Do Flexible Employment Contracts Change Household Income Differences in Italy?

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PRELIMINARY VERSION

Abstract

This paper examines whether the growing use of non-permanent contracts may have influenced the intra-family income differences in Italy over time. After the 1990s, a number of reforms were implemented to reduce the levels of employment protection in favour of permanent workers. In particular, the first considerable intervention, in the aforementioned direction, occurred in 1997 through the so-called Pacchetto Treu (L.196/1997), then carried on with the Biagi Law (L. 30/2003) which essentially introduced additional types of temporary contracts. However, the proliferation of the so-called atypical or non-standard forms of employment calls into question the greater discrimination of such category of workers. In particular, the contribution of each individual to other family members, as the ratio between the difference of his/hers personal income and the per-capita income and the equivalent household income, is calculated. Two longitudinal data drawn from the Italian surveys - ECHP and IT-Silc - conducted respectively over the period 1995-96 and 2005-2006 are used. Panel data technique are performed for men and women separately . Our results confirm that the contribution changes both across gender and age over the span considered. Men are generally more likely to support other family members. Not surprisingly, instead, more educated women positively contribute to narrow family income differences. On the contrary, sons play the role of money receivers with regard to other family members, and the magnitude of the coefficient is larger when labour market flexibility has been already implemented. Finally, with regard to the contract-related variables, the category of workers, in a less favourable financial

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condition, are those who have a temporary contract and work part-time apart from those who have other atypical contract forms. Those who are out of the labour market for several reasons, i.e. retirement, unemployment and inactivity, contribute negatively within the family.

1 Introduction

This paper examines whether the growing use of non-permanent contracts may have influenced the intra-family income differences in Italy over time. Basically, to the extent that these arrangements, increasing labour market opportunities, contribute to enlarging the relative input into family income. A working household member makes a larger economic contribution than a non-working member, even if he has a low income (Brown and Session, 2005; Booth and Francesconi, 2002; Cutuli, 2008; Picchio, 2008; Comi and Grasseni, 2009). So the most interesting question is if institutional changes can alleviate intra-family economic inequalities or not.

Over the last fifteen years the Italian labour market has been influenced by several institutional changes. After the 1990s occupational crisis, a number of reforms were implemented to reduce the levels of employment protection in favour of permanent workers. These strict regulations were considered as the major cause of high unemployment rates along with negligible replacement rates in the labour market. In particular, the first considerable intervention, in the aforementioned direction, occurred in 1997 through the so-called Pacchetto Treu (L.196/1997). The introduction of such rules, widened the opportunities of hiring new staff, i.e. adopting more flexible contractual conditions. More precisely, since then firms have been eligible to make use of fixed term contracts every time technical, organizational and productive motivations, need to adjusting their workforces. This flexibility path was then carried on with the Biagi Law (L. 30/2003) which essentially introduced additional types of temporary contracts. It is worth underlining that the primary effect of such interventions has increase the employment rates over the last decade, in spite of a moderate economic growth. However, the proliferation of the so-called atypical or non-standard forms of

employment calls into question the greater discrimination of such category of workers. In general, temporary workers experience several disadvantages, such as higher probability of unemployment and risk of on the job injuries, lower welfare provision, earnings, lifelong training, and fertility rate other than limited access to the financial market (OECD, 2004; Guadalupe, 2003). Nevertheless fixed-term employees may have worse working conditions than those in similar permanent jobs and they experience frequent periods of unemployment and consequent sharp income fluctuations that endanger their economic self-sufficiency; overall they have mainly encouraged the labour force participation of women and youths (Diaz and Sanchez, 2008; Gash and McGinnity, 2007; Petrongolo, 2004).

Italy is indeed one of the developed countries that has the lowest level of female employment and the greatest gap between male and female employment rates. According to the Eurostat statistics, in 2007 female employment rate calculated by dividing the number of women aged 15-64 in employment by the total female population of the same age group reached 47.2% in 2008 in Italy. This illustrates how difficult it is for women to enter the labour market. Thus such labour market 'flexibilization' helps people to improve their employability, in order to successfully integrate - or be reintegrated - into the active part of the labour market. Especially unemployed people and those who have not yet been economically active but are willing to work or mothers who wish to return to work after a family break are the primary target of such deregulations (Barbieri and Scherer, 2009). Most of the previous empirical studies focus on how the introduction of more flexible types of contracts lead to a segmentation of the labour market. This situation is a matter of some concern as, on the one hand, there are permanent workers with more favourable occupational conditions as well as benefits, namely

higher wages, access to training courses, job protection, government subsidies in case of job loss and a better welfare provision once retired. On the other hand, temporary workers are, instead, discriminated both in terms of monetary and non-monetary aspects. This category shows lower wages in sharp contrast with the economic theory, which suggests that fixed term workers should contract higher hourly wage to compensate the risk of becoming unemployed (Quandt and Rosen, 1986). With regards to Italy, both Picchio (2008) and Cutuli (2008) find wage differentials between permanent and non-permanent employees varying from 7% to 20%, using Italian data drawn from the Bank of Italy. This result is also confirmed by Lucidi and Raitano (2009) who provide evidence of a wage penalty associated to temporary contract owners of about 10%. In addition, non-permanent workers are also penalised regarding the opportunities for career advancement and about receiving work-related training (Arulampalam and Booth, 1997). They face low levels of retention and job satisfaction, too. Many studies concern fixed-term contracts, analyse whether they are useful stepping-stones to permanent jobs or not (Booth et al., 2002; Corsini and Guerrazzi, 2007; Berton et al., 2008).

The issues related to the boom in temporary contracts have been widely analysed over recent years, but remarkably little is known about their impact on household income differences. Clearly, the interest in this subject derives from a concern of poverty, and inequality, and recognition that differential resource allocations within households may seriously reduce the welfare of some members. The attempt is hence to provide evidence on potential changes to personal levels of income regarding other family members before and after the reduction of employment protection rules. For each individual, living in a specific family, we refer to the general household utility

framework, which goes back to Becker (1974, 1981) and Samuelson (1956), to assess the difference between his/her personal income from the relative household income. This unitary approach is based on the assumption that preferences are identically distributed within the family and household utility is maximised subject to a single budget constraint. As a result, income redistribution within the household does not change family behaviour. The hypothesis of equal sharing resources between all household members is definitely a more practical strategy to reaching our final aim that is to detect if lowering labour market protection reduces income inequality between family members.

In particular, the contribution of each individual to other family members, as the ratio between the difference of his/hers personal income and the per-capita income and the equivalent household income, is calculated. Two longitudinal data drawn from the Italian surveys - ECHP and IT-Silc - conducted respectively over the period 1995-1996 and 2004-2005 are used. Panel data technique are performed and also the analysis is carried out separately for men and women.

Our results confirm that the contribution changes both across gender and age over the span considered. Men are generally more likely to support other family members, even if the entity of the contribution reduces when time passes by. Not surprisingly, instead, more educated women positively contribute to narrow family income differences. On the contrary, sons play the role of money receivers with regard to other family members, and the magnitude of the coefficient is larger when labour market flexibility has been already implemented. Finally, with regard to the contract-related variables, the category of workers, in a less favourable financial condition, are those who have a temporary contract and work part-time, apart from those who

have other atypical contract forms. Individuals who are out of the labour market for several reasons, i.e. retirement, unemployment and inactivity, contribute negatively within the family. These results are also validated by the predicted values generated after the estimates shown.

In the following section, the data source is described and the raw data is examined to see the extent of temporary job holding in Italy, while the empirical strategy is available in section III. The estimates based on equal sharing are presented in the fifth section. The final section summarises and draws conclusions.

2 Data

The following empirical investigation focuses on Italy. In order to describe whether the growing use of non-permanent contracts may have influenced intra-family income differences in Italy, two surveys were taken into account. In particular, for the period before the so-called Pacchetto Treu (L.196/1997) the Italian questionnaire of the European Community Household Panel was used (ECHP), while the Italian questionnaire of Statistics on Income and Living Conditions (It-Silc) was adopted underling the impact of the implementation of all labour market reforms during the period 1997-2003 (namely the Pacchetto Treu, the Decree Law (2001) and the Biagi Law (L. 30/2003)). These data are based on a standardized questionnaire filled by individuals and households in several European countries and on several issues. The former is composed of 8 waves (1994-2001) while the latter by 4 waves (2004-2007). However, after some elaboration (especially on income and individual characteristics) the following waves were used: 1995-1996 for Echp and 2004-2005 for IT-Silc. In this way a ten years span was covered in order to describe the potential changes which occurred to personal levels of income regarding other family members before and after the reduction of employment protection rules. Monetary contributions within the family depend on different choices each family member makes: investment in education, labour market participation and consequently earnings profile. Moreover such contributions are associated with the role each member has in the family, his bargaining power and his mutual exchanges. For these reasons two different samples are exploited and separated regressions by gender were run. Tab. 1 shows the number of observations in each one for the two periods.

Both ECHP and IT-Silc collect information on monetary transfer be-

Table 1: Number of observations, men and women in the two periods

	ECHP		**IT-Silc**	
	1995	**1996**	**2004**	**2005**
Men	8099	7607	10543	14965
Women	9243	8687	12197	17368
Total	17342	16294	22740	32333

tween families based on the assumption that these are between heads of household. These two surveys do not provide any details about money contribution to and from individuals within the households as well as those living in different households. Even the Bank of Italy data (SHIW - Survey on Household Income and Wealth) are not useful for our purpose. Although this dataset provide information on income transfers between individuals, such information exclusively refers to members of different households instead of members of the same family. Furthermore, building a panel over the period considered is not possible as in each survey only 25% of households contained in the previous one are re-interviewed. Finally, another motivation why such data are not useful for our goal is that the disaggregation of the employment contract by different categories was not available in 1995.

The Share (Survey of Health, Ageing and Retirement in Europe) collects monetary transfers between individual within a family, but unfortunately this survey only includes individuals aged 50 and over interviewed only twice, namely 2004 and 2006.

As mentioned above, despite the fact that the surveys considered do not collect information necessary for this analysis, they are important for both the individual and household characteristics provided and the period over which they are collected. This is the reason an attempt to define a way of calculating money contribution within families is necessary. One example is Caiumi and Perali (2000) that estimate the intra-household distribution of

goods and time applying the theoretical framework proposed by Chiappori (1988) and Chiappori, Fortin and Lacroix (1998). A different strategy is applied in this paper: firstly, the assumption that consumption of each members of the family is equal to the per-capita income. Secondly, following an OECD procedure (OECD, 2001) the contribution of each member within a family is defined as: (1) per-capita income from labour and pension[1] minus (2) the personal income from labour and pension divided by (3) the total equivalized net household income[2]. The share of individual contribution which can be negative when a person is a receiver or positive when a member is a giver is obtained. Tab. 2 shows the distribution of income by gender over the two periods under consideration.

In the two period the family income increase by 38% from 1995 to 2006 while percapita increase by 57%. Moreover, the individual income form work and pension for men exceeds those for women by around 44% - 48%. Mens work and pension increase more (+28% for men and +24% for women) over time.

Table 2: Distribution of incomes in the two periods (Real value in Euro, Base=2000)

	ECHP		**IT-Silc**	
	1995	**1996**	**2004**	**2005**
Equivalized income	11243	11015	15443	15547
Per-capita income	6186	6184	9574	9697
Personal income (Men)	12338	12376	15805	15997
Personal income (Women)	8483	8574	10644	10820

[1]The per-capita income from labour and pension is calculated as the sum of personal income from labour and pension of all the members of the household divided by the number of the household members.

[2]The total equivalized net household income is calculated as the sum of personal income from labour and pension of all the members of the household and other sources of income at household level (imputed rent, income from rental, interest, dividend and other capital income, family/children allowances, other social exclusion, housing allowances and regular inter-household cash transfer received divided by the OECD equivalence scale.

2.1 Explanatory variables

Both ECHP and IT-Silc contain information on household and individuals: demographic characteristics, personal income, housing conditions, employment and so on. Regarding employment information on whether he/she is working, the type of contract he/she has and the contract duration is grew, i.e. permanent versus fixed-term contracts. Clearly there are differences between the two data sources; all the variables used have been homogeneous between ECHP and IT-Silc. (See Appendx B). Two types of coovariates have been considered. Let P_i be the first set of explanatory variables describing individual characteristics. P_i includes age, age squared, education dummies, area of residence, working status, and the corresponding type of contract. Let F_i be the second set of coovariates describing family composition. F_i will include number of females, number of members with permanent and fixed-term contract, number of unemployed, and number of members out of labour forces. It is remarkable to underline that each aforementioned variable is constructed without counting the respondent. The analysis focuses on a specific variable: type of contract classifying individuals according to the following categories: individuals with (1) permanent and (2) fixed-term contract making a distinction between full time and part time. The first category includes individuals who have a permanent employment contract, while individuals with fixed term or short-term contract, people with specific training or apprenticeship contracts are classified as non permanent contracts, if they didn't state to be in permanent contract; (3) other type of contracts are individuals classified as family worker or some other work arrangement and also those people who did not indicate any status in em-

Table 3: Distribution of type of contract and professional status (Number of observations and percentage)

	ECHP				IT-SILC			
	1995		1996		2004		2005	
	Women	Men	Women	Men	Women	Men	Women	Men
Permanent FT♭	1.574	2.858	1.382	2.544	2.077	3.564	2.972	5.117
Permanent PT♯	145	21	240	50	615	100	792	132
Not permanent FT	179	238	158	225	376	446	501	557
Not permanent PT	30	20	43	23	155	56	231	75
Other worker	191	147	159	184	137	86	195	165
Unemployed	603	661	571	628	494	471	754	669
Retired	1.354	1.734	1.261	1.647	2.176	2.878	3.090	4.020
Other Inactive	5.167	2.420	4.873	2.306	6.167	2.942	8.833	4.230
	ECHP				IT-SILC			
	1995		1996		2004		2005	
	Women	Men	Women	Men	Women	Men	Women	Men
Permanent FT	17,02	35,29	15,91	33,44	17,03	33,80	17,11	34,19
Permanent PT	1,57	0,26	2,76	0,66	5,04	0,95	4,56	0,88
Not permanent FT	1,94	2,94	1,82	2,96	3,08	4,23	2,88	3,72
Not permanent PT	0,32	0,25	0,49	0,30	1,27	0,53	1,33	0,50
Other worker	2,07	1,82	1,83	2,42	1,12	0,82	1,12	1,10
Unemployed	6,52	8,16	6,57	8,26	4,05	4,47	4,34	4,47
Retired	14,65	21,41	14,52	21,65	17,84	27,30	17,79	26,86
Other Inactive	55,90	29,88	56,10	30,31	50,56	27,90	50,86	28,27

Note: ♭ FT stands for full time; ♯ PT stands for part time

ployment but have income from labour[3] ; (4) the self-defined unemployed, as well as (5) the retired and finally (6) the other inactive mainly students and housewives.

Table 3 shows descriptive statistics for these different types of contract for both men and women. The upper panel show the number of observations while the bottom part the percentage. We notice that the percentage of the part time workers and non-permanent workers increases. This increase prevailing concerns women as non permanent contracts increase by 2 and a half between 1996 and 2004. At the same time in the two periods considered, the number of unemployed and other workers decrease. It is probable that

[3]Self employment was eliminated because they are not regulated by any specific contract, these should also include casual worker and freelancer, but these cannot be distinguished between them.

Table 4: Distribution of personal incomes from labour and pension by type of contract and professional status (Value in Euro)

	ECHP				IT-SILC			
	1995		1996		2004		2005	
	Women	Men	Women	Men	Women	Men	Women	Men
Permanent FT	12077	15017	12373	15144	15722	19345	15922	19473
Permanent PT	7536	11217	9370	14430	9934	14235	9674	14535
Not permanent FT	7233	7902	7554	10135	12000	13431	10767	13419
Not permanent PT	4725	7692	5925	6035	8215	8354	7254	8891
Other worker	3645	6621	3788	7640	9458	10726	10347	18187
Unemployed	1247	1410	960	1732	2555	3419	2918	4483
Retired	6824	9588	6749	9390	8963	13601	9397	13690
Other Inactive	856	366	947	493	2165	1796	2250	1794

Table 5: Distribution of personal contribution by type of contract and professional status and men and women during the two periods (Pergentage)

	ECHP				IT-SILC			
	1995		1996		2004		2005	
	Women	Men	Women	Men	Women	Men	Women	Men
Permanent FT	31,38	78,99	34,18	77,85	21,58	58,03	21,30	59,16
Permanent PT	7,55	41,51	17,35	70,57	7,61	23,83	4,88	23,11
Not permanent FT	8,18	35,31	14,83	53,78	13,42	35,13	6,52	36,48
Not permanent PT	-4,04	45,81	1,98	15,82	1,28	38,75	-3,21	26,63
Other worker	-22,81	16,49	-13,58	27,31	7,54	8,60	-1,18	40,71
Unemployed	-42,87	-34,63	-47,17	-30,53	-35,91	-22,60	-33,40	-14,79
Retired	0,19	37,71	0,53	37,19	-7,58	25,92	-7,30	26,99
Other Inactive	-46,82	-50,10	-46,65	-48,66	-42,79	-42,67	-42,87	-42,59

the latter move into the occupation band thug with temporary contracts. In this way favouring the emersion of previously undefined workers.

Table 4 shows that incomes also increase. The major increases concern those who are outside the labour market, other workers or unemployed who evidently have had occasional work experience during the year. Besides the increases are also in temporary contracts, both for men and women.

Table 5 show the personal contribution by type of contract and professional status during the two periods dividing men and women. Contribution is always inferior for women. Positive contributions decrease in time for both

and for each type of contract. Such result together with an increase in personal income highlights a reduction in the difference within the family in terms of contribution to the family. While the weight of those who participate negatively to the economic family management note a reduction in their weight which appears to be less negative over time.

3 Methods

As already stated, the Italian questionnaire of two datasets (ECHP and IT-Silc) have been used in this anlysis. They are both longitudinal, so panel data technique are used to estimate which factors affect the money contribution within the family.

In particular two different equations for both men and women[4] and for both ECHP and IT-Silc are estimated. Let $y_i(t)$ be the money contribution for any men (women) i ($\forall i = 1, ..., N$). The model can be written:

$$y_i(t) = \alpha_0 + z_i\alpha_1 + P_i(t)\beta_1 + F_i(t)\gamma_1 + u_i + \epsilon_{it} \tag{1}$$

where

$$E(u_i|zi, Pi, Ci) = 0$$

and

$$E({u_i}^2|zi, Pi, Ci) = {\sigma_u}^2$$

The composite error can be written as:

$$v_{it} = u_i + \epsilon it$$

3.1 Implications of the estimation's procedure

The panel data method gives the opportunity to look at time-invariant individual effect. On the one hand the fixed effect model allows the individual effect to be correlated with the regressors, removing the bias that would result. It uses the within variation but it needs sufficient variation over

[4] A maximum likelihood ratio test has been performed to test whether the un-restriceted model (i.e. two separate model for men and women), has to be preferred to the restricted one (i.e. one pooled equation for men and women). The test reject the assumption of no differences between male and female, so two separate equations were estimated

time and can only estimate coefficients on time-varying coovariates. On the other hand, the between regression uses only the between-group variation amplifying the individual effect and estimating with the potential bias due to the correlation between the individual effect with the regressors. A more general panel data technique is the random affect model where the use of the generalised least squares method weight the between and the within variation providing the efficient combination of the two. Of course, the choice of random effect model in the context of panel data technique is based on whether the assumption of individual effect uncorrelated with the regressors holds. A random effect model was chosen to estimate time-invariant coovariates. In fact, there are only two years for each panel and some of the variables estimate, namely area of residence and education, do not vary between them.

4 Estimates

Table 6 contains the RE panel regressions, performed for men and women separately, of both samples used in our analysis. Considering the age and its squared term, it is clear that the contribution changes both across gender and over the span considered, in order to keep personal income level with the per-capita one. Men, behave in an inverted U-shaped was in age as they reach the maximum at 55.5 years in the ECHP sample and 37 years in the It-Silc, respectively. This suggests that men are more likely to support other family members since the beginning of their occupational career; in particular as time passes by they reduce the entity of such money transfer. However, it is remarkable to note that, this process varies over time. Mainly, before the reduction of the levels of employment protection through diverse reforms, males decrease the amount of money transferred to

other family members once are close to retirement. On the contrary in the It-Silc sample, where the maximum of this age function is reached earlier than what emerged in the ECHP sample, men diminish the entity of transfer versus any family member when they are more likely to be in a stable job. Regarding this variable instead, women follow an U-shaped pattern in age with a minimum in adulthood (31 in ECHP and 34.5 in It-Silc, respectively). According to empirical evidence (Del Boca, 2002; Di Tella and Mac Culloch, 2002; Jaumotte, 2003) on female labour market participation, women are more likely to experience occupational interruptions when they are close to this age, especially because of pregnancy. In addition, women may also face lower employment rates before 30s because of being still in education; as a result they are less economically supportive within the family. As expected, differences between males and females emerge. The latter are more likely to be receivers within the family. With respect to regional area of residence, the results reflect the poorest economic conditions which characterise Italy. Regardless of gender and span, what it emerges is that people living in the South are more willing to share their incomes with all the other family members, possibly to overcome occupational problems of some members.. Educational qualification estimates suggest that, less educated men, on average, make a larger contribution to promote the reduction of intra-household income differences. On examining males' sample coefficients associated to education in It-Silc, the situation is different as highest educated individuals appear to be more supportive within the family. Not surprisingly, females sub-sample shows, in both data, especially those with a level of education over compulsory schooling, namely high school diploma or a degree, positively contribute to narrow family income differences. According to the ISTAT statistics (ISTAT, 2009) labour market participation

is greater for more educated women, i.e. 58.5% and 72% for the case of upper secondary school and tertiary education respectively, thereby having a job may help to reduce such household inequality. Each member has a particular role in the family. In both surveys fathers make larger transfers to other members living in the household, even if the entity is smaller in the last period. Sons, as expected, play the role of money receivers with regard to other family members, and the magnitude of the coefficient is larger when labour market flexibility has been already implemented. Even mothers are on average are economically supportive in spite of a smaller entity over time. Results related to the occupational status of each family member show that the pattern is equally distributed within the two sub-samples and across span. Generally, people who have a permanent contract are significantly more likely to promote an equal share of resources within the family. Evidently, intrinsic characteristics associated with this type of contract explain why this variable is a good predictor of the propensity to transfer money within the family, namely job tenure, higher wages, better welfare provision, etc. In particular with regard to the contract-related variables, the category of workers, in a less favourable financial condition, are those who have a temporary contract and work part-time apart from those who have other atypical contract forms. Those who are out of the labour market for several reasons, i.e. retirement, unemployment and inactivity, regardless of gender and data considered, contribute negatively and are statistically significant. However, the retired do not place a large financial burden on other family members as unemployed, students and housewives do as they receive the pension. Considering explanatory variables related to the household composition of each respondent, excluding himself, the patterns by gender are quite similar, but the coefficients differ in magnitude. A unit change in the

number of women living in a specific household enhances on average the entity of the contribution, mainly for the case of males. Nevertheless, the amount reduces in size over time. The same path is noticed, both for males and females, by inactive and unemployed, even if in the It-Silc males make larger contribution to avoid household income differences when the number of members out of the labour force in his family increases. On the contrary, after lowering labour market protections, potentially, those who benefited more than others of such interventions were females. They now become a small financial burden on men thanks to the availability of more flexible jobs. Finally, the greater the number of individuals with a job in a family, regardless of the type of contracts, namely whether they are is permanent or temporary, the smaller the magnitude contribution each individual has eventually to share with all the other family members, especially for the case of men.

To describe the effect of contract type on contributes further, we compute predicted contributes paths from the estimates of Table 6 for individuals with four different employment patterns. The first pattern involves workers who are in a full-time permanent job. The second pattern are for workers in part time permanent contracts and the third and the fourth patterns are for workers who hold one-fixed term contract full time and part- time. The predicted contributions are computed under the assumptions that the individuals' contribution changes with age. Moreover other coovariates are set as follows: parents living in the North, with an upper secondary school and with average number of women, unemployed, person with permanent and temporary contracts. We estimate two equations, for men and women separately.

Having analysed the predicted values, an inverted U-shaped pattern of

Table 6: Estimates of random effect model for personal contribution within the family

	ECHP 1995-1996		**IT-SILC 2005-2006**	
	Men	**Women**	**Men**	**Women**
Age	1.11***	-0.62***	1.47***	-0.69***
Age squared	-0.01***	0.01***	-0.02***	0.01***
Area of residence♭				
North	-2.18*	-0.06	-1.05	-0.51
South	4.10***	2.81***	1.99***	1.31**
Education♮				
Tertiary education	-2.08	11.05***	2.40**	8.91***
upper secondary ed	-2.81***	6.44***	0.04	5.36***
Member within the family§				
Parent	38.50***	14.59***	20.33***	12.59***
Children	-29.22***	-0.54	-34.09***	-0.70
Type of contract♯				
Permanent part time	-10.48**	-12.89***	-13.70***	-14.74***
Not permanent full time	-13.33***	-19.49***	-9.68***	-11.90***
Not permanent part time	-26.43***	-30.70***	-11.03***	-22.07***
Other workers	-33.07***	-46.50***	-10.67***	-21.08***
Retired	-29.61***	-37.86***	-23.30***	-42.44***
Unemployed	-69.91***	-67.67***	-51.77***	-49.95***
Other inactive	-63.01***	-71.76***	-45.34***	-61.94***
Family characteristics				
Number women	9.71***	5.40***	3.92***	5.15***
Number permanent contract	-10.76***	-5.08***	-4.86***	-6.28***
Number not permanent contract	-17.46***	-9.60***	-9.92***	-9.28***
Number unemployed	6.16***	4.38***	12.94***	4.43***
Number out of labor force	7.65***	-1.15***	15.55***	2.07***
Constant	21.36***	22.81***	-2.97	13.12***
σ_u	34.29***	26.00***	30.67***	25.29***
σ_e	27.39***	23.11***	19.50***	18.05***
Number of observations	15706	17930	25508	29565
Log likelihood	-80068	-87583	-125297	-141125

Note: $*: p < 0.1$; $**: p < 0.05$; $***: p < 0.01$, ♭ reference category Centre; ♮ reference category compulsory education; ♯ref. category Permanent full time; §ref. category other members

the contributions at the changing of age, can be confirmed for men. Looking at It-silc sample, men till in the young adul age (considering that their maximum is reached at 37 years opposed to 50 before the reform) shows a higher rate of contribution. (after reform) The men contribution increases more faster (+16%) before the maximun (during the 20 and 35 years) and then slowly decrease after the maximum age. Regardless of any personal characteristics, it is remarkable to note that women always report lower rates of contribution compared with their counterpart. This results is in line with the income dynamics observed by gender. In fact, females are penalised in the labour market once they are part-time workers contrary to males who are instead receiving positive compensating differentials when do work less than full-time.

A reduction in the family contribution for all the typologies considered, for both men and women, can be noted. They can be related to an increase in the family income, more than proportional with respects to an increase in personal income. Between the 1995 and 2005 the real per capita income increase of 57% (Table 2) while real personal increased by 30% for permanent men and about 32% for women (Table 4) Therefore reduction in contributions can be attributed mainly to an increase in family income, ie. to the increase of individuals who perceive an income in the family. The major contribution reduction is in the younger band who seem to benefit more from major economic participation of other components in the family.

Table 7: Predicted value for random effect model

	ECHP 1995-1996				**IT-SILC 2004-2005**			
	Age				**Age**			
	20	35	50	65	20	35	50	65
Men								
Permanent full time	81,63	86,83	85,76	78,44	57,54	67,23	70,15	66,28
Permanent part time	71,15	76,35	75,29	67,97	43,83	53,53	56,44	52,58
Not permanent full time	68,29	73,49	72,43	65,11	47,86	57,55	60,47	56,60
Not permanent part time	55,20	60,40	59,34	52,01	46,51	56,20	59,12	55,26
Women								
Permanent full time	35,71	35,09	39,23	48,14	24,25	24,57	30,71	42,69
Permanent part time	22,83	22,20	26,34	35,25	9,52	9,83	15,97	27,95
Not permanent full time	16,22	15,60	19,74	28,65	12,35	12,66	18,81	30,78
Not permanent part time	5,01	4,39	8,53	17,44	2,19	2,50	8,65	20,62

Note: $*: p < 0.1$; $**: p < 0.05$; $***: p < 0.01$; Predicted value for parents living in the north with secondary level of education and with all the other coovariates set to the mean

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Appendix A: Italian legislation

In the last ten years the development of the Italian Labor Law System allows companies to introduce both new types of temporary jobs and to loosen the ties of employment contracts already in use. The two principal landmarks have been the Treu and Biagi reforms of 1997 and 2003, respectively. The motivation of the "Treu package", was to increase employment, particularly among the young with special provision for the economically depressed South. This Law (n. 196 of June 1997) constitutes a sort of watershed representing the beginning of the development of temporary contracts. It eased regulation of the new apprenticeships and work- training contracts, and created incentives for on-the job training temporary work via private agencies and intra-regional labour mobility. Apprenticeships contracts are extended to all sectors, including agriculture, the age increased from 15 - 20 to people aged 16-24 (26 in the case of Southern Italy) and the age increase of two years for disabled and artisans. It also legalised worker-dispatching services and the temporary work agencies and liberalised fixed term contracts (OECD, 2009). Besides, article 13 of the Treu package introduced a set of provisions granting incentives for reduced working hours, by means of relief on social security contributions. However, these measures to encourage working hour reduction have yet to be implemented - owing to factors such as the continuing discussion surrounding the draft bill to introduce the 35-hour working week.

The second labour-market reform in Italy was in 2003 when the centre-right government introduced an additional and wider law, namely the Biagi law. (L. n. 30/2003). It aimed to take some of the Treu reforms further, in order to increase employment among youth, women, older workers and job-seekers, particularly in the poorest Southern regions. The new measures

included allowing private employment agencies to compete in the full range of services with public ones. The purpose being to create an efficacious and consistent set of instruments to ensure the transparency and efficiency of the labour market, and to improve work entry possibilities by the unemployed and by first-job seekers, with particular reference to the weak segments of the labour force. Another measure is the creation of a 'national continuous labour exchange' (Borsa Continua Nazionale del Lavoro). This consists of an on-line information system that facilitates the matching between labour supply and demand, and enables the monitoring of active employment policies, equal opportunity measures and labour market integration of disadvantaged workers. A second aspect of the Biagi reform bill focuses on the definition of new types of employment contracts, and the modification of existing ones, with a view to enhancing the quality and stability of work by making the employment relationship more adaptable to the needs of firms and workers. Moreover, ample room is left for collective bargaining to define the conditions of, and possible restrictions on, the use of the new types of employment contract. The main innovations are the following: The introduction of fixed-term or open-ended staff leasing contracts (contratto di somministrazione di lavoro). Under this system, companies may 'lease' the workers they need for technical, productive or organisational reasons from employment agencies. Secondly the so-called on-call job (lavoro intermittente), whereby the worker is available by the employer during a fixed period of time. The reform bill, also, confirms and specifies regulations on job sharing (lavoro ripartito), an arrangement based on a special contract whereby two or more workers jointly assume the responsibilities of a single work obligation (article 41). This is intended in order to encourage firms to use part-time work, and to facilitate the labour-market entry of people who need to reconcile

work with family responsibilities, study or other commitments. The bill seeks to foster the use of part-time work - both 'vertical' (i.e. comprised of working days similar to those of full-time workers, but with the number of working days reduced), or 'horizontal' (with reduced hours every day) - by including elastic clauses which allow employers (according to criteria and at the conditions agreed by the parties) to increase working time and modify schedules. An especially significant part of the reform bill concerns the rules on contracts for employer-coordinated freelance work (the so called co.co.co) - 'semi-subordinate' contracts which, according to the most recent surveys, currently affect around 2.3 million Italian workers. A freelancer should be classified as self-employed, although a person who has been regularly retained by a single employer for some time may also be regarded as an employee. The reform bill also introduces supplementary work (lavoro accessorio) - that is, work of a merely occasional nature undertaken by people at risk of social exclusion or who have not yet entered the labour market or who are about to leave it. By 'merely occasional' is meant activities involving a worker for no more than 30 days per calendar year, and for which in any case the remuneration amounts to no more than EUR 5,000 in a calendar year. The service performed must take the form of minor and exceptional domestic work (for instance, child-minding or care for the elderly). Finally, another set of employment relations addressed by the reform bill are those with a training content, such as apprenticeships. It will be possible to conclude an apprenticeship contract with a young person aged between 18 and 29 for various purposes, these being: (a) fulfilling the right/duty to education and training; (b) gaining a qualification by means of on-the-job training and technical-professional instruction; and (c) acquiring a diploma or complementing a higher education programme. Furthermore, for par-

ticular categories, such as young people aged 18 to 29 and disadvantaged workers (long-term unemployed people aged under 32, unemployed workers aged over 45, women resident in areas with high levels of female unemployment etc) the bill introduces a work entry contract, in order to achieve by means of an individual project to adjust the worker's professional skills to a particular job, his or her labour market entry or re-entry (article 55). This employment relationship will replace the existing work/training contract, which had been found to contravene EU competition rules. During the period 1995 - 2005 according official statistical data, fixed term workers increased by more 100% for women and 60% for men.

In our sample the annual composition of fixed term contracts over all the employees, is comparable with those of Official Eurostat source.Fortunately, that the annual variation, represents both fixed and permanent contract.

Appendix B: Comparison between ECHP and Eu-Silc

In order to use the two survey (Echp and It-Silc) efficiently, family income has been re-calculated in the most recent (It-silc) eliminating, in this way, differences in methodology and making the two sources comparable.

In fact, new component of disposable income have been introduced in Eu-silc:

1. Transfers paid to other households (only transfers received from other households were taken into account in the ECHP (HY080N HY130N).
2. Tax adjustment (only taxes paid at source were collected in ECHP) (HY145N).
3. Taxes on wealth (HY120N).
4. Interest paid on mortgage loans (HY100N).
5. Imputed rent (HY030N).

6. Non-cash employee income ('income-in-kind') (PY020N).

7. Value of goods produced for own consumption ('income-in-kind') (PY070N).

8. Employers social insurance contributions (PY030G).

9. Nothing is said about the income received by the under 16 years old, that are not considered in ECHP but they are enclosed in EU-Silc. (HY110N).

The total household disposable income includes the new components introduced in the project and tax adjustments are taken into account in the calculation of this variable.

Besides, the content of some variables has changed:

1. The social benefits do not contain the income from 'individual pension plans' (this component was included in theory in the ECHP).

2. Survivors' and disability benefits paid after the standard retirement age are included in EU-SILC under 'old-age benefits' (and no more in survivors' and disability functions as in ECHP).

3. Early-retirement benefits paid for labour market reasons or in case of reduced capacity to work are included respectively under 'Unemployment benefits' or under 'Disability benefits' (and no more in old age benefits as in the ECHP).

Particularly important is the fact that, EU-SILC takes into account negative values of self employment income, which were previously set to 0 in the ECHP. Other variables that can take negative values are variables collected under 'property income'. Besides, while in the ECHP the income reference period was the previous year, EU-SILC has fewer constraints. In this way,

Table 8: Income

Year	Eurostat Income	Index price	Eurostat Real Income	Annual Variation	Echp-Eusilc Real Income	Annual Variation
1995	8815	0,887	9938		10156,06	
1996	9188	0,923	9954	0,00	9840	-0,03
1997	9354	0,941	9940	0,00	10320	0,05
1998	10032	0,959	10461	0,05	10516	0,02
1999	10524	0,975	10794	0,03	10719	0,02
2000	10952	1	10952	0,01	10911	0,02
2004	15810	1,105	14308	0,31	15103	0,38
2005	16664	1,124	14826	0,04	14908	-0,01
2006	16638	1,147	14506	-0,02	15327	0,03

the income reference period may be a fixed 12-month period (such as the previous calendar year or tax year) or a moving 12-month period (such as the 12 months preceding the interview) or be based on a comparable measure.

For homogeneity between EU-silc e ECHP the family income was calculated adding the personal income of each family component and we substituting those incomes that appeared negative with zero. The reference year has been calculated with the difference between the year of the survey and the individual age at the end of the income reference period. Table 8 shows that our results do not differ a lot from the value reported in the Eurostat table

Table 9: Descriptive statistics: Men IT-Silc

Variable	N. of obs.	Mean	Standard Deviation	Min	Max
Contribution	25508	16.44	62.91	-626.47	654.15
Age	25508	41.17	23.03	0.00	8.00
North	25508	0.46	0.50	0.00	1.00
South	25508	0.31	0.46	0.00	1.00
Tertiary education	25508	0.07	0.25	0.00	1.00
Upper secondary education	25508	0.28	0.45	0.00	1.00
Up to lower secondary education	25508	0.65	0.48	0.00	1.00
Parent	25508	0.34	0.47	0.00	1.00
Children	25508	0.39	0.49	0.00	1.00
Permanent full time	25508	0.34	0.47	0.00	1.00
Permanent part time	25508	0.01	0.09	0.00	1.00
Not permanent full time	25508	0.04	0.19	0.00	1.00
Not permanent part time	25508	0.01	0.07	0.00	1.00
Other workers	25508	0.01	0.10	0.00	1.00
Retired	25508	0.27	0.44	0.00	1.00
Unemployed	25508	0.04	0.21	0.00	1.00
Other inactive	25508	0.28	0.45	0.00	1.00
Number women	25508	1.28	1.28	0.00	8.00
Number permanent contract	25508	0.10	0.31	0.00	3.00
Number not permanent contract	25508	0.54	0.70	0.00	4.00
Number unemployed	25508	0.10	0.34	0.00	4.00
Number out of labor force	25508	1.27	0.99	0.00	10.00

Appendix C: Descriptive statistics

Table 10: Descriptive statistics: Women IT-Silc

Variable	N. of obs.	Mean	Standard Deviation	Min	Max
Contribution	29565	-20.27	18.27	-753.07	500.00
Age	29565	44.00	22.77	0.00	80.00
North	29565	0.46	0.50	0.00	1.00
South	29565	0.31	0.46	0.00	1.00
Tertiary education	29565	0.06	0.25	0.00	1.00
Upper secondary education	29565	0.28	0.45	0.00	1.00
Up to lower secondary education	29565	0.66	0.47	0.00	1.00
Parent	29565	0.40	0.49	0.00	1.00
Children	29565	0.29	0.46	0.00	1.00
Permanent full time	29565	0.17	0.38	0.00	1.00
Permanent part time	29565	0.05	0.21	0.00	1.00
Not permanent full time	29565	0.03	0.17	0.00	1.00
Not permanent part time	29565	0.01	0.11	0.00	1.00
Other workers	29565	0.01	0.11	0.00	1.00
Retired	29565	0.18	0.38	0.00	1.00
Unemployed	29565	0.04	0.20	0.00	1.00
Other inactive	29565	0.51	0.50	0.00	1.00
Number women	29565	0.75	0.85	0.00	7.00
Number permanent contract	29565	0.08	0.29	0.00	3.00
Number not permanent contract	29565	0.56	0.70	0.00	4.00
Number unemployed	29565	0.09	0.32	0.00	4.00
Number out of labor force	29565	1.11	0.95	0.00	9.00

Table 11: Descriptive statistics: Men ECHP

Variable	N. of obs.	Mean	Standard Deviation	Min	Max
Contribution	15706	19.65	76.92	-75.00	448.40
Age	15706	36.94	22.13	0.00	87.00
North	15706	0.35	0.48	0.00	1.00
South	15706	0.46	0.50	0.00	1.00
Tertiary education	15706	0.05	0.22	0.00	1.00
Upper secondary education	15706	0.26	0.44	0.00	1.00
Up to lower secondary education	15706	0.68	0.46	0.00	1.00
Parent	15706	0.38	0.48	0.00	1.00
Children	15706	0.48	0.50	0.00	1.00
Permanent full time	15706	0.34	0.47	0.00	1.00
Permanent part time	15706	0.00	0.06	0.00	1.00
Not permanent full time	15706	0.03	0.17	0.00	1.00
Not permanent part time	15706	0.00	0.05	0.00	1.00
Other workers	15706	0.02	0.14	0.00	1.00
Retired	15706	0.22	0.41	0.00	1.00
Unemployed	15706	0.08	0.27	0.00	1.00
Other inactive	15706	0.30	0.46	0.00	1.00
Number women	15706	1.50	0.87	0.00	7.00
Number permanent contract	15706	0.07	0.29	0.00	3.00
Number not permanent contract	15706	0.57	0.70	0.00	4.00
Number unemployed	15706	0.20	0.53	0.00	6.00
Number out of labor force	15706	1.19	0.89	0.00	6.00

Table 12: Descriptive statistics: Women ECHP

Variable	N. of obs.	Mean	Standard Deviation	Min	Max
Contribution	17930	-23.54	0.44	-75.00	328.18
Age	17930	15.45	0,9375	0.00	87.00
North	17930	0.36	0.48	0.00	1.00
South	17930	0.45	0.50	0.00	1.00
Tertiary education	17930	0.04	0.20	0.00	1.00
Upper secondary education	17930	0.25	0.43	0.00	1.00
Up to lower secondary education	17930	0.70	0.46	0.00	1.00
Parent	17930	0.45	0.50	0.00	1.00
Children	17930	0.38	0.48	0.00	1.00
Permanent full time	17930	0.16	0.37	0.00	1.00
Permanent part time	17930	0.02	0.14	0.00	1.00
Not permanent full time	17930	0.02	0.14	0.00	1.00
Not permanent part time	17930	0.00	0.06	0.00	1.00
Other workers	17930	0.02	0.14	0.00	1.00
Retired	17930	0.15	0.35	0.00	1.00
Unemployed	17930	0.07	0.25	0.00	1.00
Other inactive	17930	0.56	0.50	0.00	1.00
Number women	17930	0.97	0.92	0.00	6.00
Number permanent contract	17930	0.07	0.28	0.00	3.00
Number not permanent contract	17930	0.62	0.70	0.00	4.00
Number unemployed	17930	0.21	0.54	0.00	7.00
Number out of labor force	17930	0.96	0.87	0.00	6.00