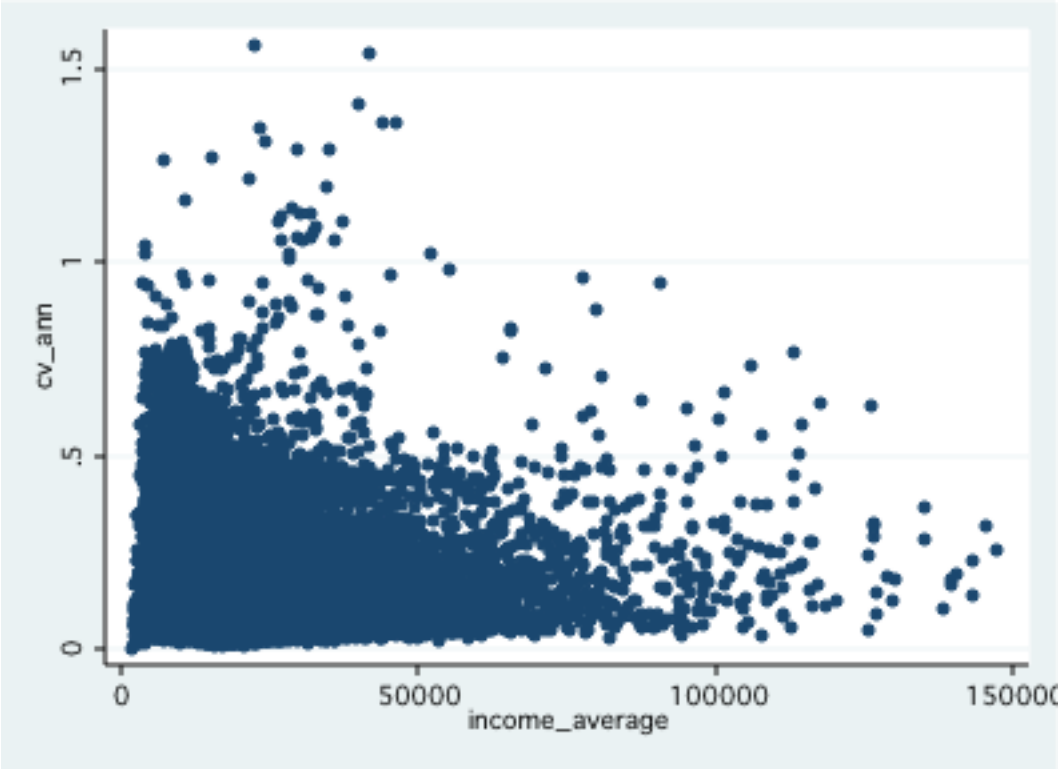
Figure 6. Overall income distribution, 2008 regulations



Values in Euros (2008 prices). Right truncation at 500,000 E. The vertical line is the in security threshold.

Source: Own elaborations on WHIP DATA

Figure 7. Annual total income and coefficient of variation over the period 1998-2003



Source: own elaborations on WHIP data.

Table 1. Entering the labor market: contract types, 1998-99.

Contract at entry	Share on total entrants (%)	Of which part-timers (%)
Open ended (standard)	33.4	22.8
Apprentices	25.8	5.6
Agency	1.8	22.9
Direct hires	8.4	32.9
Seasonal	1.3	33.3
W&S independent contractors	6.3	-
Other independent contractors	1.0	-
Self-employment	10.9	-
Total	100.0	

Source: own elaborations on WHIP data.

Table 2. Immediate employment outcome of contracts expired in the 1998-2003 period.

Contract of origin (full time only)	Occupational outcome (row percentages)			
	Non-work	*Standard*	*Non-standard*	*Self-employment*
Open ended (standard)	47.7	30.3	20.3	1.7
Apprentices	45.8	27.2	25.4	1.6
Agency	40.2	20.9	38.7	0.2
Direct hires	41.4	29.5	28.7	0.4
W&S independent contractors	66.2	9.8	21.6	2.4

Source: own elaborations on WHIP data.

Table 3. Employment outcome four years after contract expiration, contracts expired in 1998-99.

Contract of origin (full time only)	Occupational outcome (row percentages)			
	Non-work	*Standard*	*Non-standard*	*Self-employment*
Open ended (standard)	7.6	58.1	26.5	7.8
Apprentices	8.1	39.2	45.5	7.2
Agency	4.7	65.9	25.4	4.0
Direct hires	7.9	53.3	33.1	5.7
W&S independent contractors	8.5	45.2	36.2	10.1

Source: own elaborations on WHIP data.

Table 4. Employment outcome after four years, contracts active in May 1998.

Contract of origin (full time only)	Occupational outcome (row percentages)			
	Non-work	*Standard*	*Non-standard*	*Self-employment*
Open ended (standard)	11.1	66.9	15.9	6.1
Apprentices	10.6	40.4	41.8	7.2
Agency	-	-	-	-
Direct hires [(a)]	10.4	54.2	31.2	4.2
W&S independent contractors	21.5	35.4	30.4	12.7

(a) Less than 50 observations

Source: own elaborations on WHIP data.

Table 5. Portion of career (months, in %) spent in a state of non employment, 1998-2003.

(full time only)	*First observed employment status*	*Last observed employment status*
Non-work	-	24.4
Open-ended (standard)	9.4	6.3
Apprentices	11.2	12.5
Agency	9.4	18.4
Direct hires	13.1	14.9
W&S independent contractors	15.1	15.5

Source: own elaborations on WHIP data.

Table 6. Average annual gross wage by type of contract, year 2003

	Average yearly gross wage (E.)
Open-ended full-time (standard)	24,342
Open-ended part-time (a)	20,904
Direct hires full-time	17,708
Direct hires part-time (a)	17,464
Agency	19,189
Apprentices	13,964
W&S Independent contractors (b)	22,884

(a) Equivalent annual average full-time gross wage.
(b) Independent contractors also include public-sector workers; all the other data only refer to employees in the private sector.
Source: own elaborations on WHIP data.

Table 7. Gross pay differentials for employees on standard contracts

Data:	WHIP		PLUS	
Period:	1998-2003 [(a)]		2005 [(b)]	
Sample:	extended	restricted	extended	restricted
No. of observations:	278,844	107,492	13,247	13,054
Open-ended part-time	14.3%	[(c)]	6.7%	6.7%
Direct hires	n.s.	-1.1%	n.s.	n.s.
Agency	3.3%	n.s.	n.s.	n.s.
Apprentices	-31.0%	-14.2%		
W&S Independent contractors	-27.9%	-9.7%	-27.0% [(d)]	-23.3% [(d)]

(a) Fixed-effects estimation with logarithm of equivalent annual full-time gross pay as dependent variable. Control variables: age, gender, geographical area, occupation.
Extended sample: all workers. Restricted sample: only workers who worked continuously for an entire year.
(b) OLS with logarithm of equivalent annual full-time gross pay as dependent variable. Control variables: gender, level of education, age, seniority in the firm, geographical area, marital status and characteristics of the family, job and sector. The R2 in the two specifications is 27%-28%. Extended sample: all workers. Restricted sample: only workers with contracts lasting one year or more.
(c) There are no part-time employees in the restricted sample.
(d) Includes other minor contracts.
n.s. – significance level below 95%
Source: own elaborations on WHIP and PLUS data

Table 8. The Italian income maintenance system in case of non employment (2010)

	FUB	RUB
Entitlement	Only dependent workers, no apprentices, no independent contractors	Only dependent workers, apprentices only if previously qualifying job spell, no independent contractors
Eligibility	Insurance seniority: 2 years; contributory requirement: 52 full weekly contributions in the last 2 years	Insurance seniority: 2 years; work requirement: at least 78 worked days in the year the benefit is claimed for
Length	8 months, 12 months for over 50	Number of days in the reference year, with a maximum of 180
Amount	60% of gross wage up to 6 months; 40% for the following 2 months; 30% for further months; ceilings: 892 € gross per month for gross monthly wage up to 1,931 €; 1,073 €/month above	35% of previous wage up to 120 days; 40% afterwards; ceilings as for FUB

Table 9. Access to unemployment benefits in case of job loss

	Column percentage	No benefit	Access to FUB	Access to RUB	Row total
			%		
Open-ended full-time (standard)	73.8	9.1	86.8	4.1	100.0
Open-ended part-time	11.5	19.3	69.7	11.0	100.0
Apprentices	5.5	78.9	1.3*	19.8	100.0
Direct hires (total)	6.3	38.1	42.8	19.1	100.0
Part-time direct hires	*1.3*	*47.1*	*29.5*	*23.4*	*100.0*
Agency (total)	1.4	47.8	33.9	18.3	100.0
Part-time agency	*0.2*	*63.4*	*17.3*	*19.3*	*100.0*
Total	100.0	17.1	75.9	7.0	100.0

*: thanks to a preceding job

Source: own elaborations on WHIP data

Table 10: Share of precarious workers by type of contract, December 2003

	Part-time excluded (%)	Part-time included (%)
Standard workers	5.7	5,5
Part-time open-ended workers	-	49,8
Direct hires / agency	23.1	32,1
Apprentices	9.9	13,8
W&S independent contractors	40.3	45,5

Source: Own elaborations on WHIP data

Table 11 . Persistence of precariousness: Variation of precariousness status from 1998-2000 to 2000-2003

1998-2000 / 2001-2003	Not precarious	Precarious
	%	
Overall		
Not precarious	95.86	4.14
Precarious	37.83	62.17
Males		
Not precarious	97.83	2.17
Precarious	52.49	47.51
Females		
Not precarious	91.22	8.78
Precarious	28.30	71.7
Age: 25-30		
Not precarious	93.32	6.68
Precarious	45.86	54.24
Age: 31-40		
Not precarious	96.01	3.99
Precarious	36.53	63.47
Age: >40		
Not precarious	97.71	2.29
Precarious	28.45	71.55
More frequent status: Standard		
Not precarious	97.18	2.82
Precarious	52.87	47.13
More frequent status: Non-standard		
Not precarious	85.74	14.26
Precarious	26.23	73.77
More frequent status: Unemployed		
Not precarious	88.80	11.20
Precarious	42.13	57.87

Note: Precariousness computed on total income over a 3-year period

Source: Own elaborations on WHIP data

Table 12. Average annual total income and coefficient of variation of annual total income over the 1998-2003 period

	Yearly total income	Coefficient of variation, 1998-2003
Women	16,843	0.17
Men	22,124	0.13
More frequent status: Standard	21,979	0.11
More frequent status: Non-standard	12,984	0.30
More frequent status: Unemployed	14,651	0.34
Age 25-30	17,432	0.17
Age 31-40	20,195	0.14
Age >41	23,216	0.11
Total	20,364	0.15

Source: Own elaborations on WHIP data

Table 13. Relative risk of being precarious over the whole period: the effect of the predominant employment state.

	Part-time excluded	Part-time included
	Odds ratios	
Gender (female)	1.7***	2.1***
Age (yrs., in 1998)	0.97***	0.98***
More frequent status: Non-standard	4.3***	8.6***
More frequent status: Unemployed	29.6***	33.5***
No. of observations	47,386	54,703

*** significant at a 99% confidence level

Source: Own elaborations on WHIP data

Table 14. Relative risk of being precarious in each year: the effect of the predominant employment state.

	(1)	(2)
	Odds ratios	
Gender (female)	0.44***	
Age (yrs., in 1998)	0.98***	0.93***
More frequent status: Non-standard	8.2***	3.8***
More frequent status: Unemployed	120.7***	85.0***
Fixed effects	No	Yes
No. of observations	349,530	75,210

Part-time excluded

*** significant at a 99% confidence level

Source: Own elaborations on WHIP data