

The marginal propensity to consume of temporary workers: the Italian case

Marco Mello*

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Abstract

We use the Survey on Household Income and Wealth (SHIW) provided by the Bank of Italy to estimate an endogenous switching regression model for consumption between temporary and permanent employment regimes. Focusing on single-earner households and distinguishing these latter according to earners' type of contract, we find that households in which the only income earner is temporarily employed and works for part of the year only present a 15.8% lower propensity to consume non-durable goods compared to their permanent counterpart. We also provide evidence that having a temporary job as only source of employment income reduces the likelihood of buying durable goods by 7.1%. These results are related to the precautionary savings theory, according to which individuals facing greater future income uncertainty are more inclined to save. Our conclusions however regard the heterogeneity of consumption responses following, other things being equal, an hypothetical 1% increase of income, rather than the overall propensity to save of different employment regimes. These findings provide new implications to consider when evaluating the effectiveness and the distortions generated by demand-side policies involving monetary transfers to specific social categories of the population.

Keywords: consumption, temporary employment

JEL Codes: D12 , E21 , J41.

*University of Surrey; contact: m.mello@surrey.ac.uk

1 Introduction

In the last decades the share of temporary employment has increased substantially in many developed economies. Temporary contracts have been introduced in order to foster labour market flexibility, therefore this rise has mainly interested countries where the labour market was particularly rigid. Italy is a striking example of this. Trade unions have always had a prominent role in the collective bargaining process, making dismissal restrictions and social shock absorbers its foundations. Moreover the Italian labour market is considered to be one of the least efficient in the eurozone. Low productivity and high unemployment rates represent the main structural issues, which are particularly rooted among certain social categories and geographic areas. For instance Italy has one of the EU's highest youth unemployment rates, while regional heterogeneities have heightened over time making the pre-existing disparity between north and south even more marked. Also the participation rate of women is far from the corresponding European average. These problems have amplified further since the recent double-dip recession, from which the country has difficulty to recover fully.

In light of this, since the end of the nineties, Italian governments have started to reform the labour market. The reforming process has mostly aimed at stimulating employment by introducing more flexible forms of work contracts, which should compensate the simultaneous softening of protection from dismissals. Overall, this has determined a gradual replacement of permanent jobs with temporary ones. In particular this phenomenon arises whenever agents face more uncertain economic conditions. Then employers prefer to propose temporary contracts, rather than being tied down to permanent positions. It is also common practice to offer temporary contracts to hire young workers for a trial period, and then decide whether to turn them into permanent employees. All this results in a growing precariousness affecting the supply side of the labour market.

This paper investigates whether and to what extent precarious employment influences households' consumption decisions. To the best of our knowledge, there is no study aimed at investigating the specific relationship between temporary jobs and consumption habits. Most of the literature focuses on evaluating the effects generated by the advent of temporary occupation on the labour supply. We aim at filling this gap by studying how temporary contracts affect households' propensity to consume non-durable goods and likelihood of buying durable ones.

Our analysis restricts the attention on single-earner households, since this allows us to distinguish between "temporary households" and "permanent households" sharply, according to earners' type of contract. We find that temporary households in which the only income earner experiences a spell of unemployment in the year of the interview present a 15.8% lower

propensity to consume non-durables than their permanent counterpart. Thus it seems to be the combination between the type and the remaining duration of employment contracts, rather than just the nature of the contract itself, to affect daily consumption decisions. In other words, the possibility of anticipating the break of the job spell induces agents to activate a precautionary savings behaviour, which makes them less willing to spend an hypothetical 1% increase of income. On the other hand, we find that temporary households are 7,1% less likely to buy durable goods, regardless of the fact of experiencing a spell of unemployment in the year of the interview.

We estimate an endogenous switching regression model which takes into account the potential self-selectivity of job-seekers into the two possible regimes of temporary and permanent employment. Indeed it is reasonable to assume that these latter are not randomly assigned to temporary and permanent jobs, while instead that individual characteristics contribute to their self-selection into one of these two different contract groups. A two-stage approach is therefore implemented in order to make inference on the effects that temporary employment has on consumption decisions. To do this we use data from the Survey on Household Income and Wealth (SHIW) provided by the Bank of Italy. This survey is conducted every two years since 1977 and contains not only yearly information on households' consumption and income levels, but also on employees' type of contract¹ and number of working months in the year of the interview. This survey, together with the dualism between temporary and permanent jobs characterizing the Italian labour market, represents a well-suited framework to study how precarious forms of employment can affect households' consumption decisions.

This paper is structured as follows. Section 2 retraces the two strands of the literature which we contribute to: the one studying the effects of favouring labour market flexibility and the one on the precautionary savings theory. Section 3 presents an overview of the Italian labour market, focusing on its main structural problems and the main reforms that have been implemented over the last two decades to remove some rigidities. Section 4 illustrates our model and the estimation strategy used in the empirical analysis. Section 5 describes the SHIW survey and the way we built our dataset more in detail. Section 6 reports and comments our main findings. Section 7 tests the robustness of our results. Section 8 consists of concluding remarks.

2 Related literature

Most of the literature on labour market liberalization focuses on its effects on labour supply. Many authors try to identify the impact of market rigidities like minimum wages, fire re-

¹This information is actually available since wave 2000 only.

restrictions and severance pay on unemployment (see the pioneering study [Lazear, 1990] and [Marimon and Zilibotti, 1999]) and productivity rates (see [Lucidi and Kleinknecht, 2009] and [Vergeer and Kleinknecht, 2014]). Despite this, economic theory and empirical evidence are still controversial.

For instance [Blanchard and Portugal, 2001] compares the Portuguese and the U.S. labour markets to test whether and to what extent higher employment protection affects unemployment. They find that the higher Portuguese employment protection (see Figures 8 and 9 in our Section 3.2) causes higher unemployment duration, but also lower flows of workers into unemployment compared to the U.S.. This results in an overall ambiguous effect. On the other hand, [Siebert, 1997] and [Blanchard and Wolfers, 2000], among the others, find supporting evidence to conclude that employment protection hampers job creation.

Besides its arguable effects on unemployment, the need for liberalisation is theoretically justified also by the argument according to which employment protection prevents an efficient labour market matching, impeding workers to find jobs in which they are productive the most. Firing restrictions can also discourage firms to innovate, which also lowers productivity according to [Bassanini and Ernst, 2002] and [Kleinknecht, 1998]. However, [Acemoglu and Shimer, 2000] claims that unemployment insurance encourages workers to seek more productive jobs, favouring an overall increase in productivity.

In general, there exists an alternative line of the literature casting doubts on the need for liberalisation and its positive effects on labour supply ([Howell et al., 2007], [Baker et al., 2005]). This other school of thought considers firing costs as taxes which potentially reduces both hirings and layoffs. Moreover studies like [Oesch, 2010] and [Noelke, 2011] do not find any correlation between employment protection and productivity among certain cohorts of workers. As far as the specific Italian case is concerned, [Boeri and Garibaldi, 2007] finds a positive effect of labour market flexibility on employment, but an opposite one on productivity. A negative correlation with productivity is also confirmed by [Cappellari et al., 2012] and [Battisti and Vallanti, 2013], this latter showing how the introduction of flexible work contracts can reduce employees' motivation and effort.

While the effects of employment protection on labour supply is hotly debated in the literature, there are few studies examining those on labour demand. [Autor et al., 2007] exploits variations in employment protection across U.S. states over time to show that labour market rigidities reduce firm entry rates. Moreover [Adhvaryu et al., 2013] exploits variations in agricultural productivity generated by rainfall fluctuations in India to show that firms' employment responses are more sensitive to shocks in districts where labour regulation is less restrictive.

Even fewer empirical papers investigate the impact of labour market flexibility on other

economic variables. An exception is represented by [Gruber, 1994], which studies the consumption smoothing benefits produced by unemployment insurance. Related to this however there is a more prolific strand of literature, which aims at evaluating the impact of income uncertainty on economic outcomes and, in particular, on consumption. This latter has flowed into the precautionary savings theory, according to which agents facing greater future income uncertainty are more inclined to save. [Skinner, 1988] and [Caballero, 1990] present theoretical foundations for the precautionary savings theory to arise in situations of income uncertainty. Empirical micro-evidence however is still ambiguous. Most of this latter uses self-reported or predicted measures of individual job loss expectations as proxies for income uncertainty (see [Stephens Jr, 2004]). The SHIW survey provided by the Bank of Italy was also used to quantify the effects of income uncertainty on inter-temporal decisions. [Guiso et al., 1996] uses these data to show that households with larger earnings risks tend to have less risky assets in their portfolios. Moreover [Bertola et al., 2005] exploits a subjective future income uncertainty measures as an instrument to predict adjustments of durable goods stocks. The same survey is also used by [Jappelli and Pistaferri, 2000], which shows how consumption growth is correlated with the expected variance of income growth, rather than with the predicted income growth. We contribute to this strand of the literature by providing evidence of a precautionary savings behaviour characterizing temporarily employed workers. However, instead of investigating the overall propensity to save of different employment regimes, our objective of interest is represented by the propensity to consume following an hypothetical 1% increase in income. We believe this to be more interesting when evaluating the effectiveness and the distortions generated by demand-side policies involving monetary transfers to social categories of the population.

Our paper bridges the literature on the liberalization of labour markets and the one on the empirical testing of the precautionary saving theory. We provide in fact new insights on the consequences that introducing more flexible work contracts with pre-determined durations can generate in terms of consumption outcomes. Before to do this, we provide the reader with an overview of the Italian economic background and labour market.

3 The Italian case in a nutshell

Much of the political debate in Italy questions whether the Maastricht constraints on fiscal policy can be ascribed as the primary culprits of the persistent economic stagnation. But actually, Italy inherits decades of missed opportunities to reform the key sectors of its economy, resulting in the current inability to grow of the country.

Figure A.1 in the Appendix displays how Italy (the eurozone's third biggest economy) has

always been below the European average of gdp growth over the last two decades. Some factors are particularly suited at explaining this. Firstly, the Italian manufacturing system has always been grounded by small and family-owned businesses. These types of firms are generally loath to invest in innovation and to pursue the technological revolution which has taken place over the last two decades. Moreover, even at a centralized level, investments in R&D have never constituted a significant share of the national budget expenditure. The highly fragmented political scenario makes sure that Italian governments base their political economies on short-term electoral returns, rather than on a long-term investment plan. These facts are graphically represented by Figures A.2 and A.3, which compare the Italian investments on ICT and R&D with those of some European competitors in the last two decades. This has had implications for the labour productivity as well. Figure A.4 depicts the GDP per hour worked in Italy and the rest of the Euro area separately. It clearly emerges how Italy has not been capable of replicating the increasing trend in labour productivity which instead has characterized the rest of the EU. In this regard, labour market flexibility is often addressed as a key determinant. According to neoclassical economists, rigidities prevent the efficient allocation of production factors. They impede inefficient firms to be replaced by more efficient ones, hindering the creative destruction process which grounds any productive labour market.

Finally, Figures A.5,A.6 and A.7 present other key structural issues affecting the Italian economy. For instance Figure A.5 shows the low participation rate of women. Despite this, the gender gap in Italy is one of the lowest ones among European countries. It seems that, on average, only highly-educated women are very likely to be employed. Even other social categories face problems at entering the Italian labour market. Figure A.6 shows that young workers are seriously penalized too. Indeed economic rigidities represent, by definition, a barrier to entry for those facing the job market for the first time. This is one of the reasons which has favoured the introduction of more flexible work contracts discussed in the next section. The high youth unemployment rate in Italy can also be partially attributed to the scarce propensity to pursue scientific education paths, which seem to be the most requested skills in modern labour markets. This also creates one of the highest mismatches of workers' skills in Europe, as reported by Figure A.7. Many Italian workers end up having jobs which require lower skills than the ones they actually have, which is also the consequence of the low-skilled manufacturing apparatus presented at the beginning of this section.

3.1 The liberalization of the labour market

The first reform which has cleared the use of temporary contracts in Italy is the so-called "Pacchetto-Treu" (law 196/1997). Its intention was to stimulate employment by introducing new forms of employment like apprenticeship schemes, part-time and fixed-term contracts. In particular, it regulated for the first time temporary agency works and introduced the new institute of internship training. This law represented the first attempt to overcome the previously in force law 230/1962, which claimed permanent job as main employment relationship. In September 2001 the Second Berlusconi Government extended the terms of using temporary contracts with the decree n.368/2001, which implemented the European directive 1999/70/CE. Its first article allowed temporary contracts to be offered for "technical, productive, organizational or substitutive reasons". The real turning point for the liberalization of the Italian labour market however occurs in February 2003, when the "Legge Biagi" (law 30/2003) was approved. This latter mainly introduced work-for-hire contracts, according to which employees were hired like collaborators to conclude specific projects with a maximum duration of one year. Work-for-hire contracts were a particular precarious form of temporary employment, since they provide workers with fewer rights² than any other type of contract. Despite the "Legge Biagi" contributed at reducing the unemployment rate until the recent crisis, it failed at providing an adequate mechanism of social protection compensating for the increased flexibility. This has determined a sharp split between temporary and permanent employees in the Italian labour market, to the detriment of the most vulnerable social classes.

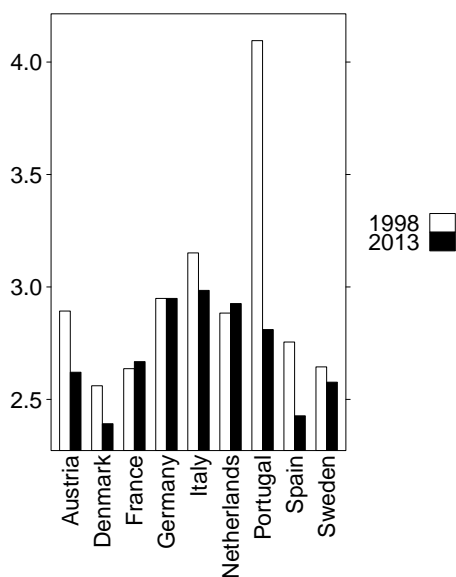
The debate about the liberalization of the Italian labour market resurfaced during the crisis, when it flowed into the "Legge Fornero" (law 92/2012). With this reform the Monti Government relaxed the strong social protection embodied by the "Articolo 18" (law 300/1970) against unfair dismissals of permanent workers. More in detail the "Legge Fornero", in case of invalid disciplinary or economic dismissals, did not provide the mandatory reinstatement³ of workers any more, rather just an economic compensation computed according to his/her seniority. This reform also tried to face the problem of precarious employment for the first time, since it made the conditions under which temporary contracts were applicable and extensible more stringent. The Articolo 18 was definitely abolished in 2014-2015, when the Renzi Government implemented one of its main reforms: the "Jobs Act" (law 183/2014). The Jobs Act has mainly proposed a new permanent contract called "contratto a tutele crescenti", which has minimized the cases of reinstatement following a layoff. The spread

²For instance they abolish holidays, sickness, maternity and regulate social security contributions differently.

³The reinstatement was imposed only when the cause of the dismissal turned out to be non-existent.

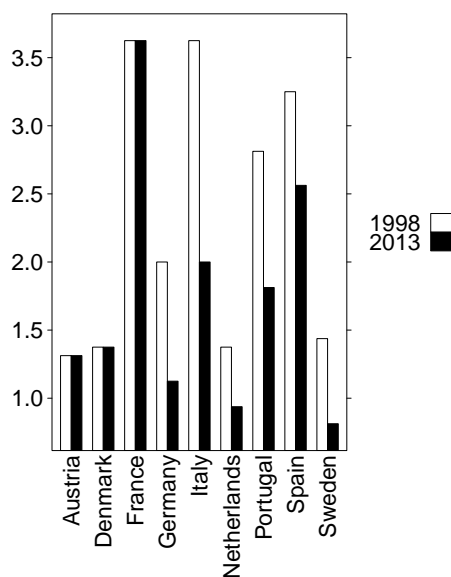
of this new contract was stimulated and the beginning of 2015, when the Budgetary Law provided consistent⁴ and non-targeted monetary incentives to adopt it. Moreover this reform has removed a previously in force rule which provided employees to get a permanent contract whenever the overall share of temporary contracts of their employers exceeded the 20%. Finally, the Jobs Act has abolished the work-for-hire contracts introduced by the Legge Biagi. This reforming process has mutated the Italian labour market severely. Figures 1 and 2

Figure 1: Protection from dismissals



Data source: OECD

Figure 2: Regulation on temps

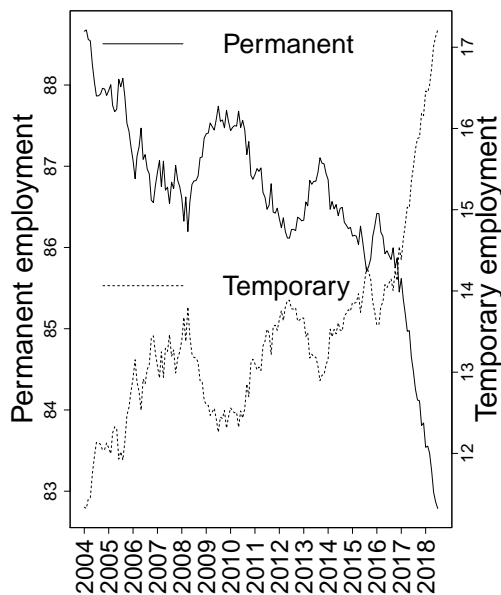


Data source: OECD

compare the change in employment protection occurred between 1998 and 2013 in many European countries according to two OECD indices. Figure 1 focuses on social protection from individual and collective dismissals of permanent workers, while Figure 2 focuses on the regulation on the use of temporary contracts. In 1998 Italy presented the second highest index regarding the protection from dismissals and the highest one (together with France) regarding the regulation of temporary contracts. We also observe that, between 1998 and 2013, Italy relaxed significantly both social protections displayed by Figures 1 and 2. In particular Italy is associated with the biggest drop in the regulation of temporary contracts, as a result of the reforms discussed in this section. It is also worthwhile highlighting that Southern European countries seem the ones which have relaxed social protection the most, in order to pursue the flexibility which is typical of many Northern European labour markets. We conclude this section by providing the reader with an idea about the quantitative and

⁴They consisted of an exemption on social security contributions up to 8060 euros per year for three years for each hire in 2015. These incentives were reduced to 3250 euros per year for two years for hires in

Figure 3: Share of temporary and permanent employment



Data source : Istat

qualitative diffusion of temporary contracts in the Italian labour market. To do this, we exploit Istat and Eurostat data by means of Figures 3,A.8,A.9 and A.10. Figure 3 displays the gradual replacement of permanent employment with temporary one which has occurred in Italy over the recent past. In particular, the share of temporary contracts has increased by more than 6% since 2004, showing an evident spike since 2017 concurrently with the end of the incentives to hire with the "contratto a tutele crescenti". Figure A.8 shows that most of temporary contracts have a duration which is shorter than 12 months. We notice also that the share of temporary contracts lasting less than 6 months has experienced a significant increase after the crisis. Figure A.9 instead tells us that the replacement between temporary and permanent jobs has mainly concerned young cohorts of workers, among whom the share of temporary employment have tripled over the same period. Finally, Figure A.10 depicts how temporary contracts are more common in the south of Italy and therefore how, in general, precarious employment spreads in deprived areas more severely.

4 The estimation strategy

Section 6.1 presents the core of the empirical analysis and consists of the estimation of an endogenous switching regression model (Roy model) for (log) consumption of non-durable

2016, while they disappeared since 2017.

goods. This latter is a generalization of the standard sample selection (Tobit-2) model based on [Heckman, 1977]. An endogenous switching regression model comprises three simultaneous latent equations. In our case, we have

$$C^* = Z\beta^C + \epsilon^C \quad (1)$$

$$y^{T*} = X^T\beta^T + \epsilon^T \quad (2)$$

$$y^{P*} = X^P\beta^P + \epsilon^P, \quad (3)$$

where C^* is the latent selection equation into the two contract regimes, while y^{T*} and y^{P*} are the two latent outcome (consumption) equations for temporary and permanent regimes respectively. We impose $X^T=X^P$, namely that the same variables affect consumption of temporary and permanent households. Moreover we assume the disturbance terms to have a 3-dimensional normal distribution⁵,

$$\begin{pmatrix} \epsilon^C \\ \epsilon^T \\ \epsilon^P \end{pmatrix} \sim \mathcal{N} \left(\begin{pmatrix} 0 \\ 0 \\ 0 \end{pmatrix}, \begin{pmatrix} \sigma_c^2 & \sigma_{tc} & \sigma_{pc} \\ \sigma_{tc} & \sigma_t^2 & \sigma_{tp} \\ \sigma_{pc} & \sigma_{tp} & \sigma_p^2 \end{pmatrix} \right)$$

The econometrician however can only observe

$$C = \begin{cases} 0 & \text{if } C^* < 0 \\ 1 & \text{if } C^* \geq 0 \end{cases} \quad (4)$$

$$y^O = \begin{cases} y^{T*} & \text{if } C = 1 \\ y^{P*} & \text{if } C = 0 \end{cases} \quad (5)$$

In our context we only observe whether employees belong to the temporary (C=1) or the permanent (C=0) regime, according to the sign of the underlying latent selection equation (C^*). This implies that also the observed consumption levels are conditional to the contract regime that employees belong to. In other words we cannot observe y^{T*} and y^{P*} for the same household simultaneously. This prevents us to estimate the casual effect of being temporary employed on the propensity to consume non-durable goods with standard OLS techniques. These latter will in fact be biased as long as employees are not randomly assigned to the two employment regimes. The endogenous switching regression model overcomes this issue by means of a two-stage approach or a full maximum likelihood estimation. In the first case notice that,

⁵The variance of the selection error is usually normalized to one in empirical works

$$\begin{aligned}
\mathbb{E}[y^T \mid C = 1] &= \mathbb{E}[y^T \mid C^* > 0] = \mathbb{E}[y^T \mid Z\beta^C + \epsilon^C > 0] \\
&= \mathbb{E}[y^T \mid \epsilon^C > -Z\beta^C] \\
&= X^T\beta^T + \mathbb{E}[\epsilon^T \mid \epsilon^C < Z\beta^C] \\
&= X^T\beta^T + \sigma_{tc} \frac{\phi(Z\beta^C)}{\Phi(Z\beta^C)}
\end{aligned}$$

and similarly

$$\begin{aligned}
\mathbb{E}[y^P \mid C = 0] &= \mathbb{E}[y^T \mid C^* < 0] = \mathbb{E}[y^P \mid Z\beta^C + \epsilon^C < 0] \\
&= \mathbb{E}[y^P \mid \epsilon^C < -Z\beta^C] \\
&= X^P\beta^P + \mathbb{E}[\epsilon^P \mid \epsilon^C > Z\beta^C] \\
&= X^P\beta^P - \sigma_{pc} \frac{\phi(Z\beta^C)}{1-\Phi(Z\beta^C)}
\end{aligned}$$

where $\phi(\cdot)$ denotes the normal density function and $\Phi(\cdot)$ the cumulative normal distribution function. The terms $\frac{\phi(Z\beta^C)}{\Phi(Z\beta^C)}$ and $\frac{\phi(Z\beta^C)}{1-\Phi(Z\beta^C)}$ are known as Inverse Mills Ratios⁶. We therefore firstly estimate $\widehat{\beta^C}$ by probit maximum likelihood of the selection equation for the contract regime. These estimates are then used to construct the IMRs, which enter in the OLS estimation of the two outcome equations for consumption of non-durables as additional regressors. This two-stage procedure returns estimates for β^T , β^P , σ_{tc} and σ_{pc} . Our objective of interest is the entry of β^T and β^P associated with (log) income, which is one of the controls included in the outcome equations.

The covariance parameters tell us the direction and the magnitude of the selection effects. If $\sigma_{tc} > 0$ and $\sigma_{pc} < 0$ we have positive selection into both regimes. This means that those entering both employment groups tend to consume more than the population average in their respective regime. If $\sigma_{tc} > 0$ and $\sigma_{pc} > 0$ we have positive selection in the temporary regime and negative selection in the permanent one. In other words permanent households tend to consume less than the corresponding average population of permanent ones. The remaining cases mirror the ones already described.

Identification of the fully-parametric endogenous switching regression model is guaranteed by the non-linearity of the first stage selection equation. It is good practice however to improve it by means of at least one exclusion restriction, that is at least one variable contained in Z should be excluded from X^T and X^P . In Section 6, while presenting the results, we discuss our exclusion restriction in detail. But let us firstly introduce the survey and the sample we use to address our research questions.

⁶Sometimes $\frac{\phi(Z\beta^C)}{1-\Phi(Z\beta^C)}$ is also referred as the selection hazard rate.

5 Data

This paper uses data from the Survey on Household Income and Wealth (SHIW) provided by the Bank of Italy. It consists of a split-panel survey involving stratification and multi-stages of sampling. The survey is conducted every two years since 1977, although only since 1989 it reaches its final formulation. This survey contains detailed yearly information about the economic status and behaviour of Italian households. A description of all variables utilized in the analysis is provided by Table 9 in the Appendix.

We use all nine waves between 2000 and 2016, since wave 2000 is the first one containing the information on employees' contract type. We keep only the first interview of any household, in order to remove any degree of dependence among observations. We focus on single-earner households, since this allows us to create a sharp distinction between temporarily and permanently employed observations. We drop households in which the only earner gets more than one employment contract from different firms in the year of the interview.

Table 1: Observations by type of contract and n° of working months

Type	Working months	Observations	Total
Permanent	12 months	4221	4382
	< 12 months	161	
Temporary	12 months	392	661
	< 12 months	262	

Our main analysis considers workers employed in the private sector only, since we believe that the selection procedure into the contract regime could differ between public and private employers. A robustness check including both the private and the public sector is however performed in Section 7. For a similar reasoning we restrict the attention on the distinction between standard fixed-term and permanent contracts, removing all workers employed with temporary agency work contracts. These latter indeed can be either temporary or permanent types of employment relationship⁷, which is a non-available information in the SHIW survey and therefore the reason why we discard these observations from the analysis.

This selection procedure leads to the sample specification presented in Table 1. The share

⁷Temporary agency work contracts consist of triangular employment relationships. Agencies act as intermediaries and provide labour force to employers who request it, both in the form of permanent or temporary work.

of temporary employees in our sample turns out to be approximately 13%. Moreover, the share of temporary contracts increases as we approach recent waves, replicating the increasing trend depicted by Figure 3. As expected, a big share of temporary employees work for part of the year only, which is a much more rare event as far as the permanent regime is concerned.

6 Results

In this section we illustrate our findings. Section 6.1 presents the main result regarding consumption of non-durable goods. In particular we find that, other things being equal, a 1% increase in income leads temporary households experiencing a spell of unemployment to increase consumption of non-durables by 15.8% lower than their permanent counterpart. Section 6.2 instead presents the result on the likelihood of consuming durable goods. We find that the temporary regime is 7.1% points less likely to buy durable goods than the permanent one, regardless of the number of working months. These results have important implications to be considered when evaluating the effectiveness and the distortions generated by demand-side policies involving monetary transfers to certain social categories of the population.

6.1 Consumption of non-durables

Table 2 firstly estimates the baseline OLS model without any sample correction and with log consumption of non durable goods as dependent variable. We then (Table 3) estimate the associated two-stage Roy model which instead corrects for potential self-selectivity of workers into the two separate regimes of temporary and permanent employment. The coefficient on income and its interactions with the dummies referring to different categories of households are the objective of interest in this section. They in fact allow us to compare propensities to consume non-durable goods of different categories of households. These latter are firstly (Column 1 of Table 2) differentiated according to earners' type of contract only. We refer with the dummy TE to those households in which the only income earner has a temporary job. Then (Column 2 of Table 2) we distinguish households both according to earners' type of contract and whether he or she experiences a spell of unemployment in the year of the interview. For this purpose we end up with the following four categories of observations: households in which the only income earner is permanently employed and works for the entire year (reference group); households in which the only income earner is permanently employed and works for part of the year only (PEPY); households in which the only income earner is temporarily employed and works for the entire year (TEFY); households in which the only income earner is temporarily employed and works for part of the year only (TEPY);

None of the columns in Table 2 present a significant interaction term between the dummies by category of households and (log) income. However, Column 1 shows a negative coefficient for the interaction term between temporary employment (TE) and income. In other words temporary households seem to present a very weak evidence of a lower propensity to consume than the reference group of permanent households. Results in Column 2 are however more interesting. Distinguishing earners according to both the type of the employment contract

Table 2: Baseline OLS^a without sample correction

	<i>Dependent variable</i> : log consumption of non durable goods	
	Type (1)	Type and working months (2)
Constant	5.058*** (0.560)	5.005*** (0.622)
TE	0.363 (0.537)	
TEFY		-0.569 (0.644)
TEPY		1.078 (0.662)
PEPY		-0.342 (0.747)
Log(Income)	0.449*** (0.055)	0.453*** (0.062)
TE * Log(Income)	-0.037 (0.055)	
TEFY * Log(Income)		0.059 (0.066)
TEPY * Log(Income)		-0.112 (0.069)
PEPY * Log(Income)		0.039 (0.077)
Adj R-squared	0.585	0.587
Observations	5,043	5,043
Year dummies	Yes	Yes
Regional dummies	Yes	Yes
Wald test ^b χ^2	0.44	3.60*

- a Baseline OLS estimates of the model for (log) consumption of non durable goods without sample correction. Private sector only. Column 1 distinguishes households according to earners' type of contract only. Column 2 distinguishes households according to earners' type of contract and number of working months in the year of the interview. TE = Temporarily employed; PEPY = Permanently employed for part of the year; TEPY = Temporarily employed for part of the year. Control variables: TE (Column 1); TEPY, TEFY and PEPY (Column 2); Log(Income); Female; Wealth; Wealth_squared; Debt_ownership; Nmembers; Nmembers_squared; Big_city; Foreign; Age; Age_squared; Education; Education_squared; Year dummies; Regional dummies. Controls omitted for brevity. White's robust standard errors in parenthesis. Significance levels: *p<0.1; **p<0.05; ***p<0.01.
- b In Column 1 we test $H_0 : TE * Log(Income) = 0$ against $H_1 : TE * Log(Income) \neq 0$. In Column 2 we test $H_0 : TEPY * Log(Income) = PEPY * Log(Income)$ against $H_1 : TEPY * Log(Income) \neq PEPY * Log(Income)$.

and whether they experience a spell of unemployment, we find that temporary households

in which income earners do not work for the entire year of the interview (TEPY) present an interaction term of -0.112. This latter coefficient again turns out not to be significantly different from 0. The same however does not apply to permanent households in which the only income earner works for part of the year only (PEPY), which instead presents a smaller (in absolute value) and non-significant interaction term of 0.039. The coefficient associated with temporary households in which the only income earner is employed for the entire year (TEFY) instead corresponds to 0.059. At the bottom row of Table 2 we perform a Wald test which tests whether the interaction term associated with temporary households in which the only income earner works for part of the year equates the one associated with their permanent counterpart. This null hypothesis is rejected at a 10% confidence level. This result suggests us that having a temporary contract as only source of employment income and with an upcoming expiration date might imply a different marginal propensity to consume.

We therefore decide to investigate deeper this issue by implementing the endogenous switching regression model presented in Section 4. The conclusions drawn so far are in fact based on coefficients which potentially suffer of bias arising from the non-randomness allocation of workers into the two employment regimes. It is in fact reasonable to think that socio-economic characteristics affect the individual likelihood of getting a temporary rather than a permanent contract. To tackle this issue we estimate and report in Table 3 the two-stage procedure described before. Column 1 displays the 1st stage probit selection equation, where the dependent variable is an indicator variable equal to one whenever workers are temporarily employed. Column 2 reports the associated marginal effects of each covariate to the probability to get a temporary contract. Columns 3 and 4 instead present the two outcome (consumption) equations for the permanent and temporary regime respectively, distinguishing employees according to the type of contract only. Columns 5 and 6 finally reports the two outcome equations for the permanent and temporary regime, but differentiating earners according to both the type of the contract and whether they experience a spell of unemployment in the year of the interview or not.

The probit estimates suggest that young and low educated job-seekers are more likely to get a temporary contract, according to the coefficients on age, education and the corresponding squares. Moreover temporary employment is more (less) widespread in the south (north) by observing the coefficients on the (omitted) regional dummies, confirming what discussed at the end of Section 3.2. The coefficient on the size of the firm is particularly important, since this latter variable represents our exclusion restriction. We argue that, once we control for wage, there is no channel through which the size of the working place will affect consumption besides its effect, if any, on the type of contract offered to job-seekers. We indeed prefer to interpret our selection equation as an individual probability of getting a temporary

Table 3: Roy model with sample correction

	Selection Eq.		Outcome Eq.			
	Probit	Marginal effects	Type		Type and working months	
			Temporary	Permanent	Temporary	Permanent
	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.132 (0.086)	0.025 (0.016)	-0.012 (0.036)	-0.036* (0.019)	-0.003 (0.035)	-0.036* (0.019)
Age	-0.080*** (0.028)	-0.015*** (0.005)	-0.018 (0.011)	-0.003 (0.005)	-0.017 (0.011)	-0.003 (0.005)
Agesquared	0.001** (0.0003)	0.00014** (0.00006)	0.0002 (0.0001)	0.00004 (0.0001)	0.0002 (0.0001)	0.00003 (0.0001)
Education	-0.688*** (0.206)	-0.013*** (0.039)	-0.105 (0.088)	-0.004 (0.046)	-0.087 (0.092)	-0.004 (0.046)
Educationsquared	0.073** (0.030)	0.014** (0.006)	0.018 (0.012)	0.005 (0.006)	0.016 (0.013)	0.005 (0.006)
Nmembers	-0.259*** (0.095)	-0.049*** (0.018)	0.124*** (0.045)	0.116*** (0.017)	0.108** (0.044)	0.117*** (0.017)
Nmembersquared	0.033** (0.015)	0.006** (0.003)	-0.014** (0.007)	-0.010*** (0.003)	-0.011 (0.007)	-0.010*** (0.003)
Foreign	0.551*** (0.083)	0.104*** (0.015)	0.036 (0.056)	-0.069*** (0.025)	0.056 (0.054)	-0.070*** (0.025)
Big city	0.026 (0.086)	0.005 (0.016)	0.177*** (0.038)	0.051*** (0.015)	0.175*** (0.038)	0.051*** (0.015)
Firm size (IV)	-0.140*** (0.025)	-0.026*** (0.005)				
Wealth			-0.018 (0.028)	-0.029*** (0.011)	-0.012 (0.028)	-0.029*** (0.011)
Wealthsquared			0.006* (0.003)	0.004*** (0.001)	0.005 (0.003)	0.004*** (0.001)
Debt ownership			0.036 (0.031)	0.053*** (0.015)	0.031 (0.031)	0.053*** (0.016)
TEPY					1.548** (0.678)	
PEPY						-0.354 (0.758)
IMR_1			0.185** (0.089)		0.170* (0.090)	
IMR_0				0.032 (0.077)		0.032 (0.078)
Log(Income)			0.346*** (0.041)	0.460*** (0.061)	0.459*** (0.060)	0.459*** (0.067)
TEPY * Log(Income)					-0.158** (0.071)	
PEPY * Log(Income)						0.040 (0.078)
Constant	2.122*** (0.657)		6.177*** (0.462)	4.993*** (0.606)	5.043*** (0.632)	4.991*** (0.661)
R-squared	0.164		0.535	0.567	0.544	0.567
Observations	5,043	5,043	661	4,382	661	4,382
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes

a Estimation of the two-stage Roy model for (log) consumption of non durable goods with sample correction. Private sector only. First-stage selection equation in Column 1 with corresponding marginal effects in Column 2. Second-stage outcome equations in Columns 3-6. Size of the working place as only exclusion restriction. PEPY = Permanently employed for part of the year; TEPY = Temporarily employed for part of the year. Design based standard errors (selection stage) and bootstrapped standard errors (outcome stage) in parenthesis. *p<0.1; **p<0.05; ***p<0.01.

contract, rather than as a voluntary binary choice typical of standard endogenous switching regression models. The coefficient on the variable about the size of the working place turns out to be negative, suggesting that fixed-term contracts are more likely to be offered by small firms. We do not discuss the coefficients in Columns 2, which should be simply interpreted as the marginal contribution of each control variable to the probability of having a temporary occupation. Turning to Columns 3 and 4, results are similar to those already presented in Table 2. By distinguishing workers according to the type of the contract only, we find a 11.4% lower propensity to consume of temporary households, which is a slightly higher differential than the one observed in Column 2 of Table 2. The coefficients on the Inverse Mills ratio in Column 3 is significant at a 10% level, confirming the need to correct for the self-selectivity of job-seekers into the two employment regimes. Furthermore this latter coefficient is positive, suggesting how in our sample households in which the only income earner has a temporary job consume more than their average population. Results are more interesting when comparing Columns 5 and 6. While accounting for self-selectivity does not affect much the consumption equation of permanent households, it makes a difference as far as temporary ones are concerned. Now the category of temporary households in which the only income earner is temporarily employed and works for part of the year presents an interaction term of -0.158 , which is significant at a 5% level. This is not the case for the permanent counterpart, which instead presents a positive and non-significant interaction term of 0.040 . We also perform a baseline quantile regression analysis without sample correction in order to investigate which part of the distribution drives the effect observed in Table 3. Results are reported in Table 9 in the Appendix. It shows how the marginal propensity to consume of temporary households in which the only income earner experiences a spell of unemployment in the year of the interview turns out to be lower as we approach the upper tail of the distribution.

We conclude that we find evidence of a significantly lower marginal propensity to consume generated by the fact of having a temporary contract with an upcoming expiration date as only source of employment income. By correcting for the potential self-selectivity of workers into employment regimes, we infer that the possibility of anticipating the break in the job spell due to the fixed-term nature of temporary contracts induces single-earner households to save 15.8% more of an hypothetical 1% increase of income.

6.2 Consumption of durables

Table 4 reports the results of the baseline probit model with a binary indicator for consuming a positive amount of durable goods as dependent variable. Panel A focuses on the

distinction of employees according to the type of contract only, while Panel B differentiates workers also according to whether they experience a spell of unemployment in the year of the interview. We also estimate an endogenous switching bivariate probit model to address the potential endogeneity of the dummy for temporary employment in this non-linear model. This estimation strategy is similar to the one described in Section 4 for consumption of non-durable goods, apart from the fact that even at the second stage we estimate a probit model with a binary dependent variable⁸. The estimation therefore is performed by full-maximum likelihood rather than through a two-stage approach. A standard LR test can then be implemented to verify the correlation between the selection and the outcome equations. In our case, this test is rejected in the specifications presented in Table 5, suggesting that we can rely on the baseline probit model without sample correction to infer about the effect of having a temporary contract on the choice of consuming durable goods. Results of the endogenous switching bivariate probit are provided by Table 11 in the Appendix.

Column 1 of Table 4 focuses on the choice of buying durable goods in general. Columns 2 and 3 disaggregate durable goods between means of transport and other durable goods. Columns 4,5 and 6 report the corresponding marginal contribution of the controls of interest to the probability of consuming a positive amount of the corresponding category of durable goods. The dummy for temporary employment results to be negative in all Columns of Table 4. Moreover it turns out to be non-significant in Column 2 only. This suggests that, differentiating employees according to the type of the contract only, we find evidence that temporary households are less likely to buy durable goods. In particular they turn out to be less inclined to buy the category of other durable goods. Again we verify whether this results is driven by the substantial presence of temporary employees experiencing spells of unemployment, compared to the permanent regime. As far as consumption of durable goods is concerned this does not seem to be the case instead. Panel B of Table 4 in fact tells us that having a temporary contract reduces the likelihood of buying durable goods regardless of the number of working months in the year of the interview. In particular we observe that temporary households in which income earners do not experience spells of unemployment are less likely to buy any sort of durable goods than their permanent counterpart (the reference group). Those instead experiencing spells of unemployment present evidence of being less likely to buy other types of durable goods, but also weak evidence of being more likely to buy means of transport, which explains the non-significance of the corresponding weighted

⁸We also do not have two different outcome equations associated with two different regimes as in the standard endogenous switching regression model. The outcome equation now has a dummy for spending a positive amount of durable goods as dependent variable and the dummy for temporary employment as control of interest, whose potential endogeneity is captured by a first-stage selection equation similar to the one presented for the standard Roy model.

Table 4: Baseline probit for durable goods

	<i>Probit</i>			<i>Marginal effects</i>		
	I(Durables >0)	I(Means_of_transport >0)	I(Other_durables >0)	I(Durables >0)	I(Means_of_transport >0)	I(Other_durables >0)
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A</i>						
TE	-0.219** (0.096)	-0.098 (0.137)	-0.264*** (0.097)	-0.071** (0.031)	-0.016 (0.022)	-0.079*** (0.029)
Constant	-4.181*** (0.939)	-4.773*** (1.287)	-3.825*** (0.993)			
Pseudo R-squared	0.09	0.10	0.08			
Observations	5,043	5,043	5,043	5,043	5,043	5,043
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes
<i>Panel B</i>						
TEPY	-0.102 (0.154)	0.233 (0.188)	-0.283* (0.156)	-0.035 (0.050)	0.038 (0.031)	-0.085* (0.047)
TEFY	-0.271** (0.108)	-0.424*** (0.155)	-0.224* (0.115)	-0.087** (0.035)	-0.069*** (0.025)	-0.067** (0.034)
PEPY	0.197 (0.160)	0.024 (0.190)	0.240 (0.164)	0.064 (0.052)	0.002 (0.030)	0.072 (0.049)
Constant	-4.530*** (0.951)	-5.176*** (1.312)	-4.050*** (0.992)			
Pseudo R-squared	0.090	0.098	0.078			
Observations	5,043	5,043	5,043	5,043	5,043	5,043
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes

a Baseline probit estimates of the model for the choice of consuming durable goods without sample correction. Private sector only. Panel A distinguishes households according to earners' type of contract only. Panel B distinguishes households both according to earners' type of contract and number of working months in the year of the interview. TE = Temporarily employed. PEPY = Permanently employed for part of the year; TEPY = Temporarily employed for part of the year. Control variables omitted for brevity. Robust standard errors in parenthesis. Significance levels: *p<0.1; **p<0.05; ***p<0.01.

average coefficient for temporary employment in Column 2. Finally, permanent households in which the only income earner works for part of the year present weak evidence of being more likely to buy other types of durable goods, despite none of the associated coefficients results significantly different from zero.

Overall, we observe that the differences between temporary and permanent regimes in terms of consumption of durable goods are not driven by the upcoming expiration of the employment contract. On the contrary, just the fact of having a temporary job makes households more reluctant to buy certain categories of goods. This result meets our a priori expectations, since durable goods embody long-term characteristics by definition, which is opposed to the short-term nature of temporary jobs. In general, we find that having a temporary contract as only source of employment income reduces the probability of buying durable goods by 7.1% (Column 4 of Table 4).

To conclude, we also estimate a baseline ML Tobit model having the log transformation of consumption of durable goods as dependent variable. Results are reported in Table 11 in the Appendix and show how having a temporary contract reduces not only the probability of buying durable goods, but also the actual amount spent for this particular category of goods.

7 Robustness checks

This section tests the robustness of our findings to different sample specifications. Table 5 reports the estimation of the Roy model when including also the public sector in our sample. Notice that the categorical variable Firm size contains a specific value for workers employed in the public sector, which impedes us to exploit it in the same way of Section 6. We therefore use this variable to construct the following 7 dummy variables: Private firm with at most 5 employees (reference group); Private firm with 5-20 employees; Private firm with 20-49 employees; Private firm with 50-99 employees; Private firm with 100-499 employees; Private firm with more than 499 employees; Public sector. These dummies replace the variable Firm size used in Table 4 and are used as exclusion restrictions in our endogenous switching regression model comprising both the private and the public sector. Including the public sector in the sample mainly affects the composition of the permanent employment sub-sample, since most of employees working for the public administration have a permanent contract. More details about the composition of this new sample are provided by Table 9 in the Appendix. Again, temporary contracts are more common among small firms, according to the signs of the coefficients associated with our exclusion restrictions. The results of the outcome equations do not differ qualitatively from those presented in Section 6. There still exists a substantial differential in propensities to consume between temporary and permanent households in which income earners experience spells of unemployment in the year of the interview. In particular this latter now turns out to be even higher than the one obtained by restricting the attention on workers employed in the private sector only. It is also worthwhile to mention that the inclusion of the public sector makes the Inverse Mills ratio in Column 4 less significant than before, confirming how the selection procedure into contract regimes might differ between the public and the private sector.

Another robustness check is conducted by using lin-lin consumption equations rather than the log-log specification assumed in the rest of the work. The endogenous switching regression model is therefore estimated but using consumption and income levels⁹ instead of their log transformations. We decide to include a two-degree polynomial in income to capture the potential quadratic relationship between consumption and income. By distinguishing earners according to the type of contract only, Columns 1 and 2 of Table 6 still tell us that the temporary regime presents a lower propensity to consume non-durables than their permanent counterpart. Both temporary and permanent households show a linear consumption function, with the corresponding second-order term of the polynomial in income which do not turn out to be significant.

⁹Both consumption and income levels are expressed as thousands of euros.

Table 5: Roy model with sample correction and public sector

	Selection Eq.		Outcome Eq.			
	Probit	Marginal effects	Type		Type and working months	
			Temporary	Permanent	Temporary	Permanent
	(1)	(2)	(3)	(4)	(5)	(6)
Female	0.144*	0.026*	-0.035	-0.028*	-0.026	-0.028*
	(0.076)	(0.013)	(0.034)	(0.015)	(0.032)	(0.016)
Age	-0.072***	-0.013***	-0.004	-0.013	-0.004	
	(0.024)	(0.004)	(0.010)	(0.004)	(0.010)	(0.004)
Agesquared	0.0006**	0.0001**	0.0001	0.0001	0.0001	0.0001
	(0.0003)	(0.00005)	(0.0001)	(0.00005)	(0.0001)	(0.00005)
Education	-0.866***	-0.156***	-0.075	0.002	-0.054	0.002
	(0.182)	(0.033)	(0.091)	(0.044)	(0.094)	(0.044)
Educationsquared	0.101***	0.018***	0.014	0.004	0.011	0.004
	(0.026)	(0.005)	(0.012)	(0.006)	(0.013)	(0.006)
Nmembers	-0.247***	-0.044***	0.146***	0.123***	0.131***	0.123***
	(0.084)	(0.015)	(0.043)	(0.016)	(0.042)	(0.016)
Nmemberssquared	0.030**	0.005**	-0.017**	-0.012***	-0.015**	-0.012***
	(0.014)	(0.0025)	(0.007)	(0.003)	(0.007)	(0.003)
Foreign	0.560***	0.100***	0.061	-0.052**	0.081	-0.052**
	(0.079)	(0.014)	(0.057)	(0.023)	(0.055)	(0.023)
Big city	0.035	0.006	0.147***	0.050***	0.146***	0.050***
	(0.078)	(0.014)	(0.035)	(0.013)	(0.036)	(0.013)
Private firm with 5-20 employees (IV)	-0.103	-0.023				
	(0.083)	(0.018)				
Private firm with 20-49 employees (IV)	-0.174	-0.037				
	(0.132)	(0.027)				
Private firm with 50-99 employees (IV)	-0.535***	-0.096***				
	(0.143)	(0.022)				
Private firm with 100-499 employees (IV)	-0.440***	-0.082***				
	(0.149)	(0.025)				
Private firm with more than 500 employees (IV)	-0.837***	-0.128***				
	(0.161)	(0.020)				
Public sector	-0.377***	-0.073***				
	(0.105)	(0.020)				
Wealth			-0.016	-0.033***	-0.012	-0.033***
			(0.026)	(0.009)	(0.026)	(0.009)
Wealthsquared			0.006**	0.005***	0.005*	0.005***
			(0.003)	(0.001)	(0.003)	(0.001)
Debt ownership			0.047	0.051***	0.041	0.050***
			(0.030)	(0.013)	(0.030)	(0.013)
TEPY					1.564**	
					(0.615)	
PEPY						-0.163
						(0.666)
IMR_1			0.158*		0.144	
			(0.087)		(0.088)	
IMR_0				0.054		0.055
				(0.070)		(0.070)
Log(Income)			0.343***	0.460***	0.457***	0.461***
			(0.038)	(0.051)	(0.055)	(0.056)
TEPY * Log(Income)					-0.161**	
					(0.064)	
PEPY * Log(Income)						0.020
						(0.068)
Constant	2.091***		6.139***	4.988***	4.991***	4.970***
	(0.610)		(0.428)	(0.512)	(0.588)	(0.555)
R-squared	0.160		0.521	0.578	0.530	0.578
Observations	6,381	6,381	749	5,632	749	5,632
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes

a Estimation of the two-stage Roy model for (log) consumption of non durable goods with sample correction. Private and Public sector included. First-stage selection equation in Column 1 with corresponding marginal effects in Column 2. Second-stage outcome equations in Columns 3-6. Size of the working place as only exclusion restriction. PEPY = Permanently employed for part of the year; TEPY = Temporarily employed for part of the year. Design based standard errors (selection stage) and bootstrapped standard errors (outcome stage) in parenthesis. *p<0.1; **p<0.05; ***p<0.01.

Once we distinguish workers also by exploiting the information on the number of working months in the year of the interview, we notice again how the difference between the two regimes is mainly driven by those households in which the only income earner is employed for part of the year. The interaction with the income term of degree one is positive and significant under the permanent regime only, while the one with the term of second degree is identical between temporary and permanent households. This result suggests us that the difference in propensities to consume between these two different categories of households arise at low levels of income mostly. Interestingly, the fact of experiencing a spell of unem-

Table 6: Roy model with sample correction and in levels

	Outcome equations			
	Type		Type and duration	
	Temporary	Permanent	Temporary	Permanent
	(1)	(2)	(3)	(4)
Income	0.375*** (0.079)	0.582*** (0.072)	0.499*** (0.103)	0.584*** (0.074)
Incomesquared	0.002 (0.002)	-0.0005 (0.0004)	0.001 (0.002)	-0.001 (0.0004)
TEPY * Income			0.146 (0.213)	
TEPY * Incomesquared			-0.010* (0.005)	
PEPY * Income				0.490*** (0.175)
PEPY * Incomesquared				-0.010*** (0.003)
IMR_0		-0.682 (1.470)		-0.675 (1.468)
IMR_1	1.949 (1.394)		1.928 (1.404)	
TEPY			0.914 (1.665)	
PEPY				-3.248* (1.810)
Constant	9.517*** (3.365)	2.179 (4.148)	7.618** (3.419)	2.063 (4.146)
Adj R-squared	0.620	0.639	0.627	0.640
Observations	661	4,382	661	4,382
Year dummies	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes

a Estimation of the two-stage Roy model for (log) consumption of non durable goods with sample correction. Selection stage removed since identical to Table 3. Private sector only. Log transformation of income replaced by a second-order polynomial in income level. PEPY = Permanently employed for part of the year; TEPY = Temporarily employed for part of the year. Controls omitted for brevity. Bootstrapped standard in parenthesis. *p<0.1; **p<0.05; ***p<0.01.

ployment transforms the linear relationship between consumption and income presented by

households in which income earners work for the entire year into a concave one. This result is consistent with [Carroll and Kimball, 1996], which shows analitically how concavity of the consumption function arises whenever uncertainty is added to a standard optimization problem. Moreover even temporary households in which the only income earner works for the entire year seem to present some evidence of a lower propensity to consume (0.499) than the one associated with their permanent counterpart (0.584), which is a result somehow mitigated by the log-log specification used in Section 5. Overall, Table 6 seems to confirm our results derived with the log-log specification, and therefore that having a temporary contract as only source of employment income reduces the marginal propensity to consume non-durable goods, especially for those households in which income earners have a short remaining duration of their temporary contracts and present low income levels.

Table 7: Roy model with parametric e non parametric propensity score

	Outcome equations							
	Parametric propensity score				Non-parametric propensity score			
	Type		Type and working months		Type		Type and working months	
	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary	Permanent
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Log_Income	0.349*** (0.041)	0.459*** (0.061)	0.461*** (0.059)	0.459*** (0.067)	0.352*** (0.041)	0.461*** (0.059)	0.461*** (0.060)	0.460*** (0.065)
PEPY * Log_Income				0.041 (0.079)				0.040 (0.077)
TEPY * Log_Income			-0.157** (0.071)				-0.152** (0.072)	
pscore	-0.538 (0.389)	-0.131 (0.225)	-0.454 (0.391)	-0.125 (0.229)	-0.080 (0.246)	-0.016 (0.193)	-0.103 (0.248)	-0.022 (0.193)
pscore_squared	0.075 (0.367)	0.176 (0.349)	0.029 (0.362)	0.166 (0.363)	-0.117 (0.207)	0.444 (0.476)	-0.071 (0.210)	0.454 (0.476)
PEPY				-0.361 (0.761)				-0.353 (0.748)
TEPY			1.532** (0.675)			1.488** (0.683)		
Constant	6.598*** (0.528)	4.998*** (0.622)	5.421*** (0.694)	4.996*** (0.682)	6.095*** (0.462)	4.898*** (0.593)	5.008*** (0.616)	4.897*** (0.648)
Adj R-squared	0.535	0.567	0.544	0.567	0.536	0.568	0.544	0.568
Observations	4,382	661	4,382	661	4,382	661	4,382	661
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

a Estimation of the two-stage Roy model for (log) consumption of non durable goods with sample correction. Private sector only. Inverse Mills ratios replaced by a second-order polynomial in the propensity score. Propensity score estimated through a fully-parametric probit model in Columns 1-4, and through the semi-parametric Klein and Spady's estimator in Columns 5-8. PEPY = Permanently employed for part of the year; TEPY = Temporarily employed for part of the year. Controls omitted for brevity. Bootstrapped standard errors omitted for brevity. *p<0.1; **p<0.05; ***p<0.01.

The last robustness check we propose consists of estimating the endogenous switching regression model with a polynomial of degree two in the propensity score of obtaining a temporary contract as a replacement for the Inverse Mills ratios. This allows us to partially relax the distributional assumptions implicitly assumed by the endogenous switching regression model presented in Section 4. Table 7 reports the results. Columns 1-4 simply uses the propensity score obtained from the estimation of a probit selection equation, without performing the transformation to derive the Inverse Mills ratios. Columns 5-8 instead computes the propen-

sity score non-parametrically following [Klein and Spady, 1993]. Figures A.11-A.14 plot the propensity scores of the temporary and permanent regimes under both the estimation procedures. The individual propensity score and its square are then included in the outcome equations as additional regressors. Results of the two approaches are consistent with the rest of the analysis and similar between each other, despite the need for correcting for the selection bias is weaker with this new specification. This makes us confident that the results are not extremely sensitive to the distributional and functional form assumptions presented in Section 4.

8 Conclusions

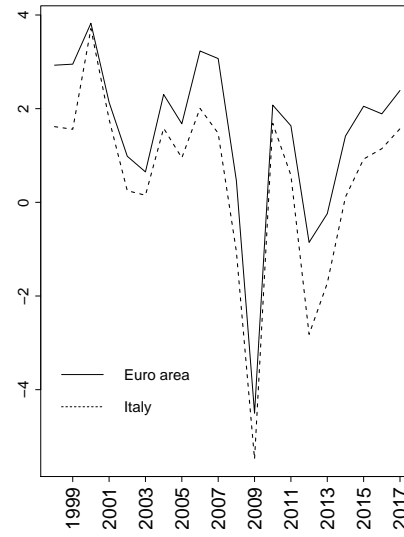
Several studies aim at studying the effects of increasing labour market flexibility. Most of them however focuses on the consequences that removing rigidities has on the labour supply, ignoring any other source of distortion that this political economy can potentially introduce in other markets. This paper evaluates the effects of being temporarily employed on households' consumption decisions, and provide supporting evidence of a precautionary savings behaviour of temporarily employed workers.

Focusing on single-earner households only, we estimate an endogenous switching regression model for consumption of non-durable goods between temporary and permanent households, which are distinguished according to earners' type of contract. We find that temporary households in which the only income earner experiences a spell of unemployment in the year of the interview present a 15.8% lower propensity to consume non-durable goods than their permanent counterpart. This result suggests that households possibly anticipating the upcoming expiration of their employment contract would spend a significant lower amount of an hypothetical 1% increase in income than their permanent counterpart. Our results show and correct for the selection bias deriving from the non-random allocation of workers, which seems to play an important role when considering the allocation of job-seekers among different contract regimes. Moreover we find that having a temporary contract as only source of employment income reduces the probability of buying durable goods by 7,1%, regardless of the fact of experiencing a break in the job spell in the year of the interview. This additional result meets our a priori expectations, since durable goods embody long-term features by definition, which are opposed to the short-term nature of temporary jobs.

Our findings provide new implications to consider when evaluating the effectiveness and the distortions generated by demand-side policies involving monetary transfers to social categories of the population. The quantification of these aggregate effects on the basis of our results is left for future research.

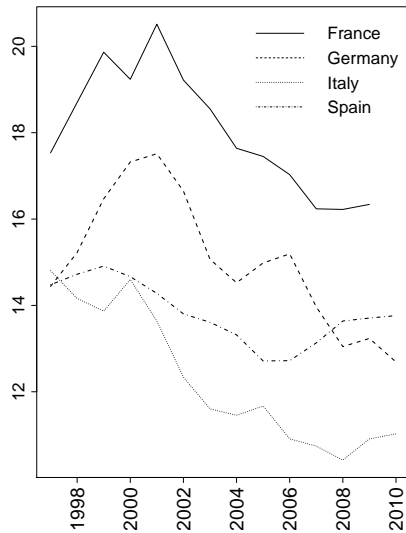
A Appendix

Figure A.1: GDP growth rate



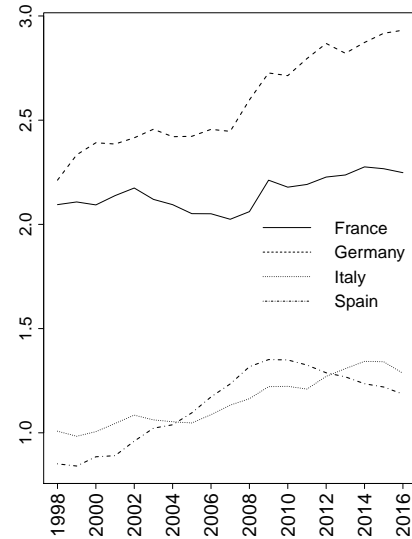
Data source : Eurostat

Figure A.2: ICT investments



Data source : Eurostat

Figure A.3: R&D investments



Data source : Eurostat

Figure A.4: GDP per hour worked

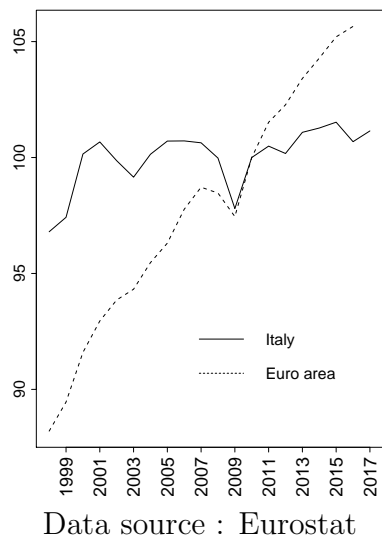


Figure A.5: Female employment rate (%)

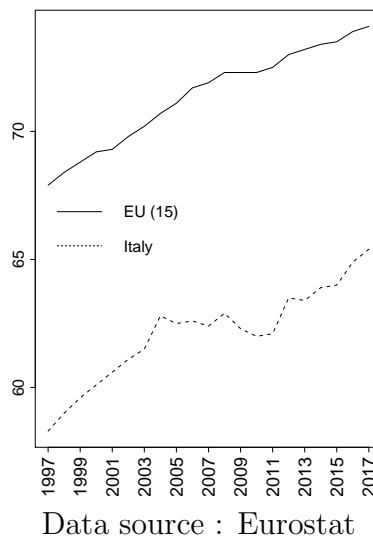


Figure A.6: Youth unemployment rate (%)

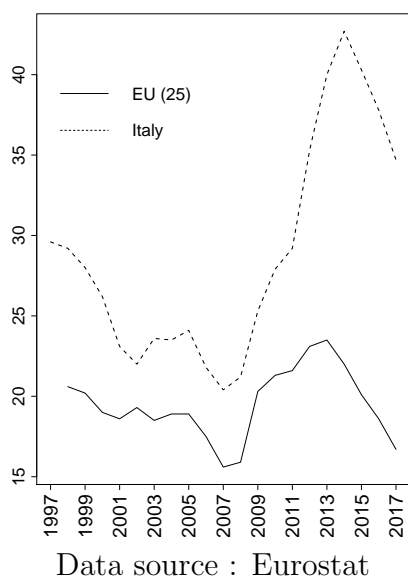


Figure A.7: Overqualified workers (%)

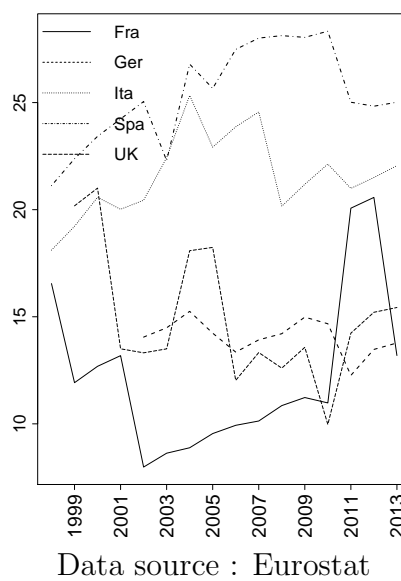
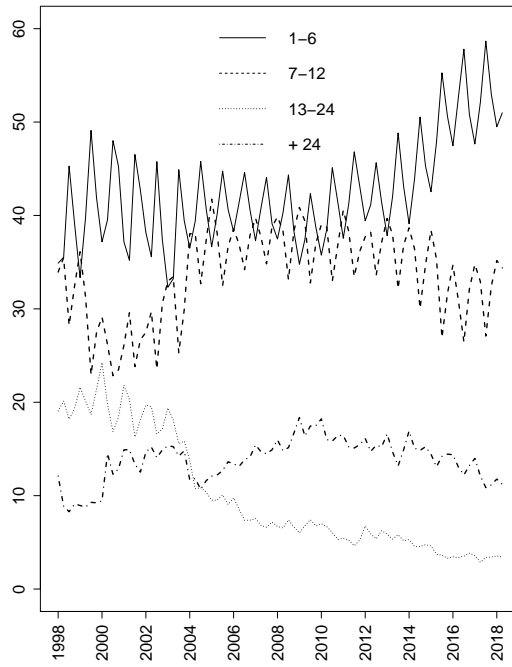
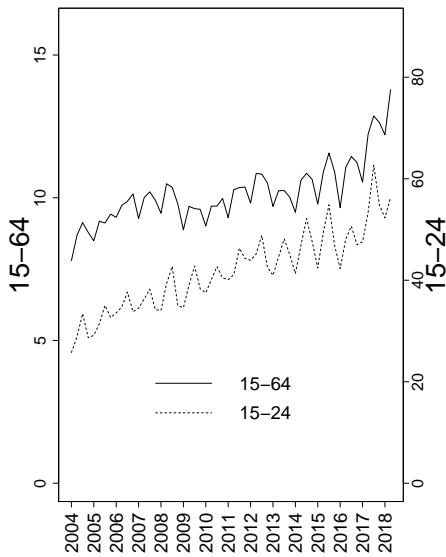


Figure A.8: Share of temporary employment by duration (months)

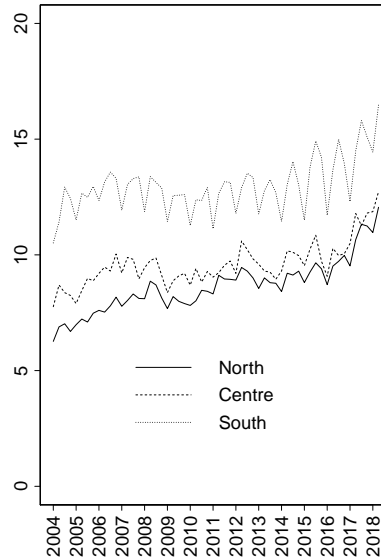


Data source : Eurostat

Figure A.9: Share of temporary jobs by age Figure A.10: Share of temporary jobs by area



Data source: Istat



Data source: Istat

Table 8: Variables description

Variable	Description
<i>Dependent variables</i>	
Log of non-durables consumption	Logarithm transformation of households consumption levels of non-durable goods.
I(Durables>0)	Indicator function equal to one if households' consumption level of durable goods is positive.
I(Means_of_transport>0)	Indicator function equal to one if households' consumption level of means of transport is positive.
I(Other_durables>0)	Indicator function equal to one if households' consumption level of other durable goods is positive.
<i>Independent variables</i>	
Log(Income)	Logarithm transformation of households' income.
TE	Dummy variable equal to one if the only income earner is temporarily employed
PEPY	Dummy variable equal to one if the only income earner is permanently employed and experiences a spell of unemployment in the year of the interview
TEPY	Dummy variable equal to one if the only income earner is temporarily employed and experiences a spell of unemployment in the year of the interview
Female	Indicator function equal to one if income earners are female.
Debt ownership	Indicator function equal to one if households debts are bigger than zero.
Wealth	Categorical variable ranging from 1 to 10 corresponding to deciles of the population in terms of assets wealth.
Wealthsquared	Square of the variable Wealth.
Nmembers	Number of households' members.
Nmemberssquared	Square of the variable Nmembers.
Big city	Indicator function equal to one if households live in cities with more than 200.000 inhabitants.
Foreign	Indicator function if income earners are not native Italians.
Age	Discrete variable indicating age of income earners.
Agesquared	Square of the variable age.
Education	Categorical variable ranging from 1 to 6 indicating the level of education of income earners.
Educationsquared	Square of the variable education.
Firm size	Categorical variable ranging from 1 to 7 indicating the size of the working place in terms of employees. A value of 7, however, is associated with the public sector.

Private firm with 5-20 employees	Dummy variable equal to one if the size of the working place is up to 20 employees
Private firm with 20-49 employees	Dummy variable equal to one if the size of the working place is between 20 and 49 employees
Private firm with 50-99 employees	Dummy variable equal to one if the size of the working place is between 50 and 99 employees
Private firm with 100-499 employees	Dummy variable equal to one if the size of the working place is between 100 and 499 employees
Private firm with more than 500 employees	Dummy variable equal to one if the size of the working place is over than 500 employees

Table 9: Observations by type of contract and n° of working months (with public sector)

Type	Working months	Observations	Total
Permanent	12 months	5446	5632
	< 12 months	186	
Temporary	12 months	446	749
	< 12 months	303	

Table 10: Quantile regression without sample correction

<i>Dependent variable : log consumption of non durable goods</i>					
	τ				
	0.1	0.25	0.5	0.75	0.9
<i>Panel A :</i>					
Log(Income)	0.504***	0.551***	0.521***	0.506***	0.505***
TE * Log(Income)	-0.03	-0.080**	-0.045**	-0.056*	-0.100*
TE	0.32	1.126***	0.805**	0.545*	0.984***
Constant	4.143***	3.776***	4.346***	4.873***	4.890***
Pseudo R-squared	0.335	0.360	0.375	0.398	0.429
Observations	5,043	5,043	5,043	5,043	5,043
Year dummies	Yes	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes
	τ				
	0.1	0.25	0.5	0.75	0.9
<i>Panel B :</i>					
Log(Income)	0.510***	0.548***	0.535***	0.532***	0.527***
PEPY * Log(Income)	-0.076	0.062	-0.056**	-0.006	0.040
TEFY * Log(Income)	-0.029	-0.016	0.064**	0.065*	0.028
TEPY * Log(Income)	0.032	-0.067**	-0.199***	-0.231***	-0.280**
PEPY	0.691	-0.582	0.591*	0.128	-0.306
TEFY	0.264	0.167	-0.573*	-0.616*	-0.285
TEPY	-0.219	0.707**	1.900***	2.191***	2.683**
Constant	4.079***	3.792***	4.214***	4.578***	4.640***
Pseudo R-squared	0.337	0.361	0.378	0.404	0.437
Observations	5,043	5,043	5,043	5,043	5,043
Year dummies	Yes	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes

- a Estimation of the quantile regressions for (log) consumption of non durable goods without sample correction. Private sector only. Panel A distinguishes households according to earners' type of contract. Panel B distinguishes households both according to earners' type of contract and number of working months in the year of the interview. TE = Temporarily employed; PEPY = Permanently employed for part of the year; TEPY = Temporarily employed for part of the year. Controls identical to Table 2 and omitted for brevity. *p<0.1; **p<0.05; ***p<0.01.

Table 11: Bivariate probit for the choice of consuming durable goods

	I(Durables >0)	I(Means_of_transport >0)	I(Other_durables >0)
	(1)	(2)	(3)
TE	-0.123 (0.127)	-0.303* (0.149)	-0.053 (0.129)
$\rho_{1,2}$	0.108 (0.137)	0.261 (0.178)	-0.080 (0.138)

a Bivariate probit to account for the potential endogeneity of the temporary employment dummy in the choice for durables consumption equation. Private sector only. TE = Temporarily employed. Correlation between error terms in both equations indicated by $\rho_{1,2}$. Controls omitted for brevity. Robust standard errors in parenthesis. *p<0.1; **p<0.05; ***p<0.01.

Table 12: Baseline tobit for durable goods

	<i>Tobit</i>					
	Type			Type and working months		
	Log_Durables	Log_Means_of_transport	Log_Other_durables	Log_Durables	Log_Means_of_transport	Log_Other_durables
	(1)	(2)	(3)	(4)	(5)	(6)
TE	-0.499** (0.207)	-0.351 (0.452)	-0.660*** (0.230)			
TEPY				-0.230 (0.336)	0.776 (0.606)	-0.707* (0.375)
TEFY				-0.625*** (0.233)	-1.488*** (0.526)	-0.559** (0.268)
PEPY				0.395 (0.329)	0.077 (0.658)	0.554 (0.368)
Constant	-9.102*** (1.905)	-16.731*** (4.245)	-9.118*** (2.238)	-9.817*** (1.920)	-17.946*** (4.269)	-9.648*** (2.235)
Pseudo R-squared	0.051	0.064	0.047	0.052	0.067	0.048
Observations	5,043	5,043	5,043	5,043	5,043	5,043
Uncensored	1,564	474	1,268	1,564	474	1,268
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes

a Baseline ML estimates of the tobit model for (log) consumption of durable goods without sample correction. Private sector included only. TE = Temporarily employed; PEPY = Permanently employed for part of the year; TEFY = Temporarily employed for the entire year; TEPY = Temporarily employed for part of the year. Robust standard errors omitted for brevity. *p<0.1; **p<0.05; ***p<0.01.

Figure A.11: Parametric propensity score distribution of temporary workers

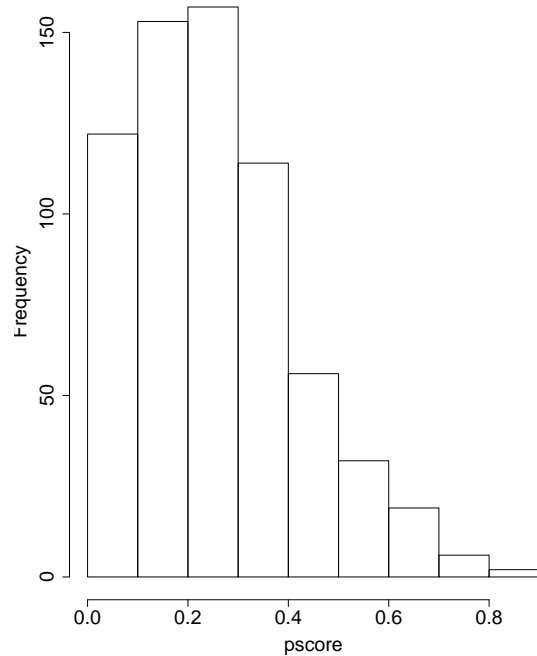


Figure A.12: Parametric propensity score distribution of permanent workers

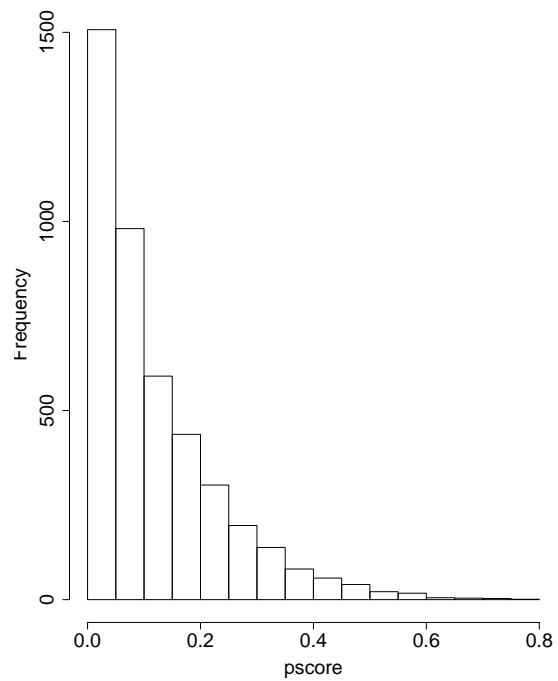


Figure A.13: Non-parametric propensity score distribution of temporary workers

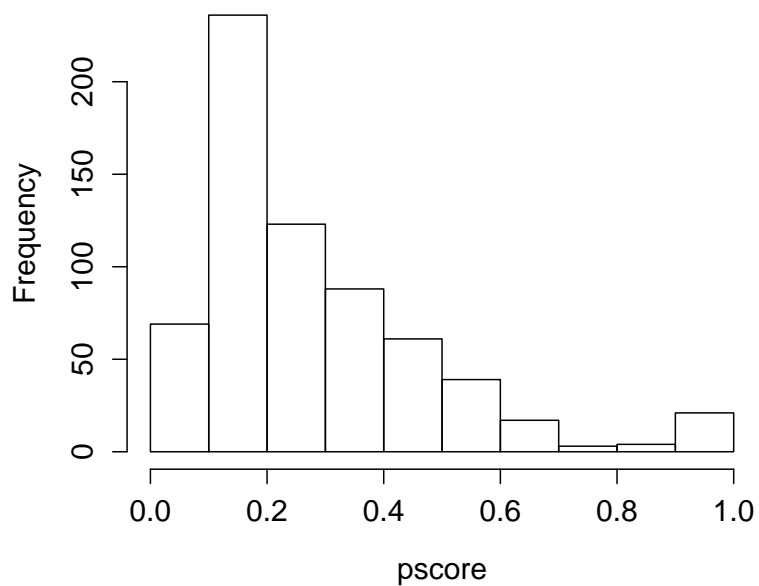
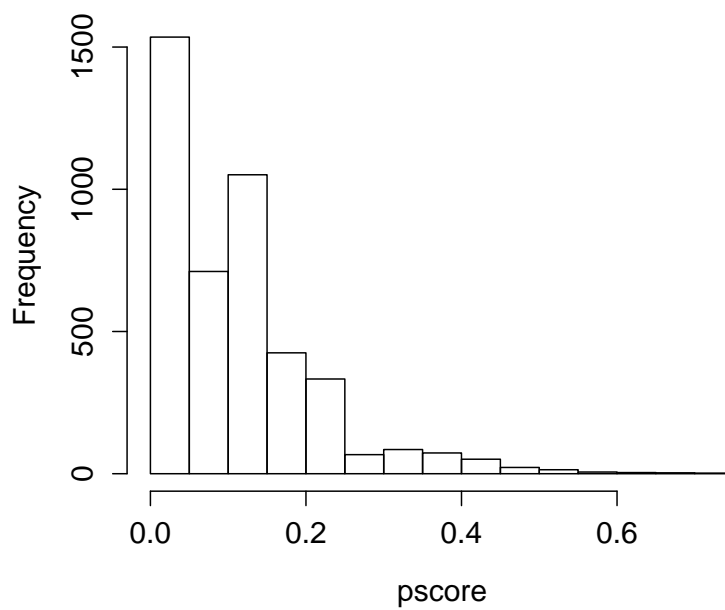


Figure A.14: Non-parametric propensity score distribution of permanent workers



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