

Undeclared Work - Evidence from France

AitBihiOuali, Laila; Bargain, Olivier

Veröffentlichungsversion / Published Version

Zeitschriftenartikel / journal article

Empfohlene Zitierung / Suggested Citation:

AitBihiOuali, L., & Bargain, O. (2021). Undeclared Work - Evidence from France. *Economie et Statistique / Economics and Statistics*, 526-527, 71-92. <https://doi.org/10.24187/ecostat.2021.526d.2053>

Nutzungsbedingungen:

Dieser Text wird unter einer Deposit-Lizenz (Keine Weiterverbreitung - keine Bearbeitung) zur Verfügung gestellt. Gewährt wird ein nicht exklusives, nicht übertragbares, persönliches und beschränktes Recht auf Nutzung dieses Dokuments. Dieses Dokument ist ausschließlich für den persönlichen, nicht-kommerziellen Gebrauch bestimmt. Auf sämtlichen Kopien dieses Dokuments müssen alle Urheberrechtshinweise und sonstigen Hinweise auf gesetzlichen Schutz beibehalten werden. Sie dürfen dieses Dokument nicht in irgendeiner Weise abändern, noch dürfen Sie dieses Dokument für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, aufführen, vertreiben oder anderweitig nutzen.

Mit der Verwendung dieses Dokuments erkennen Sie die Nutzungsbedingungen an.

Terms of use:

This document is made available under Deposit Licence (No Redistribution - no modifications). We grant a non-exclusive, non-transferable, individual and limited right to using this document. This document is solely intended for your personal, non-commercial use. All of the copies of this documents must retain all copyright information and other information regarding legal protection. You are not allowed to alter this document in any way, to copy it for public or commercial purposes, to exhibit the document in public, to perform, distribute or otherwise use the document in public.

By using this particular document, you accept the above-stated conditions of use.

Undeclared Work – Evidence from France

Laila AitBihiOuali* and Olivier Bargain**

Abstract – This study quantifies undeclared work patterns in France using a unique pilot survey which collects data on households' demand and supply of undeclared work (*Enquête pilote auprès des ménages sur la fraude*). It also proposes an international comparison at the European level using Eurobarometer data. Socio-demographic characteristics fail to explain the variance in undeclared work, while subjective factors are strongly associated with households' supply and demand for undeclared work. This suggests the underlying influence of intrinsic, extrinsic and peer effects. Similar results from the Eurobarometer allow for a cross-validation of the two surveys. We obtain similar correlates for undeclared work in France and countries where undeclared work is also a supplementary income (Denmark and Germany). This suggests homogeneous patterns across European countries.

JEL Classification: E26, H26, J46, O17

Keywords: undeclared work, informal work, declared work, underground economy, shadow economy

* Southampton University and Imperial College London (laitbihi@imperial.ac.uk); ** Bordeaux University, Institut Universitaire de France and IZA (olivier.bargain@u-bordeaux.fr)

We would like to thank Nadia Joubert, Christine Rigodanzo and Alain Fournat, as well as two anonymous reviewers for their comments and suggestions.

Received in June 2019, accepted in February 2021. Translated from "Le Travail Dissimulé en France".

The opinions and analyses presented in this article are those of the author(s) and do not necessarily reflect their institutions' or Insee's views.

Citation: AitBihiOuali, L. & Bargain, O. (2021). Undeclared Work – Evidence from France. *Economie et Statistique / Economics and Statistics*, 526-527, 71–92. doi: 10.24187/ecostat.2021.526d.2053

The informal economy is composed of all commercial goods and services whose production is deliberately concealed from public authorities, in order to avoid (i) the payment of taxes or social security contributions, (ii) labour market regulations and (iii) certain administrative procedures (Slemrod & Weber, 2012; Schneider & Enste, 2013). Undeclared work falls within this scope as it escapes the system of taxation and social security contributions. Thus, undeclared work contributes to both a reduction in public income and an imbalance in public accounts (for the case of France, see the Farriol report, 2014). It is also detrimental to the workers who undertake such work, as they are not afforded legal protection (Bajada & Schneider, 2009).¹ We propose here an analysis of undeclared work that we define as activities that are legal but not declared to social, tax and labour authorities.

Undeclared work is a phenomenon that varies in scale but is never negligible in any European country (Schneider, 2002):² on the labour supply side, 4.6% of individuals in the euro area report having made use of undeclared work in 2013 (Eurobarometer). On the demand side, 7.3% of households reported having paid for undeclared personal services. The personal services sector, which is set to grow because of an ageing society, is often associated with high rates of non-declaration. This is occurring despite the development of financial incentives (e.g., tax credits, or the *chèque emploi service universel*, which is a scheme to facilitate the use and declaration of personal services). Therefore, it is important to understand the institutional and cultural factors and those associated with labour market conditions that may influence levels of undeclared work. The respective roles of these factors may strongly influence the public policies to be implemented to combat this phenomenon.

We base our work on a pilot household survey on fraud (*Enquête pilote auprès des ménages sur la fraude*, hereafter EPMF). The joint use of the EPMF and the CRÉDOC survey on living conditions provides information on the supply of undeclared work in France as well as the demand as it collects information on the use of undeclared personal services.³ This article first proposes a quantification of undeclared work based on the EPMF; this quantification is in line with the recent literature on the measurement of undeclared work and more generally of tax evasion. While part of this field of research aims to detect indirect evidence of underground economic activities (Slemrod & Weber, 2012), the present study relies on the direct analysis

of individual responses regarding fraudulent behaviour. We highlight the obvious risks of under-reporting of these behaviours and propose a sensitivity analysis which is itself based on the joint analysis of several variables from (i) the EPMF and (ii) another sample with a very comparable structure: the France module of the Eurobarometer survey.

We then propose a series of estimates of undeclared work on a set of correlates that are potential determinants of undeclared work. We use the socio-demographic and economic characteristics provided in the EPMF as well as the richness of that survey in relation to subjective aspects: civic values, fraud fraud acceptability, perception of fraudulent behaviours of peers and relatives, and finally, the perceived risk and penalties associated with undeclared work and other fraudulent behaviours. This analysis shows that the two types of variables have complementary effects on the propensity to resort to undeclared work. In other words, the subjective elements (values, perceptions, etc.) do not reflect the behaviour of specific socio-demographic groups but capture an additional degree of subjective heterogeneity that complements the description of the individuals who are engaged in undeclared work well. In the absence of an exogenous variation of these factors, our analysis does not allow the causes to be identified. Nevertheless, the correlations obtained can be interpreted in the light of the literature and simple intuitions in relation to the potential mechanisms of the undeclared labour supply.

Finally, we replicate our statistical estimations using the French module of the Eurobarometer. This sample is smaller than the EPMF, yet some of the results obtained are similar between the EPMF and the Eurobarometer. This provides an implicit cross-validation of the two databases. We can then make a European comparison with estimates for some nearby countries or for the whole euro area, plus the UK, Sweden and Denmark. The impact of socio-demographic characteristics on undeclared work is of comparable magnitude in France, Germany and some Nordic countries. The effects of subjective

1. The latter point mainly relates to fully concealed employment, which is relevant for countries with barriers to entry into the formal sector (Perry et al., 2007), and is less about undeclared supplementary work as in France.

2. See the CNIS report (Tagnani, 2017) for a very thorough review of undeclared work in France.

3. The EPMF is the result of a joint initiative by the Délégation Nationale à la Lutte contre la Fraude (DNLF) and the Direction Générale des Entreprises (DGE), which we thank for access to the data. We are particularly grateful to Nadia Joubert for her coordination role and to Christine Rigodanzo and Alain Founa for their comments and suggestions.

heterogeneity (i.e. the fraud acceptability and the perceived risk of sanctions associated with fraud) on undeclared work practices are also similar between these countries. Germany and the Scandinavian countries seem to be closer to France in terms of undeclared work and tax fraud than in terms of social benefit fraud (Algan & Cahuc, 2009).

1. Undeclared Work in the Literature

A large strand of literature aims to quantify the size and monetary value of the underground economy and informal work. Since no direct measurement is possible, some studies' methodology consists in measuring the gap between consumption levels and income levels, with the latter assumed to be underestimated due to undeclared activities (Pissarides & Weber, 1989; Lyssiotou *et al.*, 2004). Others measure the gap between income levels reported in household surveys (assumed to be correct) and that known from administrative data (Benedek & Lelkes, 2011). The gaps seem to be significant in sectors in which income is difficult to control, namely agriculture and self-employment. Other work nonetheless observes how tax returns react to randomised audits (Kleven *et al.*, 2011) or changes in legislation (Fack & Landais, 2016).

The literature also seeks to identify the determinants of any underground activity. Theoretical studies (e.g., Cowell, 1985), have characterised taxation and legal constraints as factors increasing the risk of income concealment through undeclared work. Many empirical studies explicitly model these behaviours using structural models and taking into account taxation or charges on formal work (Lacroix & Fortin, 1992; Frederiksen *et al.*, 2005; Fortin *et al.*, 2004; Lemieux *et al.*, 1994). Others use natural experiments using variations in the level of taxation, for example between regions (Brülhart & Parchet, 2014). In our analysis, we take into account a measure of perceived tax pressure.

The monitoring system and the risk of sanctions involved are emphasised in some work on extrinsic motivations (Andreoni *et al.*, 1998); so is the quality of institutions (Torgler & Schneider, 2009). It is perception that is important: that of the effective intensity of monitoring (Trandel & Snow, 1999) or the often overestimated level of punishment (Chetty *et al.*, 2009). We will use two variables on the perception of risk and potential sanctions. The perception of the tax system is also influenced by the people around the individual, with potentially important peer effects

(Feld & Tyran, 2002). Experimental methods reveal the influence of virtuous behaviour around us (Fortin *et al.*, 2007). Studies also analyse peer effects on the demand for undeclared work for French companies (Joubert, 2003). Bellemare *et al.* (2012) and Galbiati & Zanella (2008) show their impact on corporate social fraud. In our study, we use a variable relating to the perception of fraudulent behaviour in one's direct surroundings and beyond.

More recently, the literature has also focused on intrinsic motivations such as moral satisfaction (warm glow), fiscal morality or civic values (Luttmer & Singhal, 2014). Surveys such as the Eurobarometer (as well as the World and European Values Surveys) or the EPMF make it possible to isolate these values (along with variables such as the fraud acceptability) and their correlation with undeclared work behaviour. Numerous studies use international variation (Williams & Horodnic, 2016), the role of home culture (Halla, 2012; Algan & Cahuc, 2009) or institutional choices, for example the fact that a broad tax base can deter opportunistic behaviour (see Kleven, 2014). Experimental approaches test responses to alternative messages emphasising morality, peer effects or the weight of penalties (Haynes *et al.*, 2012); they highlight the high level of heterogeneity in the influence of intrinsic and extrinsic motivations (Dwenger *et al.*, 2016). Using a representative survey, we confirm the importance of all these factors, which, together, explain a not insignificant proportion of undeclared work.

2. Data and Quantification of Undeclared Work

In this study, undeclared work covers the scope of activities that are legal but not declared to social, tax and labour authorities. In order to quantify it and identify the correlates, we use the EPMF and supplement it with the Eurobarometer. We first present these two surveys, followed by an initial descriptive approach to undeclared work.

2.1. The Data

The EPMF survey is collected jointly with the CRÉDOC *Conditions de Vie et Aspirations* survey (a French survey on living conditions and attitudes). It was conducted face-to-face in June 2015 for 2004 respondents aged 18 and over living in metropolitan France. It provides information on decisions to engage in undeclared work in 2015 in the month preceding the survey as well as over the period 2012-2015. It also records information on the hiring behaviour of

households in the field of personal services, and on the intentions to under-declare income linked to the perceived level of compulsory levies. The EPMF also includes subjective questions on the acceptability of various fraudulent behaviours, the associated perceived risk and penalties, and finally the perceived presence of fraudsters around the individual and in the country.

The questionnaire gradually leads respondents to sensitive questions in order to encourage them to reveal behaviour related to undeclared work or tax avoidance.⁴ However, the risk of under-reporting cannot be overlooked for these types of issues. We therefore compare various measures. Firstly, reports of undeclared work in the short term are compared with those for the period 2012-2015, as individuals are more likely to reveal previous fraudulent behaviour than current fraudulent behaviour. We also compare the EPMF measures with those from Eurobarometer data for the year 2013.

The Eurobarometer's survey structure is comparable to that of the EPMF and gradually addresses the most sensitive aspects in order to encourage the disclosure of fraudulent behaviour in a section on undeclared work and the use of personal services. The questions on subjective perceptions or the fraud acceptability are worded in the same way as in the EPMF, or in a very similar manner. Our analysis focuses on the countries of the euro area, the United Kingdom, Sweden and Denmark.

As with the CRÉDOC data, the EPMF aims to be representative of the French population. A comparison of the average characteristics of the respondents with the data from the population

census (Appendix, Table A-1) shows good representativeness in terms of demographic structure, as well as by type of activity.⁵ Regarding the Eurobarometer data collected for France, the representativeness is slightly less good due to the small sample size. The p-values of the tests of equality of means or proportions between the two sources show rejection for certain demographic variables (age and married) and activity statuses (retired and at home). As the EPMF corresponds to the year 2015 and the Eurobarometer corresponds to 2013, this may explain a (small) part of the differences.

Finally, it should be noted that information on the frequency of undeclared work or on the motives of undeclared workers should be treated with caution: on the one hand, the non-response rate is high and, on the other hand, the interpretation of motives can be tricky. The estimations therefore focus only on the probability of engaging in undeclared work (a binary variable).

2.2. Descriptive Statistics and Measurement of Undeclared Work

Among the 2004 individuals surveyed in the 2015 EPMF, 3.8% reported having engaged in undeclared work in the month prior to the survey (Table 1). With a sample size of 2004 observations, the proportion of undeclared work falls within a 95% confidence interval of 3.0%-4.6%, which is an acceptable margin of

4. As with any survey, the data are anonymous, and the interviewers make a point of emphasising this fact during the collection process.

5. Education levels should be treated with caution as in the EPMF we had to recreate categories based on the number of years of education. The most reliable category is "baccalaureate and higher", so it is therefore the one we report and use in the estimates.

Table 1 – Quantification of undeclared work

	EPMF 2015	Eurobarometer 2013		Differences	
	France (1)	France (2)	Europe* (3)	France (1) – France (2)	France (1) – Europe (3)
Supply of undeclared work					
Undeclared work**	0.038 (0.192)	0.044 (0.205)	0.048 (0.213)	-0.006 0.297	-0.010 0.33
Undeclared work in 2012-2015	0.088 (0.283)	-	-	-	-
Demand for undeclared (personal services) work					
Use of personal services	0.118 (0.323)	-	-	-	-
Use of undeclared personal services	0.018 (0.133)	0.023 (0.151)	0.030 (0.180)	-0.005 0.73	-0.012 0.166
Use of undeclared personal services in 2012-2015	0.048 (0.214)	-	-	-	-

*Euro area, Great Britain, Sweden & Denmark. **Undeclared work in the previous month (EPMF) or year (Eurobarometer).

Notes: The standard deviations are shown in brackets, with the p-values of difference tests shown in italics.

Sources: EPMF 2015 and Eurobarometer 2013.

error for a rather poorly assessed phenomenon also subject to underreporting. Therefore, it is important to compare this measurement with other indicators. Firstly, we can compare these results with the answers to another question in the EPMF on engaging in undeclared work in the period 2012-2015.⁶ The rate of undeclared work is 8.8% (within a 95% confidence interval of 7.6%-10%); the difference is notable but primarily reflects the cumulative probability over the longer term. Unsurprisingly, undeclared work levels are lower in the (smaller) time window that is the month preceding the survey. This problem of infrequency is all the more important as undeclared work may be of a one-off nature (supplementary income). The second measure may also benefit from better disclosure of fraudulent behaviour, as it relates to past behaviour that is easier to admit. The range provided by the two statistics is therefore interesting: the former provides a cross-sectional view of undeclared employment in France while the latter, covering a longer period, by nature collects information on more opportunities for fraud and suffers less from under-reporting. We use both variables in our estimations.

With the Eurobarometer, undeclared work is measured over the last 12 months. Therefore, an intermediate statistic is expected. This is indeed the case: the rate is 4.4% (confidence interval of 3.5%-5.3%). This is closer to the “snapshot” measure provided by the EPMF (see also Table A-1 in the Appendix for the comparison of the characteristics). It should be noted that the Eurobarometer covers the year 2013, which may somewhat limit the comparison with the EPMF figures for 2015. Nevertheless, in the absence of major shocks over the period, it is reasonable to assume that this rate has not changed much between these two years. The equality comparison with the average proportion of the EPMF is not rejected. It can also be noted that the average of the countries in the comparison group is very similar: 4.8%. The difference with France is not statistically rejected; in other words, fraudulent behaviour in France is not significantly different from the European average.

A final set of comparisons uses statistics provided in the CNIS (National council for statistical information) report on undeclared work (Tagnani, 2017) and figures from INSEE’s National accounts. This report provides comparisons in terms of lost revenue for the public finances. A measurement resulting from random checks by ACOSS (the central French agency for social security bodies) places the loss of revenue from social security contributions at between

1.5% and 1.9%. The INSEE figures relate to unreported value added (VA), as identified by controls and corrected for the probability of control; the share of concealed VA that can be attributed to undeclared work is between 3.2% and 3.7% of the total wage bill received by households. Based on simple assumptions about the income in question, the rate of undeclared work in the EPMF (3.8%) converted into undeclared income would represent between 1.4% and 2.3% of the total wage bill.⁷ This order of magnitude is relatively close to the other two statistics, given the significant uncertainties in the various estimates. The relative closeness of these figures supports the idea that the snapshot measure of the EPMF does not suffer from massive under-reporting.⁸

The second half of Table 1 presents figures for the proportion of households using personal services (11.8%, or 237 observations) and those using undeclared personal services (1.8%) in 2015. These figures relate to three main categories of services: housework, childcare and domestic help. They represent an undeclared hiring rate of about 15%. Due to the small sample size (237 observations), the 95% confidence interval is wide (10.6%-19.8%); it nevertheless provides an interesting order of magnitude for a rarely available statistic, which is a contribution of the present study: in France, undeclared personal services are difficult to identify using URSSAF inspections.⁹ For the reasons mentioned above, one would expect the rate of use of undeclared personal services to be higher in the Eurobarometer; it is (2.3%), but the difference in comparison with the EPMF is

6. More specifically, the survey asks individuals whether they engaged in more or less concealed work in 2015 than in 2012. Whether or not the respondent has engaged in undeclared work at least once over the period 2012-2015 can be inferred from the responses to this question.

7. The proportion of people reporting having undertaken undeclared work would be 3.9% (source: EPMF), which represents 1.9 million individuals when this rate is extended to the total population aged 18 and over. The proportion of persons having worked undeclared hours is then 7.1% after referring these 1.9 million individuals to the total population in employment as defined by national accounts (27 million people). It is assumed that those who worked only undeclared hours worked on a full-time basis (1600 hours/year), and that those who worked both declared and undeclared hours worked the equivalent of one quarter of a full time job (400 hours/year) in undeclared hours. With these assumptions, the concealed wage bill amounts to €16 billion for those who work only undeclared hours and €3.6 billion for the others, i.e. €19.6 billion in total, which represents 2.3% of the total wage bill received by households as estimated in national accounts.

8. In France, the legal liability in relation to undeclared work lies with the employer – who can be penalised – but not with the employee. De facto, people’s perception of the risk of being caught (and the penalties) might be low, but it is also possible that people are not aware of the law. In any case, the impact of perception must differ between undeclared work and undeclared hiring (personal services) because it is more obvious to a household that it is directly responsible for undeclared hiring.

9. Even though these inspections intend to cover the entire field of contributors, the inviolability of the private home is an obstacle to an URSSAF inspection of private employers. Note that the upper end of the range obtained is close to the estimate obtained by DARES through an indirect source matching approach in 2011.

not significant. This rate is also relatively close to the European comparison group average (3%) and is not statistically different from the French rate. Finally, for France with the EPMF, the rate is found to be higher (4.8%) over the period 2012-2015 than in the “snapshot” in the month preceding the survey.¹⁰

To refine the description, we also compare the socio-demographic characteristics of individuals who do or do not make use of undeclared work, as either suppliers or employers (Table 2). Differences are found when it comes to family structure characteristics (presence of children, marital status and age), as well as the influence of respondents’ peers and relative (more precisely, whether the individual knows at least one person who has ever made use of undeclared work). Finally, there are slight differences regarding the impact of the number of hours worked. In most cases, those who engage in undeclared work are in full-time (declared) employment: 78% of people who have engaged in undeclared work

once work at least 35 hours a week. On first glance, undeclared work in France thus appears to be a supplementary activity.¹¹

An examination of underlying motives at the root of the decision to undertake undeclared work is consistent with this conclusion. The EPMF includes a question on the main and secondary reason for non-declaration. This question is asked of all respondents, regardless of whether or not they reported having engaged in undeclared work (in 2015, or in the three years preceding the survey). The vast majority state that their

10. However, the survey does not provide the number of households using personal services over this period. This implies that it is not possible to verify the existence of significant differences in demand levels for concealed work across samples.

11. This is confirmed by the CNIS report (Tagnani, 2017) which cross-checks several sources – including the EPMF – and indicates that, in most cases, undeclared employment in France represents a part-time activity which generates a supplementary income. It is an income that supplements wages (40% of cases) or income from self-employment (13%). For the rest, it supplements replacement income (unemployment benefits) or minimum income (the RSA).

Table 2 – Characteristics of suppliers and employers

	Demand for work		Supply of work	
	Declared	Undeclared	Declared	Undeclared
Socio-demographic characteristics				
Female (0/1)	0.53 (0.50)	0.42 (0.50)	0.52 (0.50)	0.42 (0.50)
Age	49.4 (17.70)	34.7 (13.90)	48.8 (17.82)	50.4 (16.25)
Married (0/1)	0.54 (0.50)	0.31 (0.47)	0.54 (0.50)	0.42 (0.50)
No of people in the household	2.50 (1.39)	2.74 (1.63)	2.51 (1.40)	2.44 (1.38)
Presence of children (0/1)	0.72 (0.45)	0.45 (0.50)	0.71 (0.45)	0.86 (0.35)
Education				
No educational qualification	0.08 (0.27)	0.06 (0.25)	0.08 (0.27)	0.03 (0.17)
Below baccalaureate level	0.45 (0.50)	0.49 (0.50)	0.46 (0.50)	0.33 (0.48)
Baccalaureate or higher	0.47 (0.50)	0.44 (0.50)	0.47 (0.50)	0.64 (0.49)
Occupation/Activity status				
Executive/Manager	0.08 (0.27)	0.06 (0.25)	0.08 (0.27)	0.14 (0.35)
White-collar worker	0.14 (0.34)	0.18 (0.39)	0.14 (0.34)	0.22 (0.42)
Manual worker	0.11 (0.31)	0.18 (0.39)	0.11 (0.31)	0.06 (0.23)
Student	0.05 (0.22)	0.18 (0.39)	0.06 (0.23)	0.00 (0.00)
Retired	0.29 (0.45)	0.05 (0.22)	0.28 (0.45)	0.36 (0.49)
Job seeker	0.09 (0.28)	0.19 (0.40)	0.09 (0.29)	0.00 (0.00)
Self-employed worker	0.04 (0.19)	0.06 (0.25)	0.04 (0.19)	0.08 (0.28)
Employed person	0.48 (0.50)	0.53 (0.50)	0.48 (0.50)	0.61 (0.49)
Employed, open-ended contract (vs. fixed-term contracts)	0.13 (0.34)	0.22 (0.42)	0.13 (0.33)	0.35 (0.49)
Full time (vs. part time)	0.82 (0.39)	0.78 (0.42)	0.82 (0.39)	0.68 (0.48)
Number of hours worked				
Less than 20 hrs	0.05 (0.22)	0.10 (0.30)	0.05 (0.23)	0.09 (0.29)
Between 20 hrs and 35 hrs	0.14 (0.35)	0.12 (0.33)	0.14 (0.35)	0.23 (0.43)
35 hrs	0.36 (0.48)	0.27 (0.45)	0.36 (0.48)	0.27 (0.46)
Between 35 hrs and 39 hrs	0.15 (0.36)	0.17 (0.38)	0.15 (0.36)	0.18 (0.39)
40 hrs and over	0.27 (0.44)	0.34 (0.48)	0.27 (0.45)	0.23 (0.43)
Context (peer effects)				
Knows at least one undeclared worker (Yes=1)	0.42 (0.49)	0.77 (0.43)	0.43 (0.49)	0.72 (0.45)

Notes: The standard deviations are shown in brackets.
Sources: EPMF 2015.

main motivation is the need to make ends meet; when combined with the similar motive of “to be paid more”, this reaches between 50% and 60% of responses in all cases. The next most popular reason is a lack of regular employment, which represents 15% to 20% of responses. This view seems to be widely shared, as evidenced by the surprising closeness between the declarations of fraudsters and those of non-fraudsters. There is just a little more divergence between the two groups for minor reasons: for example, respondents who did not engage in undeclared work more often cite that evading taxes is fraudsters’ main motivation, whereas undeclared workers cite other financial (to be paid more) or personal (doing a favour for a friend or relative) motives instead of tax avoidance (Figure I).

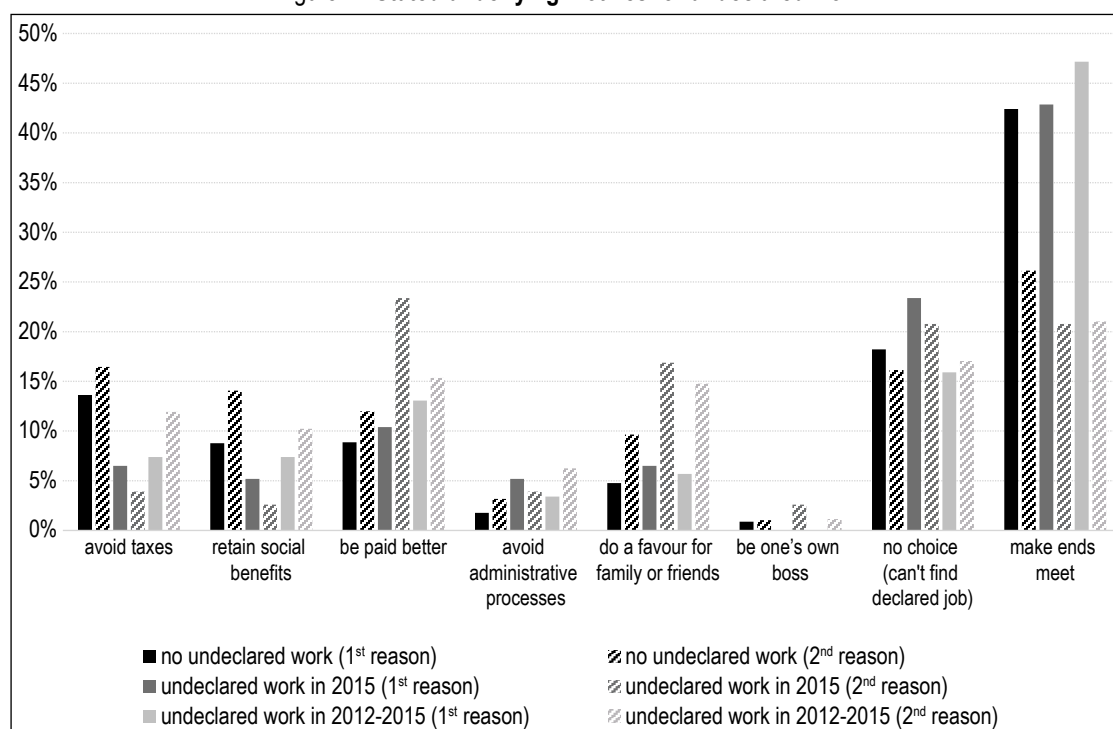
Finally, it should be noted that the distribution of the acceptability of undeclared work, whether

on the demand or supply side, is comparable across all the samples used, i.e. respectively between the EPMF and the Eurobarometer for France and between France and Europe using the Eurobarometer (Table 3).

2.3. Elements Used for Comparison at European Level

Eurobarometer data allows us to compare France and other European countries. We report a set of comparison points which are computed for several groups. We first use an average point of comparison which is the level of undeclared work for the European group composed of the euro area, the UK, Sweden and Denmark; we also report averages for countries comparable to France that are the UK and Germany. Finally, we report averages for countries from contrasting groups that are (i) Nordic countries and (ii)

Figure I – Stated underlying motives for undeclared work



Reading note: Among respondents who engaged in undeclared work in the period 2012-2015, 47% cite “making ends meet” as their main reason and 21% cite it as a secondary reason.
Source: EPMF 2015.

Table 3 – Acceptability of undeclared work

Acceptability...	EPMF 2015	Eurobarometer 2013		Differences	
	France (1)	France (2)	Europe* (3)	France (1) – France (2)	France (1) – Europe (3)
... of undertaking undeclared work	3.02 (2.37)	2.91 (2.27)	3.60 (2.65)	0.11 <i>0.059</i>	-0.58 <i>0</i>
... of hiring an undeclared worker	3.53 (2.58)	2.00 (1.77)	2.25 (1.93)	1.53 <i>0</i>	1.28 <i>0</i>

*Euro area, Great Britain, Sweden & Denmark.

Notes: The standard deviations are shown in brackets, with the p-values of difference tests shown in italics. Acceptability is scored on a scale from 1 to 10.
Sources: EPMF 2015 and Eurobarometer 2013.

southern European countries. France seems to be similar to its European neighbours (Figure II). However, European statistics are surprising, with relatively high rates of undeclared work in two Scandinavian countries and lower rates in the southern countries. The size of the underground economy as a percentage of GDP (shown in the graph) is more in line with what would be expected instinctively.¹²

One explanation for the differences in rates of undeclared work across European countries could be related to practices: for example, in Denmark – or even in Sweden and France – undeclared work mainly encompasses supplementary activities and more rarely constitutes the main employment situation. Conversely, in Eastern and Southern European countries, it is more often a case of jobs that are completely undeclared, which may lead to under-declaration even in the European survey.¹³ Although the Eurobarometer variable on this issue is not fully completed, it does show that around 60% of undeclared work constitutes extra hours worked in north-western and Scandinavian Europe (61% and 58% respectively), compared with 27% in eastern and southern European countries. To take these elements into account, our estimations for all European neighbours will be weighted using various Z_i factors to increase the influence of nearby countries: we will use the weights

$f(Z_i) = Z_{max} - \text{abs}(Z_{France} - Z_i)$ for each country i , so as to give a lighter weighting to those that differ from France. The factors used are the percentage of undeclared work corresponding to undeclared additional hours worked, GDP per capita and the unemployment rate.

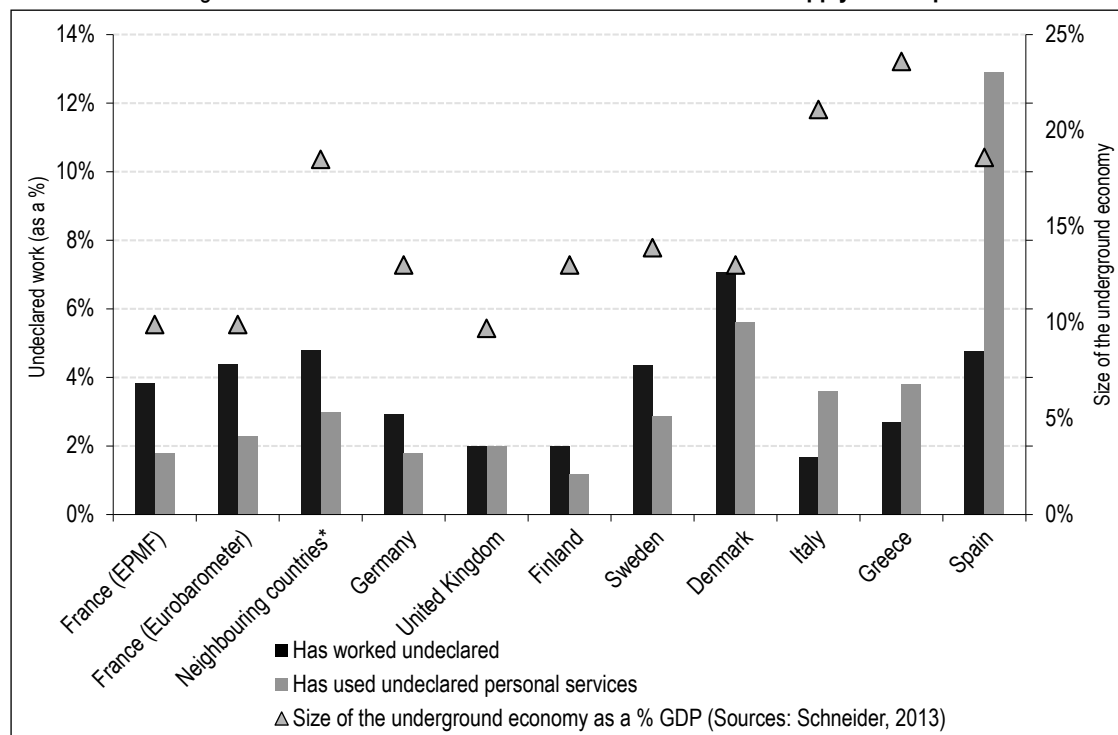
2.4. Acceptability of Fraudulent Behaviour

Undeclared work practices are also in line with the wider perceptions of the acceptability of fraudulent behaviour. Table 3 reports the average response to a question on the acceptability of undeclared work (“holding a job without declaring it to tax authorities or public bodies”) and the use of undeclared personal services. Responses are given on a scale from 1 (“totally unacceptable”) to 10 (“totally acceptable”) in the EPMF and Eurobarometer. For France, the average is around 3 in both surveys, which is

12. In Figure II, data on the size of the underground economy, expressed as a percentage of GDP, are taken from Schneider (2013). The underground economy is measured using a MIMIC (Multiple Indicators and Multiple Courses) estimation, which is presented in detail in Schneider (2011). Undeclared work is only one part of the underground economy, which also includes undeclared turnover and the proceeds of criminal activities and economic crimes. As regards undeclared personal services, Figure II shows similar rates for France and neighbouring countries. There are notable differences between countries – the very high rate in Spain is consistent with the size of the informal economy in that country.

13. The “Undeclared Work in the European Union” Report (Eurobarometer, 2014) indicates between 60 and 100 hours/year of undeclared work in Northern and Western Europe, compared to 330-350 hours in Southern Europe.

Figure II – Quantification of undeclared work demand and supply in Europe



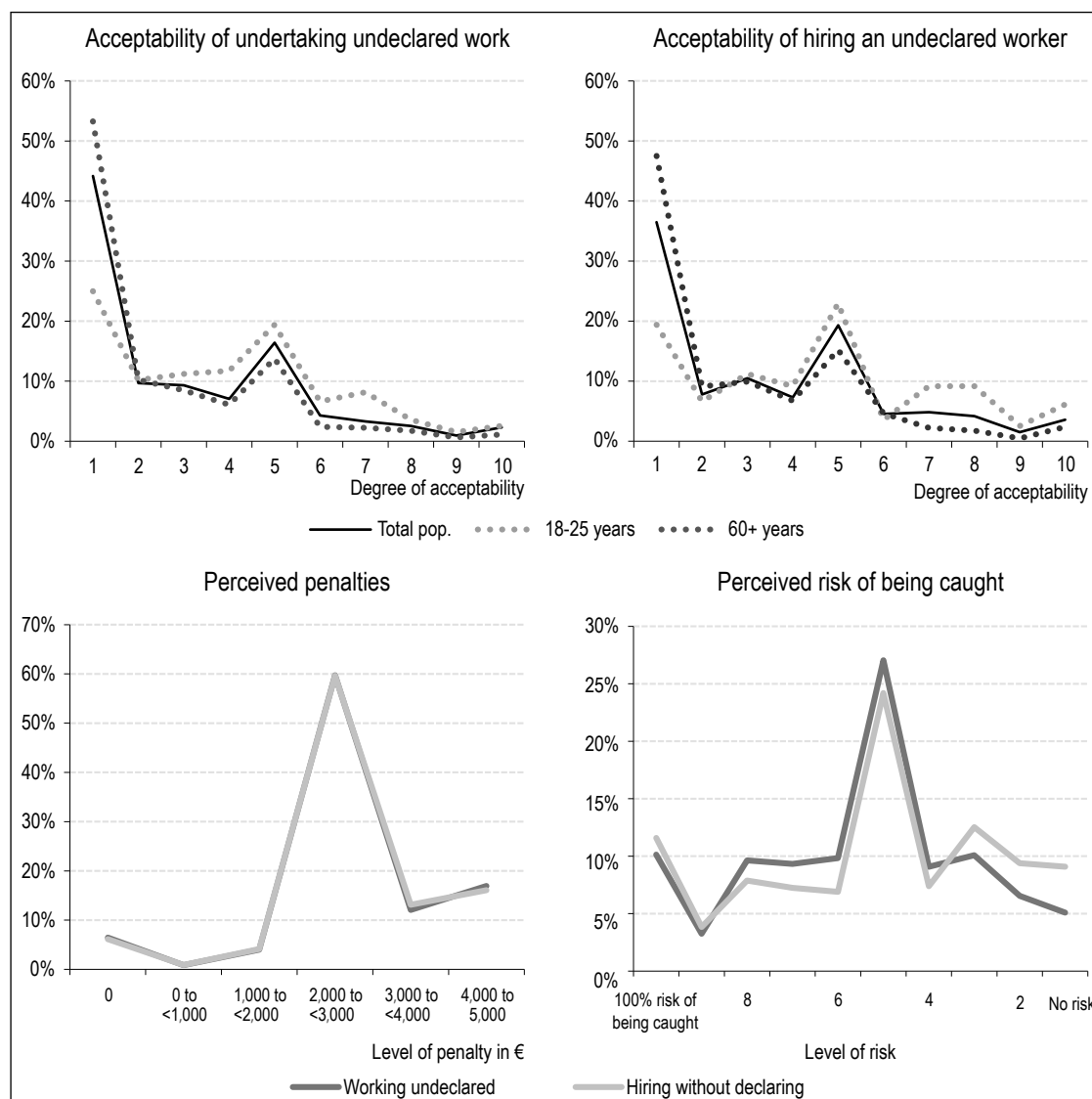
*Euro area, Great Britain, Sweden & Denmark.

Sources: EPMF 2015 for France, Eurobarometer 2013 for France and other countries.

slightly lower than the European average. We will mainly use this variable as an explanatory variable (civic value) in the estimation of undeclared work, alongside other variables on fraudulent behaviours related to “not declaring all one’s income to the authorities” (tax fraud) or “receiving social benefits without being entitled to them” (social fraud). A majority of respondents consider each of the fraudulent behaviours to be unacceptable (response 1 on the scale of 1 to 10, Figure III). The distribution of responses on the acceptability of various fraudulent behaviours appears to be very similar both in the EPMF and in the Eurobarometer (Appendix, Figure A-I). The only exception is in the perception of hiring someone for personal services: the distributions are somewhat less comparable, perhaps due to the small proportions of people using personal services in the data.

For other countries, most respondents also consider all the aforementioned fraudulent behaviours to be totally unacceptable, yet the profile of acceptability appears to vary with respect to the type of fraud (Appendix, Figure A-II). When it comes to social fraud and undeclared hiring for personal services, the distribution highlights significant differences between Nordic countries and Southern European countries, with higher tolerance levels being recorded for the latter (see Algan & Cahuc, 2009). However, North-South differences do not necessarily highlight consistent virtuous behaviour in one area compared to the other: when it comes to undeclared work and the non-declaration of all income, reflecting the differences in the nature of undeclared work across the countries compared (informal employment in the South, supplementary

Figure III – Distribution of the acceptability of undeclared work and the perceived associated penalties and risks



Sources: Eurobarometer 2013.

employment elsewhere). France and Germany are ranked in the middle for all types of fraud. Moreover, it is important to mention that North-South differences are not recorded for all items either. A more detailed statistical analysis is provided in the Online Appendix (link at the end of the article).

3. Analysis of Undeclared Work in France

Our analysis is based on econometric estimations of the characteristics of those who supply undeclared work. These estimations allow us to study the nature of the association between undeclared work and various relevant factors previously identified in the literature. It should be noted that the current study is undertaken in a non-experimental setting – therefore, it is not possible to determine causality patterns.

We use a probit model with the following specification for binary dependent variables Y_i (e.g. the indicator for undeclared work in 2015):

$$P(y_i = 1 | X_i, Z_i) = \Phi(\alpha + D_i\beta + S_i\gamma)$$

Several sets of explanatory variables are used: the vector D_i includes socio-demographic (age, marital and family status and education) and economic (main occupational category and income) characteristics and the vector S_i includes individual subjective characteristics (perception of the people around the individual,

perceived risk and penalties, civic values and perceived tax pressure). To detect strong correlations between the regressors, we introduce the variables in an incremental manner (stepwise). This approach allows us to gauge the multicollinearity that can affect our estimates.¹⁴ Omitted variables may influence both the propensity to engage in undeclared work and the explanatory variables (e.g. sector). Therefore, here we will discuss potential correlates or determining factors of undeclared work. We can, however, sketch the profile of households undertaking undeclared work and study the role of heterogeneity regarding subjective factors that may influence practices (morality, perceived risks and penalties and people around the individual).

3.1. The Influence of Socio-Demographic and Economic Variables on Supply

Our estimates focus on two dependent variables, respectively undeclared work in 2015 and undeclared work in the three years preceding the survey. We gradually introduce the following explanatory variables: demographic variables (model 1), age (model 2), education (model 3), income level (model 4) and main occupational category (model 5). The results are presented in Table 4. We report the marginal effects of probit

14. In addition, an analysis by variance inflation factor (not reported) for the following set of estimations does not suggest any problematic collinearity between the regressors.

Table 4 – Estimation of the supply of undeclared work: socio-demographic and economic variables (probit models)

	2015					2012-2015				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Family circumstances (ref.: single female)										
Single male	0.0209* (0.0120)	0.0133 (0.0119)	0.0106 (0.0119)	0.0110 (0.0117)	0.0106 (0.0122)	0.0558*** (0.0179)	0.0411** (0.0177)	0.0385** (0.0178)	0.0389** (0.0176)	0.0371** (0.0181)
Single mother	-0.00888 (0.0204)	-0.0157 (0.0206)	-0.0178 (0.0205)	-0.0197 (0.0202)	-0.0186 (0.0198)	0.0107 (0.0320)	-0.00744 (0.0315)	-0.00929 (0.0314)	-0.0167 (0.0314)	-0.0155 (0.0307)
Single father	0.00327 (0.0277)	-8.29e-05 (0.0283)	-0.00458 (0.0277)	0.000137 (0.0273)	-0.000794 (0.0281)	0.0334 (0.0458)	0.0175 (0.0450)	0.0149 (0.0448)	0.0255 (0.0450)	0.0187 (0.0460)
Married female no child	-0.0412** (0.0203)	-0.0309 (0.0208)	-0.0312 (0.0208)	-0.0270 (0.0208)	-0.0273 (0.0205)	-0.0549** (0.0257)	-0.0320 (0.0262)	-0.0321 (0.0261)	-0.0211 (0.0263)	-0.0201 (0.0261)
Married female with child(ren)	-0.0425* (0.0222)	-0.0451** (0.0223)	-0.0462** (0.0222)	-0.0436* (0.0225)	-0.0415* (0.0225)	-0.0690** (0.0345)	-0.0775** (0.0337)	-0.0777** (0.0337)	-0.0706** (0.0344)	-0.0671** (0.0342)
Married male with child(ren)	-0.0638*** (0.0225)	-0.0450** (0.0228)	-0.0472** (0.0230)	-0.0421* (0.0227)	-0.0412* (0.0231)	-0.0588** (0.0230)	-0.0148 (0.0238)	-0.0188 (0.0238)	-0.00431 (0.0243)	-0.00675 (0.0245)
Married male without children	-0.00939 (0.0204)	-0.00679 (0.0205)	-0.00951 (0.0201)	-0.00671 (0.0204)	-0.00814 (0.0209)	-0.0157 (0.0335)	-0.0144 (0.0325)	-0.0163 (0.0323)	-0.00602 (0.0332)	-0.0130 (0.0334)
N. of dependent children	-0.00370 (0.00671)	0.00402 (0.00607)	0.00379 (0.00617)	0.00300 (0.00633)	0.00323 (0.00627)	-0.0255** (0.0126)	-0.00853 (0.0114)	-0.00916 (0.0114)	-0.0112 (0.0119)	-0.0106 (0.0116)
N. of people in the household	0.00947*** (0.00340)	-0.000191 (0.00419)	-0.000178 (0.00420)	0.00181 (0.00442)	0.00138 (0.00442)	0.0204*** (0.00542)	0.000647 (0.00636)	0.000888 (0.00638)	0.00629 (0.00656)	0.00667 (0.00654)

→

Table 4 – (contd.)

	2015					2012-2015				
	(1)	(2)	(3)	(4)	(5)	(1)	(2)	(3)	(4)	(5)
Age (ref.: < 25 years)										
25-40 years		-0.0154 (0.0142)	-0.0184 (0.0142)	-0.0151 (0.0144)	-0.0169 (0.0149)		-0.0265 (0.0211)	-0.0300 (0.0210)	-0.0271 (0.0210)	-0.0379 (0.0232)
40-60 years		-0.0398*** (0.0143)	-0.0435*** (0.0146)	-0.0405*** (0.0148)	-0.0438*** (0.0153)		-0.0747*** (0.0212)	-0.0796*** (0.0215)	-0.0731*** (0.0217)	-0.0841*** (0.0236)
60-70 years		-0.0734*** (0.0213)	-0.0764*** (0.0214)	-0.0735*** (0.0214)	-0.0826*** (0.0181)		-0.149*** (0.0284)	-0.154*** (0.0285)	-0.149*** (0.0283)	-0.157*** (0.0298)
> 70 years		-0.108*** (0.0297)	-0.112*** (0.0286)	-0.107*** (0.0286)	-0.117*** (0.0308)		-0.172*** (0.0299)	-0.177*** (0.0300)	-0.174*** (0.0302)	-0.183*** (0.0372)
Education (ref.: Bacalaureate and higher education)										
Unqualified			0.0117 (0.0165)	0.00836 (0.0176)	0.00454 (0.0179)			0.00471 (0.0247)	-0.00507 (0.0260)	-0.00940 (0.0262)
Qualification below bacalaureate level			-0.00365 (0.0115)	-0.00404 (0.0113)	-0.00824 (0.0113)			-0.0153 (0.0166)	-0.0124 (0.0166)	-0.0165 (0.0170)
Income (ref.: Less than 900 €/month)										
€900-€1,499				-0.0273* (0.0150)	-0.0281* (0.0151)				-0.00524 (0.0222)	-0.00833 (0.0222)
€1,500-€2,299				-0.0225 (0.0146)	-0.0216 (0.0148)				-0.0209 (0.0225)	-0.0237 (0.0227)
€2,300-€3,099				-0.0308* (0.0159)	-0.0302* (0.0159)				-0.0626** (0.0246)	-0.0656*** (0.0248)
€3,100-€3,999				-0.0334* (0.0196)	-0.0321 (0.0196)				-0.0522* (0.0292)	-0.0564* (0.0295)
€4,000 and more				-0.0233 (0.0197)	-0.0198 (0.0197)				-0.0241 (0.0290)	-0.0265 (0.0298)
Self-employed (Yes=1)					0.0533 (0.0414)					0.0438 (0.0420)
Occupation/Activity status										
Executive/Manager					-0.0143 (0.0181)					-0.00397 (0.0275)
Intermediate profession					-0.0207 (0.0138)					-0.0128 (0.0224)
Manual worker					0.00350 (0.0166)					0.0146 (0.0232)
Retired					-0.00936 (0.0134)					-0.0194 (0.0201)
Job seeker					0.00541 (0.0191)					-0.00251 (0.0267)
R2 of a linear probability model	0.021	0.037	0.040	0.043	0.049	0.040	0.073	0.075	0.080	0.083
Number of observations	2,004									

Notes: Standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.
Sources: EPMF.

estimates, as well as the R² of linear probability models; these remain small, regardless of the specification. Socio-demographic and economic variables alone ultimately explain relatively little of the variance in undeclared work, which is a minimum of 2% under model 1 providing a “snapshot” and a maximum of 8% under model 5 for the period 2012-2015. This improved ability to provide an explanation can be linked to two reasons: firstly, people are more likely to reveal a “past” fault (with the 2012-2015 variable being

less prone to under-reporting); secondly, the 2012-2015 variable contains better information on regular undeclared work practices, which would be more linked to the socio-demographic characteristics of the individuals.

The definition of specific family status groups that we have adopted was intended to further break down the type of people who might engage in undeclared work. However, there is no strong demographic profile, except for the “married

woman with child(ren)” variable, which comes out negatively and in a statistically significant manner in most models. It is thought that this group is less affected by undeclared work, which is as expected and can be explained by their lower participation in the labour market in general. The magnitude of this reduced coefficient in the specification also checks for effects associated with main occupational categories. We also see a propensity to engage in undeclared work among single men, though it is less strong among the over-40s; these results are unaffected whether or not we add social-professional categories, or include the coefficient associated with retirement. Further estimation reveals no significant effect of education (high school level and above).

The introduction of monthly household income levels does not provide very clear information as almost 40% of the variance in income is itself explained by the demographic and education variables.¹⁵ The middle-income levels, however, appear to be less affected by undeclared work. The variables related to the main occupational categories do not appear significant. The results indicate that wages influence the propensity to engage in undeclared work more significantly than the type of occupation held by the respondent. The negative and significant coefficient associated only with the €2,300-€3,999 income bracket implies that individuals do not necessarily engage in undeclared work solely depending on their income level. The scale and significance of the coefficients indicate that individuals with incomes below €2,300 appear to be more likely to engage in undeclared work, which is moreover mostly a supplementary activity (see Table 2).

3.2. The Influence of Subjective Factors

We will now focus on the subjective factors – perception of the people around the individual, perceived risks and penalties, and acceptability – while still controlling for the socio-demographic and economic characteristics discussed above.

Subjective variables are defined in a way that facilitates the interpretation of their correlation with undeclared work: a positive coefficient reflects a potential positive impact on undeclared work. Acceptability is already defined in this way in the survey as it is measured on an increasing scale (from 1 to 10). The variable for the perception of the people around the individual indicates the proportion of people engaging in undeclared work in France

and in the people around the individual as perceived by the respondent. The risk variable is set on a scale of 1 (100% chance of being caught) to 10 (0%), and the penalty amount variable is calculated as the difference between €5,000 and the amount of penalty the person considers they would face if they worked for an undeclared wage of €1,000. We also use an indicator concerning the perception of a contribution level that is too high. The results are presented in Table 5, again for undeclared work in the previous month in 2015 and for the period 2012-15.

An initial question consists of determining whether or not these subjective factors reflect particular socio-demographic profiles (e.g. whether the effect of perceived risk disappears by including age).¹⁶ The coefficient for the different subjective factors is significant and has a positive or negative influence that can be interpreted intuitively: undeclared work is positively and significantly correlated with (a) the perceived extent of the spread of undeclared work within the people around the individual, (b) the degree of acceptability of such behaviour, (c) the weakness of the perceived risk, (d) the weakness of the perceived penalty, and (e) the perception that compulsory contributions are too high (significant only for the 2012-15 measure).¹⁷ Additional estimates (not reported) that control only for marital and family status yield similar results (the coefficients are simply lower, between one-half and two-thirds, as are the R²). This allows us to answer the above question in the negative: the

15. The wording of the question on income is as follows: “In total, how much is your total household income per month, i.e. wages, pensions, unemployment benefits, self-employed income, spouse’s income, family benefits, other income, etc.?” We assume here that, given the general tendency to under-report, respondents do not include any undeclared income.

16. The Online Appendix C1 presents an intermediate step: the estimation of subjective factors for socio-demographic and economic variables. These variables appear to provide little explanation of subjective heterogeneity. Nevertheless, young people and those on very low incomes perceive a higher level of undeclared work among the people around them, perhaps because their labour market situation brings them more into contact with such situations. The perceived risk increases with economic fragility and age, while the penalties are perceived more strongly by younger people and those on low incomes. The fraud acceptability in general (tax, social contributions and labour market) decreases with age and seems to be higher for the self-employed than for any socio-demographic group.

17. We stress again that our interpretations are not causal. There are potentially omitted variables, reverse causalities and measurement errors leading to bias. For example, in relation to the perception of the people around the individual, errors may come from under-reporting which affects both the concealed activity of the person and the people around them. Reverse causality is simply declaring someone around you to be a fraud to justify your own fraudulent behaviour. The omitted variables correspond to unobservable circumstances common to an individual and the people around them (e.g. sharing a feeling of mistrust towards the state). The coefficient for the variable concerning the perception of the people around the individual thus overestimates implicit peer effects, which limits interpretation and leads us to speak only of potential correlates or determining factors of undeclared work but not of a coefficient indicating and quantifying a causal relationship.

Table 5 – Correlates of the supply of undeclared work: subjective factors (probit estimation)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
2015											
Perception of the % of concealed work											
in France	0.0499**		0.000098								0.00195
	(0.0243)		(0.0257)								(0.0256)
among people around the individual		0.141***	0.141***								0.107***
		(0.0241)	(0.0262)								(0.0250)
Acceptability (1-10)				0.00845***			0.00791***		0.00836***	0.00782***	0.00600***
				(0.00154)			(0.00152)		(0.00153)	(0.00152)	(0.00146)
Perceived low risk (1 – probability of being caught)					0.00578***		0.00451***	0.00576***		0.00450***	0.00335**
					(0.00167)		(0.00164)	(0.00166)		(0.00163)	(0.00159)
Perceived weak penalty (€5,000 – penalty)						0.00954**		0.00947**	0.00894**	0.00890**	0.00755**
						(0.00397)		(0.00392)	(0.00387)	(0.00383)	(0.00361)
Thinks that mandatory contributions are too high											0.00948
											(0.0104)
R2 of a linear probability model	0.051	0.074	0.074	0.065	0.055	0.052	0.069	0.057	0.068	0.071	0.089
Number of observations	2,004										
2012-2015											
Perception of the % of concealed work											
in France	0.0932***		0.0177								0.0219
	(0.0348)		(0.0363)								(0.0350)
among people around the individual		0.248***	0.241***								0.166***
		(0.0379)	(0.0402)								(0.0380)
Acceptability (1-10)				0.0176***			0.0168***		0.0175***	0.0167***	0.0142***
				(0.00219)			(0.00220)		(0.00220)	(0.00221)	(0.00216)
Perceived low risk (1 – probability of being caught)					0.0108***		0.00877***	0.0107***		0.00870***	0.00701***
					(0.00248)		(0.00248)	(0.00248)		(0.00248)	(0.00244)
Perceived weak penalty (€5,000 – penalty)						0.00883*		0.00852	0.00823	0.00787	0.00799
						(0.00533)		(0.00519)	(0.00506)	(0.00494)	(0.00488)
Thinks that mandatory contributions are too high											0.0337**
											(0.0147)
R2 of a linear probability model	0.086	0.108	0.108	0.115	0.091	0.084	0.121	0.092	0.116	0.122	0.138
Number of observations	2,004										

Notes: Probit estimations with controls for socio-demographics, education, income and occupation. Standard errors in brackets. *** p<0.01, ** p<0.05, * p<0.1.

Sources: EPMF.

weak association between socio-demographic variables and subjective correlates (see Online Appendix) means that the explanatory role of the latter changes very little when the former are added to the model.¹⁸ In other words, subjective heterogeneity concerning the people around the individual (potentially the effect of a local norm), acceptability (potentially reflecting the role of “fiscal morality” and civic values) and the perceived risk or penalties is added.

A second question assesses the interdependencies between these potential determinants: are they independent of each other or, on the contrary, are they strongly correlated, and can they replace each other in explaining undeclared work? Answering this question enables us to refine the interpretation of these variables’

inherent influence. Indeed, acceptability may refer to a moral dimension, but may also depend on the norm perceived by those around us. The incremental approach chosen in this study allows us to provide some elements of response. Subjective factors seem to play differentiated roles: their coefficients remain fairly stable whether we introduce these variables one at a time or combine them in different ways (e.g. acceptability and risk in model 7 compared to models 4 and 5). Model 11 shows that these coefficients’ magnitude decreases by only one quarter to one third when all variables are taken into account simultaneously, compared

18. In the most comprehensive specification (model 11), the adjusted R² increases little when all controls are included.

to specifications where each variable is introduced alone. Alternative estimates (not reported) indicate that the contribution of each of these variables (people around the individual, risk, penalty and acceptability) to the R^2 is fairly similar (around 0.03 each) when the models do not include any control variables.

We then use another approach to assess interdependency between the variables, which consists in including interaction terms for the aforementioned factors. Table C2-1 in the Online Appendix presents the coefficients on the interaction terms between (i) the respondent's relatives fraud behaviour and the acceptability of fraud, (ii) between acceptability and risk, and (iii) between risk and the effect of the people around the individual. The coefficients obtained are all positive and significant: this suggests there are complementarity dynamics between these factors.

To sum up, the subjective factors seem to have the main explanatory role and are quite complementary with each other. The full empirical model explains about 9% of the total variance in undeclared work for the month prior to the survey in 2015; the results are qualitatively similar over the extended period 2012-2015, but the effects are stronger in total because the information content is certainly higher (the R^2 is then around 0.14).¹⁹

Finally, one can ask whether subjective factors reflect general components at the root of any fraudulent behaviour or if these correlates are specific to undeclared work. To answer this question, the Online Appendix (Table C2-2) presents a detailed analysis of the demand for undeclared personal services and tax fraud. This enables the analysis of the extent to which fraudulent behaviours are determined by people's general perceptions with respect to fraud. Results show that cross-effects exist: for example, the acceptability of tax fraud explains both undeclared work and the acceptability of undeclared work. Similarly, the acceptability of undeclared work explains tax fraud as much as its acceptability. These results are consistent with those of Dwenger *et al.* (2016) which show that the intrinsic aspect of compliance with the rules is found across the board: our results indicate that individuals who reject any form of fraud (tax, social, etc.) are also less likely to participate in undeclared work, both as suppliers and as employers. The estimates also suggest that there is complementarity between the acceptability of undeclared work and tax fraud to a degree. These two correlates act cumulatively and indicate

that the different aspects of tax morality are complementary for a single individual. The same is true of tax fraud: the acceptability of undeclared work is positively correlated with the acceptability of tax evasion.²⁰ Overall, results presented in Table 5 indicate that the act of considering undeclared work totally acceptable (answer of 10 on a scale of 1 to 10) rather than totally unacceptable (answer 1) increases the probability of engaging in undeclared work in 2015 by around 0.3 percentage points (8%) (for an average engagement figure of 3.8%). This substantial difference implies that the perception of (moral) values is the source of substantial differences in people's behaviour, which is reflected in a positive association between the level of acceptability of undeclared work and the propensity to engage in it.

4. Comparisons at the European Level

This final section proposes a comparison of the influence of socio-demographic characteristics on individual perceptions of undeclared work, comparing France and some neighbouring countries, as well as the group made up of the euro area, Great Britain, Sweden and Denmark. To achieve this, we use the variables that are strictly common to both the EPMF and the Eurobarometer in terms of definition, and therefore slightly different specifications than those presented so far. The results are presented in Table 6.

First we cross-check the validity of both sources. For the EPMF, with the variables redefined in line with the Eurobarometer, the results confirm that the propensity to engage in undeclared work is lower for married women with children and the over 25s, and higher for the self-employed. Once again, the role of perceived risk, fraud acceptability and the perception of the people around the individual can be seen. To some extent, the results for the Eurobarometer-France are along the same lines, not only for the effect of age, but also of civic values and of the perception of the people around the individual. The estimates are less precise due to the small sample size. To increase the sample size and the statistical strength of the model, we stacked the observations from both databases (while

19. The most important difference seems to be the fact that the effect for acceptability and risk is up to two times greater. The effects relating to penalties tend to disappear. One possible interpretation is that morality and risk aversion are more entrenched and persistent factors than perceptions concerning the people around the individual or penalties.

20. This is not true for undeclared personal services: the acceptability of different types of fraud are exchangeable in this case. In relation to the perceived penalties, the perception of undeclared work and the perception of tax fraud tend to be cumulative.

Table 6 – Estimation of the determining factors of undeclared work

	France					European neighbours		
	EPMF	Euro-barometer	EPMF+Euro-barometer	Germany	United Kingdom	Denmark	(a)	(b)
Female	-0.0290** (0.0139)	-0.000222 (0.0134)	-0.00771 (0.00792)	0.0147* (0.00868)	-0.0202** (0.00784)	-0.0410*** (0.0151)	-0.0154*** (0.00301)	-0.0154*** (0.00301)
Married	-0.0525*** (0.0160)	-0.00458 (0.0116)	-0.0246*** (0.00858)	-0.00368 (0.0105)	-0.0214** (0.00910)	0.0324* (0.0196)	-0.0101*** (0.00323)	-0.00805** (0.00323)
Presence of child(ren)	-0.0396** (0.0172)	0.0210 (0.0268)	0.000653 (0.0118)	0.0111 (0.0158)	-0.000203 (0.0153)	0.0509 (0.0370)	-0.00405 (0.00505)	-0.00654 (0.00504)
N. of people in the household	0.00440 (0.00783)	-0.00629 (0.00786)	0.00199 (0.00481)	-0.00940** (0.00460)	0.00432 (0.00502)	-0.0290** (0.0124)	-0.00237 (0.00179)	-0.00150 (0.00179)
Age (ref.: < 25 years)								
25-40 years	-0.0634* (0.0368)	-0.0633* (0.0362)	-0.0436* (0.0225)	-0.0449* (0.0238)	-0.00916 (0.0237)	-0.150** (0.0609)	-0.0232*** (0.00774)	-0.0226*** (0.00772)
40-60 years	-0.111*** (0.0354)	-0.0743** (0.0340)	-0.0647*** (0.0212)	-0.0462** (0.0220)	-0.00911 (0.0230)	-0.143** (0.0570)	-0.0429*** (0.00719)	-0.0438*** (0.00719)
60-70 years	-0.162*** (0.0355)	-0.0648 (0.0440)	-0.0739*** (0.0233)	-0.0807*** (0.0237)	-0.0259 (0.0240)	-0.155** (0.0618)	-0.0496*** (0.00815)	-0.0521*** (0.00819)
> 70 years	-0.173*** (0.0367)	-0.0838* (0.0428)	-0.0871*** (0.0233)	-0.0705*** (0.0250)	-0.0256 (0.0247)	-0.182*** (0.0631)	-0.0505*** (0.00824)	-0.0550*** (0.00828)
Baccalaureate or higher	-0.0107 (0.0222)	0.00135 (0.0141)	-0.00607 (0.0124)	-0.131 (0.114)	-0.00138 (0.0302)	-0.0154 (0.0361)	-0.00949* (0.00498)	-0.0130** (0.00512)
Self-employed	0.0335 (0.0364)	0.0489 (0.0537)	0.0345 (0.0263)	0.0121 (0.0197)	0.000510 (0.0266)	0.144*** (0.0489)	0.0174** (0.00692)	0.0187*** (0.00692)
Occupation/Activity status (ref.: white collar)								
Executive/Manager	0.00603 (0.0263)	0.00654 (0.0342)	-0.00242 (0.0159)	0.00549 (0.0297)	-0.0186 (0.0193)	-0.0441 (0.0410)	-0.00510 (0.00804)	-0.00860 (0.00815)
Intermediate profession	-0.00908 (0.0209)	-0.0492*** (0.0145)	-0.0307*** (0.00968)	-0.00528 (0.0134)	-0.0201 (0.0125)	-0.0258 (0.0246)	-0.0194*** (0.00554)	-0.0206*** (0.00562)
Manual worker	0.0260 (0.0274)	-0.0190 (0.0223)	-0.00178 (0.0153)	0.0167 (0.0186)	0.00521 (0.0181)	0.0697* (0.0359)	0.0112* (0.00597)	0.0108* (0.00594)
Retired	0.0145 (0.0178)	-0.0107 (0.0295)	0.00216 (0.0130)	0.0180 (0.0155)	0.00805 (0.0154)	0.00939 (0.0280)	-0.00991** (0.00478)	-0.00854* (0.00481)
Job seeker	0.0220 (0.0289)	-0.00579 (0.0297)	0.00797 (0.0175)	0.0227 (0.0230)	0.0136 (0.0248)	0.00580 (0.0400)	0.0366*** (0.00724)	0.0367*** (0.00728)
Lowness of perceived risk	0.0147*** (0.00564)	0.00293 (0.00885)	0.00908*** (0.00350)	0.00720 (0.00625)	-0.00443 (0.00510)	0.0182 (0.0118)	0.00939*** (0.00184)	0.00946*** (0.00189)
Acceptability of concealed work	0.0157*** (0.00373)	0.0135*** (0.00501)	0.00808*** (0.00234)	0.00712*** (0.00250)	0.00750* (0.00393)	0.0178*** (0.00434)	0.00659*** (0.000788)	0.00559*** (0.000802)
Acceptability of tax fraud	0.00644 (0.00424)	0.0116* (0.00664)	0.00742** (0.00290)	0.00491 (0.00387)	0.00108 (0.00493)	0.00396 (0.00692)	0.0111*** (0.00123)	0.0121*** (0.00125)
Undeclared work around	0.0587*** (0.0125)	0.0486*** (0.0132)	0.0363*** (0.00706)	0.0598*** (0.0131)	0.112*** (0.0258)	0.0584*** (0.0150)	0.0761*** (0.00348)	0.0762*** (0.00354)
"EPMF" indicator			-0.00617 (0.00786)					
Country fixed effect	-	-	-	-	-	-	YES	YES
Number of observations	2,004	1,027	3,031	1,499	1,006	1,016	20,180	20,180
R2	0.126	0.116	0.082	0.093	0.136	0.072	0.099	0.105

(a) Euro area, Great Britain, Sweden & Denmark. (b) Countries weighted in accordance with Z with $f(Z) = Z \max(\text{abs}(Z \text{France} - Z_i))$, where i is the percentage of undeclared work due to supplementary hours in each country.

Note: Probit estimation of undeclared work (binary variable). Standard errors in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. EPMF: undeclared work over the period 2012-2015; Eurobarometer: undeclared work in 2013.

Sources: EPMF 2015 and Eurobaromètre 2013.

introducing an "EPMF" indicator to take into account the average differences – notably the temporal effect, as the two sources do not cover

the same year). The two databases do not contradict each other: on the contrary, the important effects remain (age, acceptability of tax fraud

and undeclared work, low risk and fraudulent people around the individual). Some coefficients become significant, such as the expected contribution of the self-employed to undeclared work.

This validation of the Eurobarometer for France allows us to use it with a little more confidence for making a European comparison. With this source, the results for France are shockingly close to those of neighbouring countries, in particular Germany and Denmark: the same positive or negative influence and a significant coefficient for age, acceptability of undeclared work, the people around the individual and for some occupational categories, e.g. intermediate professions. In some cases, the values of the coefficients are themselves comparable (acceptability and people around the individual).²¹ Equally surprising, the estimates for the European comparison group give effects that are even more similar to those for France²² for age, marital status, self-employed status and all subjective factors. These results therefore suggest that the correlates of undeclared work are similar in countries where the nature of such activity is similar (supplementary work), as well as with subjective factors that reflect to some extent regularities in terms of fiscal morality, civic values, risk and peer effects. The residual country effect (fixed effect), designed to identify specific institutional or cultural aspects not taken into account in the rest of the model, is rather marginal: it explains 13% of the R^2 , compared to 20% for the socio-demographic variables and 67% for the subjective variables. Finally, in order to improve this estimate, we weight the countries by a measure of proximity to France in terms of the nature of the undeclared work. As indicated above, we use the weights $f(Z_i) = Z_{max} - \text{abs}(Z_{France} - Z_i)$ with Z_i as the percentage of undeclared work due to supplementary hours worked in country i . This assigns greater importance to nearby countries such as the northern European countries, in which undeclared work is most often associated with supplementary income. The last column of the table shows that this correction has little effect on the previous conclusions (this is also true when we use other criteria for Z , such as GDP per capita or the unemployment rate).

* *
*

This article proposed an analysis of undeclared work in France based on the EPMF survey conducted in 2015. We also used Eurobarometer

data to successively conduct a cross-validation of the results obtained for France, and then to perform a European comparison. The main findings of this study highlight the role of socio-demographic and economic variables on the one hand. Results also indicate the impact of subjective factors (fraud acceptability, perceived risk and level of sanctions and the frequency of undeclared work in the family). The first conclusion is that these two sets complement each other, explaining between 9% and 14% of the variance of undeclared work. Secondly, socio-demographic characteristics and perceptions appear to be correlated, yet they do not cancel each other out. Thirdly, subjective factors appear to be complementary with each other. For example, acceptability only marginally accounts for the perception of illegal work in the people around the individual and would therefore seem to represent only moral or civic values. Finally, we note the cross-cutting nature of intrinsic motivations: individuals' higher tolerance for tax fraud is positively associated with their propensity to engage in undeclared work just as much as their tolerance for undeclared work itself. However, to a certain extent, these effects are cumulative: the likelihood of engaging in undeclared work will thus be higher among those who tolerate different types of fraud than among those who find only undeclared work acceptable.

The replication of our estimates with the Eurobarometer, that structure is comparable to that of the EPMF, leads to similar conclusions; the cumulation of the two samples, which allows for more precise results, also leads to very similar results for the correlates of undeclared work in neighbouring countries. European comparisons confirm the importance of subjective components, which seem to play a similar role in undeclared work practices – despite its more or less *ad hoc* or widespread nature, depending on the country in question. Socio-demographic characteristics do not homogeneously influence undeclared employment in Europe, with the exception of age and some occupational categories (self-employed). The influence of other observable factors (income and qualification levels), which are undoubtedly linked to local labour markets, is less homogeneous. The results of the estimates for France are

21. The value of the coefficients of the perceived risk and perceived penalties variables is more difficult to compare as it is itself relative to the legal and tax system of the country in question. These coefficients indeed reflect the arbitrary perception of the individual, as well as the reality of local institutions.

22. The estimates include country fixed effects. An alternative estimate with fixed regional effects (north-western, southern, eastern Europe) gives similar results.

similar to those obtained for countries in which undeclared work corresponds to supplementary income, in particular Germany and Denmark. On the issue of social benefits, the literature has highlighted the potential difficulty of importing policies from these countries (e.g., “flexicurity”) due to an excessively large difference in civic values (Algan & Cahuc, 2009). Here, in relation to undeclared work or the acceptability of tax fraud, France does not seem so different from Scandinavian countries.

Nevertheless, there are several fundamental issues that need to be considered from a public policy perspective. Firstly, the EPMF survey does not make it possible to assess the extent to which undeclared work, even when occasional, is chosen or suffered by households because of a major financial constraint or poor access to sufficiently remunerative full-time jobs. Secondly, our analysis does not claim to be causal. Some correlations may reflect reverse causality and measurement errors – for example, if the response regarding the acceptability of fraudulent behaviour (or the perception of the behaviour of people around the individual) reflects a degree of justification of one’s own

actions. The coefficients of the statistical model may also be biased due to omitted variables that affect both these factors and the probability of engaging in undeclared work. This is typically the case for subjective variables related to risk and penalties: highly risk-averse individuals tend to overestimate the probability of being caught and, at the same time, are less likely to engage in undeclared work. Thus, even if our findings overlap with the results of the experimental literature and propose a profile of potential fraudsters in France, it is difficult to draw precise recommendations in terms of the fight against undeclared work. To identify the most effective action levers, it would be necessary to compare the role of intrinsic (moral and civic values) and extrinsic (risk and penalties) motivations on behaviour, for instance by using random draws of employees subjected to messages emphasising one aspect or the other. These experiments would make it possible to better calibrate the official communication of administrative bodies such as ACOSS, the MSA or the DGFIP, for instance using personalised emails or inserts on the personal page of taxpayers on the website of these administrative bodies, with the objective being to reduce fraudulent behaviour. □

Link to Online Appendix:

https://www.insee.fr/en/statistiques/fichier/5430850/ES-526-527_AitBihiOuali-Bargain_Online-Appendix.pdf

BIBLIOGRAPHY

- Algan, Y. & Cahuc, P. (2006).** Civic Attitudes and the Design of Labor Market Institutions (IZA): Which Countries can Implement the Danish Flexicurity Model? *IZA Discussion Papers* N° 1928. <https://ssrn.com/abstract=878337>.
- Andreoni, J., Erard, B. & Feinstein, J. (1998).** Tax compliance. *Journal of Economic Literature*, 36(2), 818–860. <https://www.jstor.org/stable/pdf/2565123.pdf>
- Bajada, C. & Schneider, F. (2009).** Unemployment and the Shadow Economy in the OECD. *Revue économique*, 60(5), 1033–1067. <https://doi.org/10.3917/reco.605.1033>
- Bellemare, C., Fortin, B., Joubert, N. & Marchand, S. (2012).** Effets de pairs et fraude sociale : une analyse économétrique sur données françaises. *Cahier Scientifique CIRANO* N° 33. https://www.researchgate.net/profile/Bernard-Fortin-2/publication/268005940_Effets_de_pairs_et_fraude_sociale_une_analyse_econometrique_sur_donnees_francaises/links/546cd09a0cf2193b94c57778/Effets-de-pairs-et-fraude-sociale-une-analyse-econometrique-sur-donnees-francaises.pdf
- Benedek, D. & Lelkes, O. (2011).** The distributional implications of income under-reporting in Hungary. *Fiscal Studies*, 32(4), 539–560. <https://doi.org/10.1111/j.1475-5890.2011.00150.x>
- Brühlhart, M. & Parchet, R. (2014).** Alleged tax competition: The mysterious death of bequest taxes in Switzerland. *Journal of Public Economics*, 111, 63–78. <https://doi.org/10.1016/j.jpubeco.2013.12.009>
- Chetty, R., Looney, A. & Kroft, K. (2009).** Saliency and taxation: Theory and evidence. *American Economic Review*, 99(4), 1145–1177. <https://doi.org/10.1257/aer.99.4.1145>

- Tagnani, S. (2017).** La mesure du travail dissimulé et ses impacts pour les finances publiques. Rapport du groupe de travail du Conseil National de l'Information Statistique. <http://www.epsilon.insee.fr/jspui/bitstream/1/82616/1/Chronique-13.pdf>
- Cowell, F. A. (1985).** Tax evasion with labour income. *Journal of Public Economics*, 26(1), 19–34. [https://doi.org/10.1016/0047-2727\(85\)90036-2](https://doi.org/10.1016/0047-2727(85)90036-2)
- Dwenger, N., Kleven, H., Rasul, I. & Rincke, J. (2016).** Extrinsic and intrinsic motivations for tax compliance: Evidence from a field experiment in Germany. *American Economic Journal: Economic Policy*, 8(3), 203–232. [https://doi.org/10.1016/0047-2727\(85\)90036-2](https://doi.org/10.1016/0047-2727(85)90036-2)
- Fack, G. & Landais, C. (2016).** The effect of tax enforcement on tax elasticities: Evidence from charitable contributions in France. *Journal of Public Economics*, 133, 23–40. <https://doi.org/10.1016/j.jpubeco.2015.10.004>
- Farriol, B. (2014).** Conséquences économiques, financières et sociales de l'économie non déclarée, Les avis du Conseil économique, social et environnemental. *Journal officiel de la République française*, mandature 2010-2015, séance du 24 juin 2014. https://www.lecese.fr/sites/default/files/pdf/Avis/2014/2014_15_consequences_economie_non_declaree.pdf
- Feld, L. P. & Tyran, J. R. (2002).** Tax evasion and voting: An experimental analysis. *Kyklos*, 55(2), 197–221. <https://doi.org/10.1111/1467-6435.00183>
- Fortin, B., Joubert, N. & Lacroix, G. (2004).** Offre de travail au noir en présence de la fiscalité et des contrôles fiscaux. *Économie & prévision*, 164-165, 145–163. <https://doi.org/10.3917/ecop.164.0145>
- Fortin, B., Lacroix, G. & Villeval, M. C. (2007).** Tax evasion and social interactions. *Journal of Public Economics*, 91(11-12), 2089–2112. <https://doi.org/10.1016/j.jpubeco.2007.03.005>
- Frederiksen, A., Graversen, E. K. & Smith, N. (2005).** Tax evasion and work in the underground sector. *Labour Economics*, 12(5), 613–628. <https://doi.org/10.1016/j.labeco.2004.02.011>
- Galbiati, R. & Zanella, G. (2008).** The social multiplier of tax evasion: Evidence from Italian audit data. Department of Economics of the University of Siena, Working Paper N° 539. <https://ideas.repec.org/p/usi/wpaper/539.html>
- Halla, M. (2012).** Tax morale and compliance behavior: First evidence on a causal link. *The BE Journal of Economic Analysis & Policy*, 12(1), article 13. <https://doi.org/10.1515/1935-1682.3165>
- Haynes, L., Goldacre, B. & Torgerson, D. (2012).** Test, learn, adapt: Developing public policy with randomised controlled trials. UK Cabinet Office, Behavioural Insights Team. [https://researchonline.lshtm.ac.uk/id/eprint/201256/1/TLA-1906126%20\(2\).pdf](https://researchonline.lshtm.ac.uk/id/eprint/201256/1/TLA-1906126%20(2).pdf)
- Joubert, N. (2003).** Offre individuelle de travail au noir : approche micro-économétrique. Thèse de doctorat, Université Lyon 2. https://www.economie.gouv.fr/files/files/DNLF/campagne2012-2013/Doctorat_Joubert.pdf
- Kleven, H. J. (2014).** How can Scandinavians tax so much? *Journal of Economic Perspectives*, 28(4), 77–98. <https://doi.org/10.1257/jep.28.4.77>
- Kleven, H. J., Knudsen, M. B., Kreiner, C. T., Pedersen, S. & Saez, E. (2011).** Unwilling or unable to cheat? Evidence from a tax audit experiment in Denmark. *Econometrica*, 79(3), 651–692. <https://doi.org/10.3386/w15769>
- Lacroix, G. & Fortin, B. (1992).** Utility-based estimation of labour supply functions in the regular and irregular sectors. *The Economic Journal*, 102(415), 1407–1422. <https://doi.org/10.2307/2234797>
- Lemieux, T., Fortin, B. & Frechette, P. (1994).** The effect of taxes on labor supply in the underground economy. *The American Economic Review*, 84(1), 231–254. <https://www.jstor.org/stable/2117980>
- Luttmer, E. F. & Singhal, M. (2014).** Tax morale. *Journal of Economic Perspectives*, 28(4), 149–168. <https://doi.org/10.1257/jep.28.4.149>
- Lyssioutou, P., Pashardes, P. & Stengos, T. (2004).** Estimates of the black economy based on consumer demand approaches. *The Economic Journal*, 114(497), 622–640. <https://doi.org/10.1111/j.1468-0297.2004.00234.x>
- Perry, G. E., Arias, O., Fajnzylber, P., Maloney, W. F., Mason, A. & Saavedra-Chanduvi, J. (2007).** *Informality: Exit and exclusion*. The World Bank Publications.
- Pissarides, C. A. & Weber, G. (1989).** An expenditure-based estimate of Britain's black economy. *Journal of Public Economics*, 39(1), 17–32. [https://doi.org/10.1016/0047-2727\(89\)90052-2](https://doi.org/10.1016/0047-2727(89)90052-2)
- Schneider, F. (2002).** Size and measurement of the informal economy in 110 countries. *Workshop of Australian National Tax Centre*, ANU, Canberra, Vol. 17. <https://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.534.406&rep=rep1&type=pdf>
- Schneider, F. (2011).** *Handbook on the Shadow Economy*. Cheltenham (UK): Edward Elgar Publishing Company.
- Schneider, F. & Enste, D. H. (2013).** *The shadow economy: An international survey*. Cambridge University Press. <https://doi.org/10.1017/cbo9781139542289>

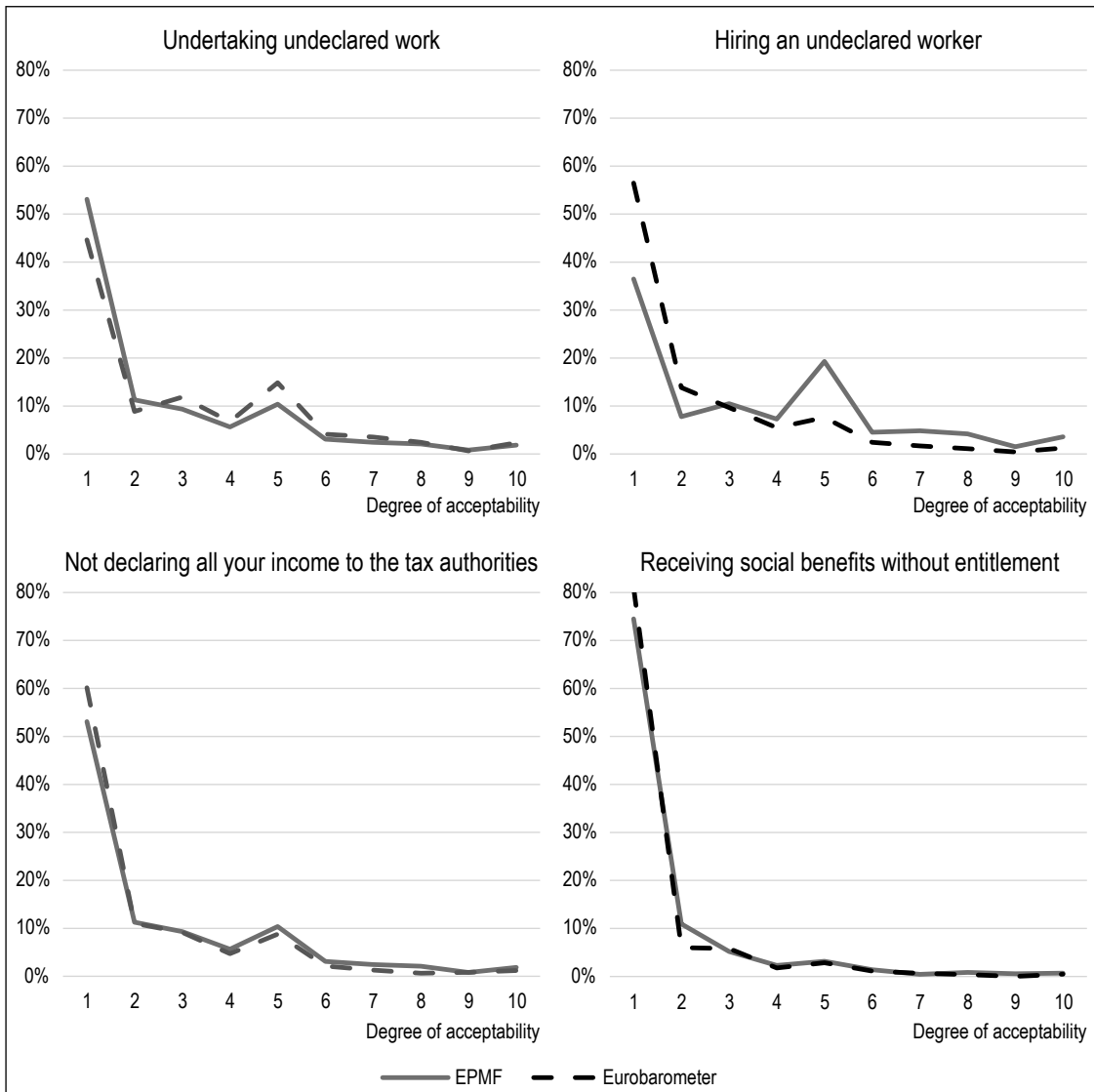
Slemrod, J. & Weber, C. (2012). Evidence of the invisible: toward a credibility revolution in the empirical analysis of tax evasion and the informal economy. *International Tax and Public Finance*, 19(1), 25–53. <https://doi.org/10.1007/s10797-011-9181-0>

Torgler, B. & Schneider, F. (2009). The impact of tax morale and institutional quality on the shadow economy. *Journal of Economic Psychology*, 30(2), 228–245. <https://doi.org/10.1016/j.joep.2008.08.004>

Trandel, G. & Snow, A. (1999). Progressive income taxation and the underground economy. *Economics Letters*, 62(2), 217–222. [https://doi.org/10.1016/s0165-1765\(98\)00232-8](https://doi.org/10.1016/s0165-1765(98)00232-8)

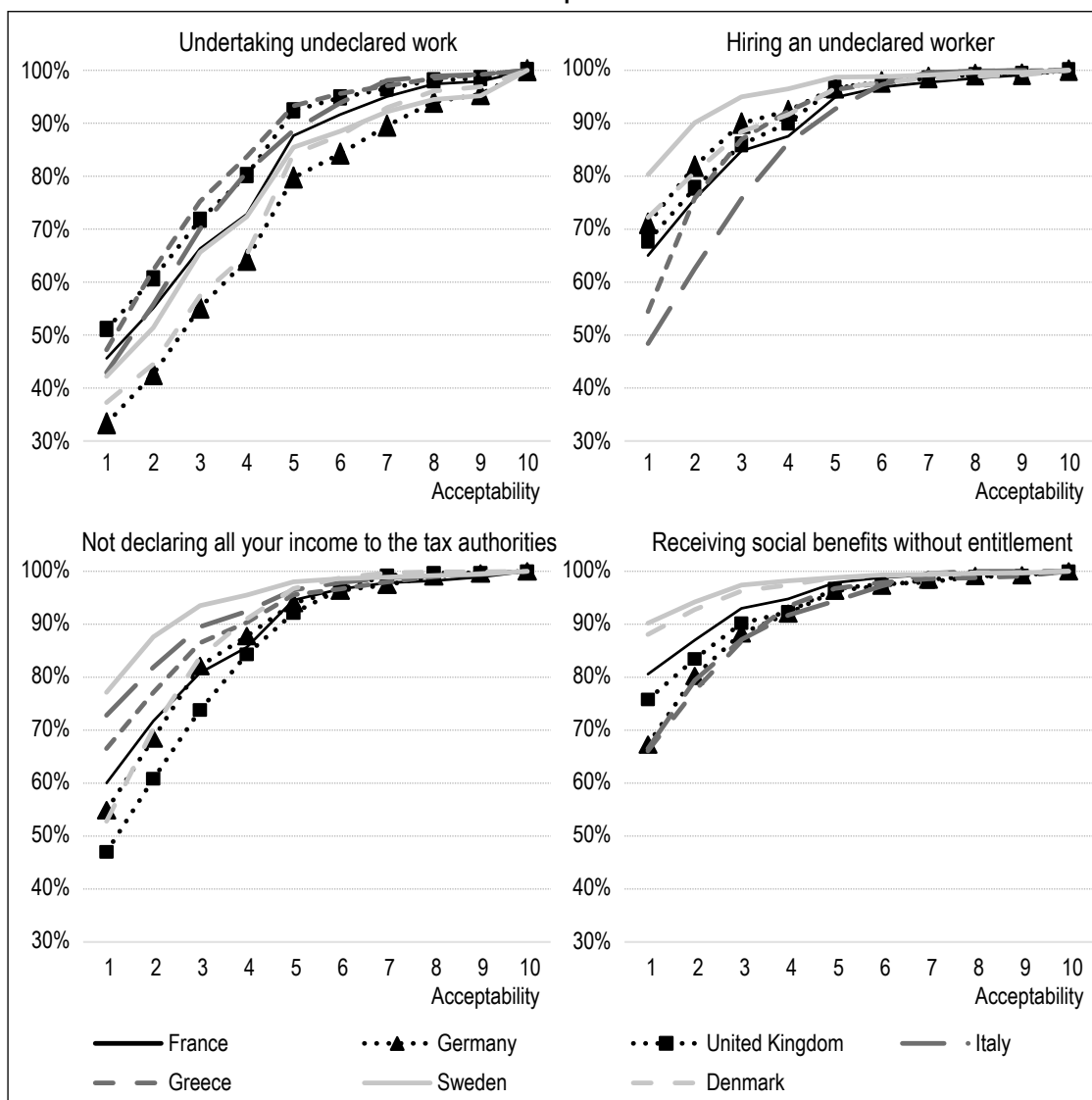
Williams, C. C. & Horodnic, I. A. (2016). Tackling the undeclared economy in the European Union: an evaluation of the tax morale approach. *Industrial Relations Journal*, 47(4), 322–340. <https://doi.org/10.1111/irj.12142>

Figure A-I – Distribution of the acceptability of fraudulent behaviour, France EPMF and Eurobarometer



Reading note: For most individuals, all fraudulent behaviours are deemed to be unacceptable (response 1 on a scale from 1 to 10).
Sources: EPMF 2015 and Eurobarometer 2013.

Figure A-II – Cumulative distributions^(a) of the acceptability of different types of fraud, France and European countries



^(a) this presentation allows for differences between countries to be distinguished, which would not be possible because of the high concentration of the response "totally unacceptable" in all countries, making the distribution curves flattened in a similar fashion, hence indiscernible (value 1 on the acceptability scale of 1 to 10).
Source: Eurobarometer 2013.

Table A-1 – Comparison of sources

	EPMF (2015)		Eurobarometer (2013)		Differences		Census France 2015 (INSEE)
	France	France	France	Europe*	France (EPMF) - France (Eurobaro.)	France (EPMF) - Europe (Eurobaro.)	
Socio-demographic characteristics							
Female	0.52 (0.50)	0.54 (0.50)	0.54 (0.50)	0.54 (0.50)	-0.02 <i>0.29</i>	-0.02 <i>0.09</i>	0.52
Age	48.8 (17.79)	50.2 (18.97)	49.2 (18.33)	49.2 (18.33)	-1.4 <i>0.05</i>	-0.4 <i>0.34</i>	49.3
Married	0.47 (0.50)	0.42 (0.49)	0.51 (0.50)	0.51 (0.50)	0.05 <i>0.008</i>	-0.04 <i>0</i>	0.46
Number of people in the household	2.51 (1.40)	2.55 (1.45)	2.57 (1.39)	2.57 (1.39)	-0.04 <i>0.46</i>	-0.06 <i>0.07</i>	2.22
Baccalaureate and higher diploma	0.47 (0.5)	0.47 (0.5)	0.46 (0.5)	0.46 (0.5)	0 <i>1</i>	0.01 <i>0.39</i>	0.45
Self-employed worker	0.04 (0.19)	0.04 (0.19)	0.07 (0.26)	0.07 (0.26)	0 <i>1</i>	-0.03 <i>0</i>	0.04
Occupation/Activity status							
Manual worker	0.14 (0.12)	0.1 (0.30)	0.11 (0.31)	0.11 (0.31)	0.04 <i>0.001</i>	0.03 <i>0</i>	0.13
Retired	0.28 (0.45)	0.36 (0.48)	0.30 (0.46)	0.30 (0.46)	-0.08 <i>0</i>	-0.02 <i>0.058</i>	0.28
Executive/Manager	0.09 (0.28)	0.14 (0.34)	0.11 (0.31)	0.11 (0.31)	-0.05 <i>0</i>	-0.02 <i>0.003</i>	0.09
Intermediate profession	0.16 (0.37)	0.03 (0.17)	0.05 (0.23)	0.05 (0.23)	-0.03 <i>0</i>	0.11 <i>0</i>	0.14
White-collar worker	0.16 (0.37)	0.19 (0.39)	0.20 (0.40)	0.20 (0.40)	-0.03 <i>0.04</i>	-0.04 <i>0</i>	0.17
Homemaker, unemployed, other inactive	0.16 (0.37)	0.19 (0.39)	0.23 (0.42)	0.23 (0.42)	-0.03 <i>0.04</i>	-0.06 <i>0</i>	0.08
Number of observations	2,004	1,027	20,180	20,180			

*Euro area, Great Britain, Sweden & Denmark.

Notes: The standard deviations are shown in brackets, with the p-values of difference tests shown in italics.

Sources: EPMF 2015 and Eurobarometer 2013