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Empirical Challenges in the Study of Employer Associations and their Representativeness

Thomas Breda*

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Abstract: The paper examines the quality and appropriateness of the data available to measure firms' affiliation to Employer Associations (EAs). We find large discrepancies in affiliation rates obtained from the five different data sources available for France, leading us in particular to discard tax data. Focusing on survey data, we show that asking managers about affiliation to EAs in general or affiliation to a list of specific EAs can lead to large differences in affiliation rates, highlighting the importance of the framing of survey questions. We then provide methods to estimate an aggregate firm-level affiliation rate from surveys covering workplaces with eleven or more employees. Exploiting (i) conflicting survey responses regarding EA affiliation between distinct establishments in the same firm and (ii) survey responses for firms that report paying contributions to EAs in their financial statements, we finally estimate the shares of employers that wrongly declare being or not being affiliated to EAs, and provide a rate of affiliation corrected for such errors. The implications for econometric analysis of the high observed error rates are discussed.

Keywords: Employer Associations, Representativeness, Data Quality, Measure

Ethic statement - Not applicable

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1 Introduction

Since Freeman & Medoff (1984) seminal book “What do unions do?”, trade unions have attracted considerable attention in the economics and industrial relations literatures. In contrast, Employer Associations (EAs) have remained little studied, with most research being qualitative and focused on organisational strategies (see, e.g., Behrens 2004, Brandl & Lehr 2019, Demougin, Gooberman & Hauptmeier 2019, Gooberman et al. 2020, Sheldon et al. 2016, Sheldon & Thornthwaite 2004, Silvia & Schroeder 2007). This asymmetry is found even for countries where bargaining occurs primarily at the industry or national levels, for which the role and representativeness of trade unions and EAs may be considered as equally important. The lack of empirical work on EAs’ economic effects is also surprising in regard to their potential importance for the provision of sectoral public goods (e.g. collective bargaining, training, coordination) but also to the possible threat they may represent to market efficiency (e.g. through collusion of firms, barriers to entry, increased firms’ monopsony power, see Martins (2020) for a survey).

A possible reason that could explain the lack of empirical studies on EAs is the limited amount of data available to study them, and their limited quality (Traxler 2000, Traxler et al. 2001). Figure 1, taken from Visser (2021), compares in 24 European countries the percentage of employees working in a firm member of an EA according to two distinct data sources: the European Company Survey (ECS) where membership rates are computed from the declarations of firm managers, and the database on Institutional Characteristics of Trade Unions, Wage Setting, State Intervention and Social Pacts (ICTWSS) where the rates are calculated by aggregating the number of affiliates declared by the main EA in each country. In most countries, there is a substantial difference between the two sources. For instance, in 17 out of the 24 studied countries, the difference in membership rates is above 15 percentage points. Such a large gap casts doubts on the reliability of the available data to study them.

This paper investigates this question of the quality of the data available to study EAs. It first reviews the possible empirical sources available to study them. It then compares

the conclusions that can be drawn from these sources for one country (France), starting from simple comparisons of EAs coverage obtained from the various available data sources, to a more refined description of the determinants of EA membership based on different datasets.

The main contribution is methodological. A prerequisite to studying EAs empirically is to have reliable data. We therefore examine to what extent the available data is consistent and if one may trust a single indicator of EA membership to apprehend their representativeness and in turn assess their importance in the economy. We conclude with a number of suggestions to improve the quality of data collection. The second contribution is to link the discrepancies between the existing quantitative measures of EA affiliation to the functioning of EAs, the services they do or do not deliver to affiliated and non-affiliated firms, and more broadly to their role in society from a socioeconomic point of view. The paper offers an opportunity to discuss, based on various statistical sources, the different meanings of the concept of affiliation. It examines if EAs' economic role and importance can be meaningfully assessed with a single indicator of affiliation rate typically used in cross-country comparisons.

There are three broad strategies to measure EAs audience and representativeness. The first is to ask firms if they are affiliated to these associations. This is the type of information gathered in representative firm- or establishment-level surveys. The second way is to directly ask EAs about their affiliates. This direct source is privileged for example for the country-level statistics provided in the well-known ICTWSS database (see below). The third way is to observe directly the contributions paid by firms to EAs from a fiscal source.

France is an ideal country for this study because it benefits from all these types of sources. There is first information on EA affiliation in two distinct surveys, the detailed establishment-level employment relation survey REPONSE, and in the French part of the European Company Survey (ECS). A legal criteria was then introduced in 2017 to establish EAs representativeness at the industry and national levels. As a consequence, the French EAs that are asking for legal representativeness have to report their number of affiliates at these levels. The reports provided by EAs are certified by an external auditor and

should provide reliable information. Finally, a new cell for contributions paid to EAs was introduced in firm tax records in 2009, providing in principle another source of reliable information on affiliation at the firm-level for the universe of French private firms.

Combining these sources, we revisit existing measurements of EAs coverage for France (e.g., Bunel & Saglio 1984, Offerlé 2009, Goetschy & Rozenblatt 1992, Goetschy 1998, Amossé et al. 2012, Pignoni 2015), as well as its recent evolution. Our results point to large discrepancies across sources. We investigate a series of possible basic reasons for these differences and conclude from our investigations on the reliability of the various sources. Two conclusions emerge. First, contributions paid in tax returns strongly under-estimate EAs affiliation rates, likely because many firms fail to declare their paid contributions correctly in their tax declaration. Hence, this new type of data source in the literature on EAs that should in principle have provided rich and comprehensive high-quality information should be discarded for now. Second, survey measures and statistics based on what EA declare are more consistent, in the sense that differences remain around 10 percentage points (50.2% of workplaces with 11 or more employees in REPONSE are affiliated against 39.0% in ECS).

If the tax return information missed several affiliated firms, we are left with standard survey data for the economic analysis of the determinants or effects of EAs affiliation. We therefore try to provide a couple of empirical exercises to assess the quality of such data. First, we use standard linear probability models to study in a descriptive fashion the determinants of EA membership in REPONSE and ECS. The potential determinants (e.g. firm size, corporate structure, market size, industry, etc.) are constructed similarly in both data sources, allowing for a direct comparison. Reassuringly, even if baseline levels of affiliation are not fully consistent in the two datasets, the determinants are to some extent similar.

Second, we focus on the most reliable micro datasource—the REPONSE survey—and use it to provide global estimates of the coverage of EAs in the French private sector. To this aim, we start by providing a reweighting strategy to establish statistics representative at firm level from a workplace-level survey. We then extrapolate coverage rates observed in

the survey for workplaces just above 10 employees to smaller workplaces (not covered by the survey). The combination of these two exercises allow us to propose a global coverage rate from REPOSE that can be directly compared to the estimates established from the official declarations made by EAs.

Third, we take advantage of the presence of several establishments belonging to the same firm in the REPOSE survey to examine if the responses provided by their managers regarding their firm affiliation status are consistent with each other. We also match the REPOSE survey with the fiscal data. While the latter misses several affiliated firms, it has an advantage: when a firm has paid contributions to an EA, we know that it is likely to be affiliated to it. Using this insight, we restrict the analysis to the firms reporting a contribution to EAs in the fiscal data and examine if the managers interviewed in REPOSE are aware that their firm is affiliated. These analyses allow us to estimate the shares of employers that wrongly declare being or not being affiliated to EAs and to provide in turn a corrected estimate of EA membership, once measurement error has been accounted. We finally discuss how attenuation bias generated by measurement error in EA affiliation may affect analysis of its effects.

While our conclusions are not entirely reassuring, especially regarding the opportunity to use panel data, they provide a set of methodologies that may be exploited to study measurement accuracy of EA membership in other countries or other outcomes such as union membership. They also illustrate that firms' involvement in EAs, and more broadly the economic importance of EAs are difficult to capture with a single indicator. They finally allow us to make a set of policy recommendations to improve data collection on EAs. An objective of the paper is indeed to increase awareness on the limitations of existing data in order to call for improvements in the way the data is collected.

The rest of this paper is organised as follows. Section 2 provides a literature review and more information on EAs that is latter used to interpret the empirical findings. Section 3 describes the institutional context and different data sources. Section 4 provides the results, and section 5 concludes.

2 Literature review and background information on Employer Associations

The various roles of employer associations. Employer associations are organisations that represent the interests of a group of businesses or employers. Firms may choose to adhere to employer associations for a variety of reasons, including:

- **Collective Bargaining:** EAs can negotiate on behalf of their members with trade unions or government bodies, helping firms to negotiate wages, working conditions, and benefits for their employees. Even if in a country like France, industry-level agreements are almost systematically extended to non-affiliated firms, joining an employer association can be way to seat at the bargaining table or indirectly shape the EA's bargaining position.
- **Legal services:** they may include advice on employment law, contract law, and other legal matters that are relevant to the operation of a business. In France, EAs typically have in-house lawyers who can provide legal assistance to their members, for example when a grievance is filled by an employee. Legal services seem to be an important determinant of affiliation in France. For example, the UIMM, which is the powerful federation organizing firms in the metal industry has the reputation to have the best specialists of employment law, and some firms declare adhering to this federation only for this (Offerlé 2013).
- **Networking:** Employer associations provide opportunities for firms to network with other businesses in their industry. This can be useful for sharing information and best practices, finding potential partners or customers, and keeping up with the latest industry trends.
- **Advocacy:** Employer associations can represent the interests of their members by lobbying governments and other stakeholders on issues that are important to the

industry. This can include advocating for favourable tax policies, regulations, or industry-specific legislation.

- **Training and Education:** Many employer associations offer training and education programs to their members. This can include workshops, seminars, and certification programs that help firms stay up to date on the latest industry standards and best practices.
- **Cost savings:** By joining an employer association, firms may be able to access group discounts on goods and services, such as insurance, legal services, or marketing services.

These various activities can be grouped in three essential functions: corporatist political representation, intervention in industrial relations (mostly collective bargaining) and the provision of services to members (Demougin, Gooberman, Hauptmeier & Heery 2019). The literature has tried to understand how EAs allocate their means between these functions and, recently, how they responded and adapted to the recent widespread trends of liberalisation and labour markets deregulation.

A first question concerns whether EAs supported market liberalisation and the general movement from coordinated to less-coordinated economies. The variety of capitalism approach (Hall & Soskice 2001) emphasises the high stability of European industrial relations and the support of EAs for institutions of non-market coordination, especially in countries with coordinated economies. However, EA members are usually strongly advocating for entrepreneurial freedom and EAs official position is almost systematically against market regulation (Streeck 2009). This position conflicts with the fact that participating into coordination and bargaining is one of the main purposes of EAs.

To understand how this conflict of interest between affiliated firms and the EA representing them was resolved, the literature highlights a number of factors: the industrial relation system EAs operate in, their governance structure, the type of firms they represent, path-dependence, etc. Sánchez-Mosquera (2022) highlight the role of path-dependence and

country-specific institutions to understand the opposition of the main Spanish EA to market liberalisation. Studying Italy, Portugal and Spain, Bulfone & Afonso (2020) highlight the heterogeneity across EAs, and show that those representing small firms (numerous in these countries) were particularly prone to resist to state-led reforms liberalising industrial relations during the Euro crisis because these firms need industry-level bargaining. This type of conflicts between advocacy activities and members' interests is actually inherent to collective organisations like EAs. In France, the position of a former top leader of the Medef (the main French EA) regarding the move away from administrative price control in the 1980s illustrates this well:

"You know that the question of prices has been an issue that has helped the professional EAs a lot. And, in my opinion, the French professional organisation was extraordinarily virtuous in pleading for price freedom and obtaining it, because it was going to the dogs, to suicide. This shows that it has a sense of the general interest. Because its interest was to maintain the control of the prices, it is obvious, since it was the element of discussion with the public authorities and that it was a big thing, that occupied us many many meetings." cited by Offerlé (2013) p. 125.

The second question regards how EAs adapted to changes induced by labor market liberalization and/or the decline in collective bargaining. Since previous research has found EAs activity to be very dependent on collective bargaining (Traxler 2004), and collective bargaining being declining over time, one could think that EAs density had declined. However, Brandl & Lehr (2019), Traxler (2010) find that EAs rates are quite stable over time for most Western countries. In fact, despite this apparent stability, the number of EAs and their structure has changed considerably over time. This phenomenon has led research to focus on the adaptation of EAs and their structure, and on firms' motivations to adhere to EAs. Recent research typically show that in countries where collective bargaining declined, EAs have adapted, shifting their focus from collective bargaining to lobbying, provision of services, legal support, or training (see e.g. Gooberman et al. (2019, 2020), Demougin, Gooberman & Hauptmeier (2019) for the U.K., Helfen (2012) for Germany). In Germany for example some EAs started to offer "bargaining-free membership" to their

members, allowing them to benefit from offered services, while avoiding the obligations arising from industry-level collective agreements (Behrens & Helfen 2019). One powerful theoretical framework to analyse these adaptations is the model developed by Schmitter & Streeck (1999) regarding EAs organizational properties to respond to the logic of membership (based on the properties of the represented group) and the logic of influence (based on the properties of the state, unions and other external institutions) depending on capacities and resources and internal governance. Applying this framework, Demougin, Gooberman & Hauptmeier (2019) show that, following the decline of tripartite bodies and collective bargaining, UK EAs adapted and shifted from the logic of influence to the logic of membership, offering to their members a broader range of services.

Organisation and structure of EAs in France. French EAs are grouped together within mostly three higher-level entities, or confederations. The Medef (*Mouvement des Entreprises de France*) is the largest one. It gathers both several federations which are organisations representing employers' interests in a specific sector, and local entities (in almost each of the 95 French *departements*). Some federations are very powerful and the Medef has recently tried to reinforce the local entities, which it controls more directly (e.g., by appointing the local leaders), in order to generate a counter-power (Offerlé 2013). The governance is complex and not fully transparent. Both federations and local entities get seats in the general assembly or executive committee. Firms may adhere directly to the Medef through a local entity or adhere indirectly through a federation. They sometimes do both. Some federations actually overlap and firms are sometimes members of more than one federations. These choices depend, among other things, on a trade-off between the cost of the contribution, which may vary a lot depending on the type of affiliation, and gaining influence in the head organisation (often to have a say regarding political lobbying and, relatedly, national policy-making). Some firms, such as tobacco shops, are affiliated automatically to their industry's federation.

The two other high-level entities are the CPME (Confédération des petites et moyennes entreprises) which is focused on SMEs, and the UPA (Union patronale des artisans) which

covers mainly small businesses. Some federations are affiliated to both Medef and one of these two (or both). Some firms can be affiliated directly to a local union of the Medef and a federation belonging to the CPME. Historically, several federations were affiliated to both the Medef and the CPME but this has been less and less the case over time, with the desire of the main organisations to distinguish from each other.

Unlike local or industry-level trade unions, which are in France clearly integrated within one of the main national unions, the structure of French EAs is very opaque. It differs across sectors and is highly path-dependent, being shaped by historical specificity. It is worth noting that some federations belonging to the Medef do not even mention this affiliation on their website.

These organisational aspects are key to understand the challenge of measuring EAs membership. Some firms may ignore the head organisation they are indirectly affiliated to. Others may depend on a very particular industry-level structure they do not even identify as a proper EA. In some cases, workplace managers may also be involved in the local structures of EAs and use them to get legal advice or for networking, even if their firm is not formally affiliated. All these aspects should be kept in mind when reflecting on the empirical analyses provided in the paper.

3 Materials and methods

3.1 Institutional context

France industrial relations system is characterised by the following features. First, social partners bargain at the workplace, industry and national levels. At the national level, however, social partners reach common positions that are not usually applied immediately but instead need to be translated into actual laws. Second, union density is very low (around 10%). Third, EAs membership appears relatively large, according to existing sources (see below). Fourth, the coverage of collective agreements at the industry-level is very large due to an almost systematic extension by the state of the collective bargaining

agreements.

France also introduced official representativeness criteria for both unions and EAs since the 2000s. Regarding EAs, there was no legal framework defining the representativeness of employers' organisations before 2013, and mutual recognition by social partners was typically applied. In 2013, EAs started to engage in discussions at the national level and reached a common position regarding criteria of representativeness in June 2013. The position led to an inter-industry agreement in January 2014 followed by a series of laws in March 2014 and July 2016. Based on these laws, EAs were bound by the same criteria as unions from January 2017 onward. After that date, an EA is representative at a given level (industry or inter-industry) if it gathers either (i) at least 8% of the firms that are members of the EAs applying for "representativeness" at that level, or (ii) at least 8% of the total workforce in these firms. To apply this rule, EAs were asked to report their number of affiliated firms in each industry, and their reports were certified by official auditors, hence providing a new, official source to measure membership to EAs¹.

3.2 Data sources

The REPOSE surveys (years 2011 and 2017). The REPOSE survey is managed by the DARES, and is one of the main sources of data on industrial relations in France. It is carried out every six years. We use the 2011 and 2017 waves that include about 4,000 establishments of firms with 10 employees or more operating in the business sector (excluding agriculture). A management representative (usually the top executive in the establishment or the HR manager) completes a long face-to-face interview in each establishment, and replies to a large number of questions covering notably the organisation of work, the technologies used, and industrial relations. In 2017 the initial sample includes 4,364 interviews. We exclude associations, foundations or public firms, keeping a final sample of 3,525 establishments belonging to private firms.² Two sets of weights are

¹For a detailed analysis of the introduction of representativeness criteria in France, see Bérout et al. (2012) and other articles in the same volume.

²Publicly owned companies or associations operating in the private sector are actually often affiliated to EAs. In practice, excluding them has little impact on our results. However it makes the REPOSE

provided with the REPONSE managers survey: one that makes statistics representative of all establishments in the scope of the survey, and another one that makes statistics representative of workers in these establishments. We use these weights accordingly.

Managers surveyed in the REPONSE survey are asked if their establishment belongs to a firm that is affiliated directly or indirectly to the following EAs: MEDEF, CGPME (now renamed CPME), UPA, UNAPL, and UDES. These are the main French EAs. Managers are then also systematically asked if they are affiliated to other EAs, and if yes, the name of these organisations. We build from these questions an indicator variable equals to one if a firm belongs to an EA.^{3,4}

The European Company Survey (2013, 2019). The European Company Survey (ECS) provides information on firms EAs membership in several European countries. The survey is produced by the European Foundation for the Improvement of Living and Working Conditions (Eurofound) and covers over twenty European countries. We use the last two waves (2013 and 2019) which are the only ones to provide information on EA membership. The ECS dataset is composed of an Employee Representative (ER) questionnaire and a Management (MM) questionnaire. We use only the latter as it includes the information on EA membership. The MM file of the 2019 ECS wave data originally contains detailed information on 21,869 establishments across 32 countries (1,360 for France). The

sample more comparable to the ECS one. This is the main reason why we did it.

³Several managers did not know if their firm belonged to the smaller EAs such as UPA, UNAPL or UDES. As affiliation rates to these EAs is very small, we considered, when the information was missing, that firms were not affiliated. This avoids throwing away too many observations, and we checked that it had little impact of the estimated affiliation rates. In contrast, missing information for affiliation to the MEDEF and CGPME was treated as such (for a firm that does not know its affiliation to the MEDEF and declares not being affiliated to other EAs, the affiliation status is considered to be missing).

⁴Note that the REPONSE survey is very rich and includes other useful questions to understand and characterise employers' participation in EAS. For example, the survey respondent is asked if she or other executives in the establishment participate in various instances, such as an industry- or local-level federation or union, a chamber of commerce and industry, a labour court, a social security organism, a club of HR managers or a club of managers. In their detailed analysis of the 1998 and 2004 REPONSE survey, Amossé et al. (2012) take advantage of this information to characterise employers' participation in EAs in a richer way than we do here (see their chapter 1). Instead, our purpose here is to examine if one can rely on a single indicator of EA membership to measure their representativeness. We therefore focus on the most objective indicator which is available in a variety of sources and can be compared across them.

ECS survey conducts interviews with senior HR partners at the establishment level, for establishments with more than 10 employees. In order to determine firms EA membership status, we use the variable EMPORG (AEMPORG in 2013), asking 'Is your company a member of any employers' organisation which participates in collective bargaining?'. As with REPOSE, statistics are systematically weighted using either establishment-level or worker-level weights.

The Firm Tax Records (years 2009-2020). The tax data we use corresponds to the tax files of the industrial and commercial profits under the normal regime (BIC-RN), produced by Treasury Department (DGFIP). These files contain the detailed yearly accounting information of each firm operating in France, and it is used to calculate their corporate income tax. It gives us information on both firms financial and economic characteristics. Since 2009, a new cell was introduced in the tax files (cell ES of the 2050 tax form) to report the amount of contribution paid to employers' associations, allowing for a direct identification of the firms contributing to EAs. More precisely the variable ES reports the total amount of "contributions paid to employer and trade organizations". It is in principle mandatory to fill the tax form comprehensively and to report these contributions. We also use the tax group perimeter files (PERIM), produced by the DGFIP, to identify the firms belonging to the same tax group.

EAs reports. The final source on EAs consists in the number of affiliated firms directly reported by the main EAs. Since 2017, this reporting—together with the number of workers these affiliated firms represent—is mandatory in France both at the national level and by branch to establish EAs representativeness, and it is certified by an external auditor. Combining this information with the number of private sector jobs and firms in each branch obtained from social security records (the Déclarations Annuelles de Données Sociales), Langevin (2019) provides an estimate of both the number of firms and workers covered by EAs in each branch and at the national level. In what follows, we simply compare Langevin (2019) measures of EAs audience with those we have recomputed from the data

sources above.

Note that EAs were already providing aggregate information—although not certified—on their affiliates before 2017. EAs declarations were actually the main source of information used in historical studies of EAs coverage (see, e.g., Bunel & Saglio 1984, Goetschy & Rozenblatt 1992). It is also the basis for the information provided in the OECD/AIAS ICTWSS database that is based on the longstanding work of Professor Visser and provides for EU countries country-level information on various features of collective bargaining, including the share of workers covered by EAs (see Visser 2021, for details). We therefore also compare our estimates with those provided in the ICTWSS database.

The DADS établissements. We also exploit establishment-level data constructed from social security records. The data includes all active workplaces in late 2015 and their number of employees. It is used to know the number of workplaces for each firm included in REPONSE and to get precise measures of the firm or workplace size distribution and of the number of individuals employed in different workplace or firm size brackets. These pieces of information are then used to construct firm-level weights for REPONSE and to estimate EA coverage in workplaces or firms of less than 10 employees by extrapolating coverage rates observed in REPONSE just above this threshold.

4 Results

The analysis proceeds in four steps. We first discuss the three available micro data sources (the firm tax records and the REPONSE and ECS surveys) and their appropriateness to measure EAs' audience. We show that the tax records should be discarded while the ECS survey might still be used, for instance for international comparisons, but with some limitations that we highlight. In the remaining three steps, we focus on what appears to be the most appropriate data source: the REPONSE survey. In step 2, we discuss how it can be used to provide firm-level statistics even if the information on affiliation is initially available at workplace level. In step 3, we discuss how it may also be used to estimate

affiliation in smaller firms (less than 10 employees). Finally, we discuss how REPOSE may be used to provide a corrected affiliation rate and for econometric analyses.

4.1 Which data sources are appropriate to measure EAs affiliation?

An overview of the different data sources. Table 1 presents a summary of the different available data sources, the sample and units of observation (firms or workplaces) they cover, and the EA membership rates they provide for the covered units on the covered sample. We find very different rates of coverage across data sources. This might in part reflect that these different sources do not cover the same units of observations nor the same samples.

Regarding firm or establishment-level coverage, statistics based on the official count state that 25% of firms with at least one employee are covered by EAs in 2015, while this is the case for 50.2% of establishments with eleven or more employees in 2017 according to REPOSE and 39% of these establishments in 2019 according to the ECS. In the fiscal data, the rate is even lower than the official count with only 20.1% of firms reporting contributions paid to EAs in 2017. The coverage rate ranges from 20 to 50% across these sources, preventing to draw any clear conclusions. Figure 2 adds more years when available over the 2009-2020 period and confirms the discrepancies observed over the more recent period. It shows, however, that statistics from a given data source are reasonably consistent across available years.

Regarding worker-level coverage, a slightly more consistent picture emerges, with coverage rates being between 57% (ECS 2019) and 69.3% (ICTWSS 2017) in all sources but the tax returns, where it is observed to be much lower (below 20%). Figure 2 adds more years when available and shows that the above conclusions broadly remain for earlier years. Interestingly, coverage obtained by aggregating EAs declared number of affiliates (ICTWSS statistics for the private sector and statistics computed by Langevin (2019) from official count) is well in line with coverage obtained from employers interviewed in the REPOSE

survey. Over the whole period 2008-2017, these sources provide five data points that all indicate coverage rates between 62 and 70% at the worker level. This suggests that these sources, both consistent over time and between them, may provide the most reliable source of information on EA affiliation (even if they do not cover the same sample of workers). In contrast, coverage rates obtained from ECS are systematically lower than those obtained from these sources.

Discarding the firm tax records. Even though the firm tax returns are an appealing administrative data source on paper, the low affiliation rate it delivers in comparison to official sources already suggest that it should be discarded. We provide a couple of additional comparisons to confirm this insight.

First, the lower observed numbers of both firms and workers covered by EAs in the tax returns is not explained by the inclusion of small firms. Indeed there is limited variation of the membership rate by firm size in the fiscal data, and when the sample is restricted to the scope covered by the REPONSE and ECS surveys (11+ employees), the share of covered firms or workers remain much lower in fiscal data than in these surveys (Table 2). In both REPONSE and ECS, membership to EAs is also increasing with firm size (see Table 2 for REPONSE) which is in contradiction to what is found with the tax returns.⁵

Another possible reason for the much lower contribution rate in the tax returns is the frequency at which affiliated firms pay their contributions: some of them may not pay their contributions every year, even if their managers declare being affiliated in surveys. A similar concern is actually at the heart of the debates regarding historical series of trade union membership in France. Before the 1990s, there was no evidence available from state-managed surveys to measure trade union membership, and the Labour department publishes estimates (see Pignoni 2016) that rely on extrapolation made from the number

⁵A possible source of discrepancy between the tax returns and the REPONSE and ECS survey is the unit of observation (workplace versus firm). In the next section, we will show that statistics at establishment or firm level are close to each other, so that the difference in unit of observation cannot explain the much lower affiliation rate in the tax returns.

of monthly union dues paid by workers to the main French unions (see Bévort 1995, Labbé 1995). The challenge with these extrapolations came from the fact that it was well-known that many workers were not paying their union dues every month, so that dividing by twelve the total number of monthly dues declared by the main French trade unions largely under-estimates the total number of workers that paid dues at least once during a given year. The problem is that there was no reliable evidence of the number of monthly dues paid on average by a union member. Trade unions were suspected to deflate that number in order to over-estimate their membership, and scholars typically considered a larger number of month than what was proposed by unions. These debates interest us because they touch an important question: what does it mean to be affiliated to a trade union or an EA? Does it mean to consider oneself as such, or to actually pay for it? Perhaps our different data sources simply capture different understandings of what being affiliated means.

To investigate empirically if this difference in definition could be quantitatively important, we pulled together years 2016, 2017 and 2018 of the tax returns and considered that a firm was a member if it had paid contributions at least one of these years. Doing so increases the affiliation rate by about 5 percentage points in the fiscal data, but it is still far from filling the gap with the survey data estimates (Table 2). This is because the turn over among the firms that pay contributions is not large enough to increase substantially the stock of firms that have paid contributions over a three-year period. For example, only 3% of the firms that were not paying contributions in 2017 do so in 2018, and 17% of those that were paying contributions in 2017 stop doing so in 2018.

Third, it could be that in firms belonging to a group, only the head of the group or a specific affiliate does pay the contributions to EAs. If all firms in the group declare being affiliated to EAs, while only one firm is observed paying the contribution, that may explain the much lower rate observed in the tax returns. There is some evidence that this is the case. In REPONSE 2017, the affiliation rate (for firms with at least 11 employees) is larger in firms that belong to a group (defined as a fiscal group in the tax returns) than in those that do not. However, the opposite is observed in the tax returns. This could reflect discrepancies between what means “being affiliated to an EA” in survey data and in fiscal

data: all firms in a group may consider themselves affiliated, even though only the head or one firm of the group actually pays the contributions. To gauge the extent to which this hypothesis could account for the observed differences across sources, we compute an alternative rate of affiliation in the tax returns assuming that a firm is affiliated provided that at least one firm in the group has paid contributions in 2017. We do so for firms with 11 employees or more (to get statistics comparable with REPONSE 2017⁶), considering either only the subsample of firms belonging to a group or all firms. We first observe that the affiliation rate among firms belonging to a group more than doubles with this alternative definition, and it becomes much larger than the affiliation rate among firms not belonging to a group, consistent with what is obtained with REPONSE. We then see that the affiliation rate among all firms with eleven employees or more increases from 22.4% to 27.4% when the correction is applied (Table 2). This estimate remains much lower than the one obtained with REPONSE (49%), and we therefore conclude that even though group-level affiliation may play a role, it cannot explain entirely differences across data sources. The same can be said if we focus on worker-level coverage: with the alternative definition, it jumps from 22.3% to 40.5% in the tax returns, but remains lower than the coverage of 62.5% observed in REPONSE.

Together the analyses above confirm that the tax returns understate the true EA membership, no matter the corrections that can be applied to the raw statistics on contributions paid. One possible explanation for this is that some firms may not wish to display the amount they pay, in one way or another, to EAs, for example because they want to keep secret certain lobbying actions with trade union players or press enquiries. Yet another explanation, possibly related to the first, is that firms almost never pay their contributions directly to the main confederations (Medef and CPME). It might be that they do not consider they are requested to report contributions paid to entities that might not be as clearly or as directly identified as EAs as the main organisations are. Importantly, a firm that do not declare directly the contributions paid to EAs but subsumes them with other miscel-

⁶The sample covered remains slightly different from the one in REPONSE as the latter excludes firms with 11 or more employees that have multiple establishments which all have 10 employees or less.

laneous expenses (contributions to EAs are a sub-item within miscellaneous expenses) will not see its tax base being affected. Indeed, the declared corporate taxable income will be net of such expenses and therefore identical whether or not the firm directly makes visible its contributions paid to EAs. Sentences in case of misreporting accounting information appear to be rare in practice, especially when it does not affect taxable corporate income (Spire & Weidenfeld 2015). It could therefore be that firms simply have no strong incentive to report adequately their contributions paid to EAs to the fiscal authorities: this will not change their corporate tax and they do not fear possible penalties. Further work would be necessary to confirm this hypothesis. We can nevertheless conclude that, so far, tax returns should not be used to assess EAs representativeness.

Comparing the ECS and the REPONSE surveys. ECS and REPONSE are very similar but still provide different affiliation rates.

A first reason for this could be statistical imprecision in survey measures. Indeed, estimates from survey data rely on a subsample of all private firms, so there is statistical imprecision due to sampling error. On Figure 2, we provide the 95% confidence intervals associated with the workplace-level estimates of the affiliation rate. It appears that their magnitude is always smaller than 5 percentage points. We see graphically that the decrease in the coverage rate at the establishment level between 2011 and 2017 observed in the REPONSE survey is not statistically significant, but that all other point estimates are significantly different from each other and from coverage rates based on exhaustive sources. Hence, statistical uncertainty does not explain alone differences between REPONSE and ECS (and with estimates obtained from other data sources).

The way the question about affiliation is asked in REPONSE and ECS is more likely to explain the larger membership rate in REPONSE versus ECS. Whereas ECS asks managers “Is your company a member of any employers’ organisation which participates in collective bargaining?”, REPONSE relies on detailed questions regarding membership to each main French EA. As the density rate in REPONSE is higher, one would suspect that firms might know if they belong to a specific organisation but they do not know in general that this

actually means belonging to an EA.

The ECS question “participate in collective bargaining” may also not always have a clear meaning to employers. In practice, the EAs listed in the REPONSE survey almost always bargain for firms at the industry-level. However, it could be that some firms miss this point and think that the question only concerns firm-level bargaining during which EAs may provide assistance or guidance to the company negotiators but do not necessarily do so. As EAs in France rarely intervene directly in firm-level bargaining, this could explain why the numbers in ECS are lower. More generally, by focusing exclusively on collective bargaining, the question in ECS fully excludes several of the key roles played by EAs (see Section 2). Clearly, most French firms do not adhere to EAs for collective bargaining. They are covered by industry-level agreements due to their almost systematic extension and can therefore free-ride. It is only when they are willing to gain political power and influence directly the result of the industry-level negotiations that they may adhere in relation to collective bargaining.

Together, the former insights suggest that the more specific questions in REPONSE are better suited to measure EA membership in general, that is not focusing on specific aspects of the services provided by EAs to firms. This conclusion is reinforced by the fact that affiliation rates in terms of the number of covered workers obtained in REPONSE are close to those obtained in the ICTWSS database and in the official count (see Figure 2). The methods used to produce these numbers are actually partly similar as affiliation rates computed in ICTWSS (and typically used for cross-country comparisons) rely on recovering the number of affiliated firms in each of a predefined list of EAs in each country.

Determinants of EA affiliation in ECS and REPONSE. Despite the limitations described above, the ECS may still have some interest for international comparisons. In such comparisons, it is key however to keep in mind the possible downward biases resulting from the limited scope of the question capturing affiliation to EAs (i.e. in relation to collective bargaining).

We also examine if ECS could be appropriate to study the determinants of EA affiliation

and compare them across countries. To this aim, we use simple statistical models (linear probability models) in which we try to explain EA affiliation by a set of firm characteristics including (i) firm size, industry and age, and (ii) variables regarding collective bargaining (presence of a union delegate in the firm, presence of a work council in the firm). We construct the exact same regressors in REPONSE 2017 and the ECS 2019 and attempt to explain EA affiliation by these regressors separately in these two datasets (that cannot be matched). We then compare the results.

Estimates provided in Table 3 show that the determinants of EA affiliation are to some extent aligned in REPONSE and ECS. First, affiliation increases significantly with workplace size in both datasets (model 1), but to a lesser extent when controls for the presence of union delegates or a work council are included (model 2). Second, in both data sources, the presence of union delegates or of a work council in the workplace substantially increase the likelihood of being affiliated to an EA. These effects are large in both datasets, but significantly larger in ECS than in REPONSE. There are however a couple of differences as well: conditional on other controls, industries affect the likelihood to be affiliated to an EA in REPONSE (with firms in trade or services being less likely to be affiliated) but not in ECS. In contrast, workplace age increases the likelihood to be affiliated in ECS, but not in REPONSE.

The comparison of EA affiliation in REPONSE and ECS hence offers mixed conclusions. Some determinants, that are likely to be the most important ones (e.g. workplace size, collective bargaining) are observed in both data sources, while others, which may be more secondary, can only be detected in one source.

Take aways. This section reveals that one needs to focus the analysis on the two reference sources, i.e. (1) the official measure of the employers' affiliations calculated as a percentage of firms/employees, which is unfortunately only published at the level of non-agricultural branches of the private sector, and (2) the REPONSE survey, which is representative of workplaces with 10 or more employees in the non-agricultural private sector, and which makes it possible to calculate the proportion of workplaces whose firms are declared to be

affiliated to an employers' organisation.

The official statistics established from EAs reporting their members also entail the risk of inflating affiliation rates. For example, a firm that is affiliated both to the MEDEF and CGPME in 2017 will be reported as an affiliate by both of these organisations. Such double counting can inflate rates observed in ICTWSS and reported by Langevin (2019) based on the official number of affiliates of each main French EA. To assess its potential magnitude, we exploit the fact that there are detailed questions on affiliation to each main French EA in the REPOSE survey, and compute an “inflated” coverage rate that counts twice a firm that is affiliated to two EAs. Table 2 shows that this inflated coverage rate is barely above the baseline rate. This is because less than 1% of workplaces in the REPOSE survey report being affiliated to more than one EA. As a consequence, double counting seems unlikely to explain more than a percentage point difference across sources.

In the next three sections, we focus our attention on the highest-quality data source—the REPOSE survey—and discuss if and how it might be used to analyse EAs with a quantitative approach.

4.2 Using REPOSE: from workplace to firm-level statistics

As REPOSE samples workplaces and not firms, the statistics from REPOSE are representative of the population of workplaces covered by the survey (or the population of workers in these workplaces when the corresponding sampling weights are used). To compare REPOSE with official sources or simply get an estimate of the share of firms that are affiliated to EAs with REPOSE, one has to aggregate information.

To examine if coverage at firm and establishment level is likely to differ substantially, we start by comparing EAs coverage rate at the establishment-level in REPOSE 2017 separately for multi- and mono-establishment firms. We see in Table 2 that there is a 8 percentage point difference between the two groups. We then establish firm-level statistics in the REPOSE 2017 survey. To do so, we recover from the DADS “établissements” 2015 the number of establishments within each French private firm and merge it with REPOSE

(5 observations are lost in the process). We then compute a firm-level weight for each establishment by dividing the establishment weight by the number of establishments in a given firm. The idea is that in a firm that has (say) one hundred establishments, one given establishment represents one percent of the firms' establishments but it does represent only one firm. Another way to understand why this procedure is correct without entering detailed calculations is to consider the case where we observe the universe of establishments. In that case, it is clear that in a firm with one hundred establishments, the EA membership information for that firm will be reported one hundred times (in each establishment) and each establishment of the firm should therefore only account for one percent of a firm. Table 2 provides estimates of firm-level EA coverage computed with the above strategy: we see that these estimates are slightly smaller than establishment-level ones. However, the difference remains very small (2 percentage points), implying that the survey design at the establishment-level does not explain much of the differences across sources.

In REPOSE 2017, there are 244 distinct firms for which more than one establishment participates to the survey. This raises a question regarding how information from establishments in the firms should be aggregated to provide firm-level statistics. A first option is to consider that each workplace of a given firm provides a signal on its own that can be weighted according to the procedure described above to provide firm-level statistics. Another option is to consider that we should keep one observation per firm and therefore aggregate information for firms having more than one establishment surveyed. We do so by taking either the average response of the workplaces in a firm or the maximum (considering in that case that the firm is affiliated if at least one establishment declares so). We then compute the weight for firms that have multiple establishments surveyed as the average of the establishment weights divided by the number of establishments in the firm. The average rate of affiliation to EAs at firm level obtained after doing this procedure for the few firms that have multiple establishments is almost unchanged. The percentage of affiliated firms moves from 48.20% when information is not aggregated (see Table 2) to 48.18% when we aggregate taking the average declaration and 48.21% when we aggregate taking the maximum response. We conclude that 48% is a reasonable estimate of the affiliation

rate among firms having at least one workplace of more than 10 employees.⁷

4.3 Estimating affiliation in small workplaces using survey data for larger ones

A limitation of REPONSE is that it only covers workplaces of eleven or more employees, making it hard to directly compare coverage rates based on REPONSE with official statistics that cover all firms with one employee or more (see Langevin 2019). This section discusses how REPONSE can be used to estimate the rate of affiliation to EAs in smaller firms by extrapolation.

Figure 3 first shows how the share of affiliated workplaces in REPONSE 2017 varies with either workplace or firm size. The analysis is restricted to workplaces that have between 11 and 100 employees (left panel, N=1,622 workplaces) or belong to firms that have between 11 and 100 employees (right panel, N=1,124 workplaces). It confirms that among these workplaces or firms, the probability for a workplace to be affiliated to EAs grows both with workplace and firm size. It grows almost linearly with workplace place, from 42% in workplaces of 11 employees to around 65% in those of 100 employees. The profile of expected EA affiliation as a function of firm size is more concave, and the observed probabilities to be affiliated appear to be lower (from 39% in firms of eleven employees to almost 60% in those of 100 employees).

Informed by this non-parametric examination of the profiles of affiliation as a function of workplace or firm size, we performed linear regressions of EA affiliation on polynomials of order 1, 2 or 3 in workplace or firm size. We restrict the analysis to workplaces or firms with less than 100 employees when a third order polynomial is used, less than 50 employees for a second order polynomial, and less than 30 employees when a simple linear prediction is applied. The fitted probabilities to be affiliated to EAs obtained using these linear

⁷We may also have tried to establish more precise statistics on the small subsample of firms that have multiple establishments. This subsample is however not representative. In section 4.4, we nevertheless use it to examine if employers of different firm sites provide consistent responses and then suggest additional corrections to the workplace-level affiliation rate.

probability models fitted just above the 11 employee thresholds are then extrapolated to workplaces or firms with less than 10 employees. More precisely, for each possible integer size between 1 and 10 employees (10 in total), we attribute a predicted probability that workplaces or firms of that size are affiliated to EAs. The three different extrapolations we use correspond to different trade-offs between the local nature of the fit (e.g. just above 11 employees or using also workplaces higher up in the size distribution) and the flexibility of the polynomial approximation (e.g. a simple linear extrapolation or a higher order polynomial).

Based on the predictions obtained for smaller workplaces or firms, we can produce an overall estimates for this group, either in terms of the share of workplaces/firms affiliated, or in terms of the number of workers in affiliated workplaces/firms. To this aim, we retrieved from the DADS “établissement” the number of workplaces or firms of each size (and the number of workers in these workplaces/firms) and computed an average of the predicted probabilities for each integer size between 1 and 10 weighted by the number of workplaces or firms (or workers in these workplaces/firms).

Results presented in Table 4 show that the three extrapolation methods lead to very similar estimates (which are all broadly consistent with what is observed on Figure 3). According to our extrapolation exercise, 33 to 37% of both workplaces and firms of 1 to 10 employees would be affiliated to EAs, covering between 35 and 38% of workers in workplaces or firms. Taking the weighted average between these estimates and those obtained in REPONSE for larger workplaces or firms (see Table 2), we get an overall affiliation rate at workplace or firm level that ranges between 36 and 39%, covering around 57-58% of the workforce.

These estimates can be compared to those obtained by Langevin (2019) for firms (25%) and workers (66%). We see that the estimate from REPONSE are higher at firm-level, but lower at worker-level. The higher firm-level estimates could reflect that our approximation for small firms tend to overestimate the true share of affiliated firms. This might be because a firm of (say) 2 employees is quite different from one of 11 employees, and it is not clear that affiliation rate varies with firm size as regularly between 1 and 10 employees

as it does above the 10-employees threshold. Hence our extrapolation might not be valid for very small firms or workplaces. Yet, it is hard to rationalise the large gap between the share of firms and the share of workers covered in the estimates established from the official statistics. Indeed, if our extrapolation overestimates the number of small firms that are affiliated, it would also overestimate the share of workers in affiliated small firms. Hence, correcting downward our extrapolation for small firms would lead to lower both the aggregate share of affiliated firms and share of workers in these firms. We therefore conclude that the estimates derived from EAs direct declarations on their membership should be considered with some caution, especially the large proposed estimated share of individuals that work in a firm affiliated to EAs.

4.4 What possible use and econometric strategy for REPONSE data?

REPONSE can be used to study the possible determinants of EA affiliation in France as done in Table 3. Alternatively, it can also be used to examine its effects. To these aims, simple statistical models (linear probability models or probit models) can be implemented. Many scholars have used these models. In ideal cases, panel data can also be used to exploit changes over time in EA affiliation, making it possible to get rid of unobserved heterogeneity, providing that it is constant over time.

Such econometric investigations have been done for various countries. They may be problematic if EA affiliation is measured with a lot of errors. In what follows, we combine different approaches to gauge the amount of erroneous responses in REPONSE (false positives and false negatives) and discuss how errors may bias econometric studies of the determinants or effects of EAs which are either based on cross-sectional or panel data.

Conflicting responses between establishments from the same firm. In REPONSE 2017, there are 244 distinct firms for which more than one establishment participate to the survey. We exploit this feature of the survey design to examine if managers of different

firm sites provide consistent answers regarding EA membership. As the question to measure EA membership concerns firm-level affiliation, all managers in the same firm should provide the same answer if the membership status of their firm is known to them.

In panel A of Table 5 (columns 1 and 2), we keep the 179 firms for which at least 2 establishments did provide information allowing us to measure EA membership. In 57.5% of these firms, all surveyed establishments provided the same answer regarding EA membership. In the remaining 42.5%, answers are inconsistent across establishments. These statistics indicate a high level of ignorance at the local workplace level regarding EA membership. They show that the type of services EA can provide to firms rarely trickle down directly to the workplace level and remain largely centralised. It is clear, at least, that if organisational practices, local bargaining or HR practices are impacted by an EA affiliation, this is not directly visible to the local managers (which are HR managers in half of the cases and often workplace directors in other cases). Otherwise, they would provide consistent answers regarding their firm affiliation.

Panel B of Table 5 focuses exclusively on the 150 firms in REPOSE 2017 for which we have exactly two establishments surveyed and shows how the different possible combination of responses (including non response) are split across these pairs. We get similar results: for 37.5% of the pairs for which both establishments responded, the responses are inconsistent. We also see that the information on EA membership is sometimes missing: in about a third of these pairs, at least one of the establishments did not respond to the questions on EA membership. It is interesting to note that pairs with missing answers are not much more numerous than conflicting ones. This is the case even if managers are offered the opportunity to respond that “they do not know” for each of the questions on membership, suggesting that many of them think they know the affiliation status of their firm while in some cases they actually do not (e.g. they think they know that the firm is not affiliated while they actually simply ignore that it is).

To make sense of the rate of inconsistent answers regarding EA membership, we compare it to that obtained for two other firm-level outcomes: the presence of a CFDT (the main French union) union delegate at firm level, and the existence of a firm-level pension

plan. We see that for both of these outcomes, the share of inconsistent answers is also high (between 20 and 30%) but lower than for EA affiliation. Similar conclusions were reached by Askenazy & Grenet (2009) in their study of inconsistent answers across establishments of the same firm in REPONSE 1998 and 2004. These conclusions comfort the idea that EA affiliation is a feature of their firm that local managers are not very well aware of. This indirectly shows that EAs are institutions that mostly concern firms' headquarters and rarely directly impact local management in France. It also questions the validity of the information they provide for more sophisticated statistical analysis.

Firms paying contributions but not reporting their affiliation in REPONSE.

Even if the tax returns largely underestimate firms' affiliation to EAs, they can be used to try to assess the amount of false negatives in REPONSE. To this aim, we merged the two data sources for 2017. Doing so, we recover for 3,478 of the 3,525 business establishments in REPONSE the contributions declared as paid to EAs by their firm in the tax returns. Table 6 shows the cross-tabulation of affiliation status in the two data sources for the 3,141 establishments in which the information is not missing in REPONSE. Perhaps not surprisingly, we again observe a lot of inconsistent results. There are many establishments affiliated in REPONSE and not reporting contributions in the tax return: this is not entirely surprising given the much higher rate of membership obtained in REPONSE. However, in a third of the establishments belonging to a firm that declares paying contributions to EAs in the tax returns, the manager interviewed in REPONSE declares no affiliation. This suggests that local managers are not always aware that their firm is affiliated to an EA. An alternative interpretation is that the contributions declared by the firms in the tax returns concern one specific establishment which is not the one surveyed in REPONSE. Indeed, since 2016, firms are allowed to pay their contribution at the establishment-level (see article R2152-1 of the Labour code). In that case the firm might declare a contribution that concerns affiliation for one or a few specific establishments. To investigate this hypothesis, we split the sample between mono- and multi-establishment firms as only the latter group is concerned by discrepancies between establishment- and firm-level affilia-

tion. In 38% of the 306 matched mono-establishment firms declaring contributions in the tax returns, the interviewed manager in REPOSE declares no affiliation. However, this is the case for only 23% of the 371 multi-establishment firms observed in REPOSE and declaring contributions in the tax returns. If establishment-level affiliation was widespread, one would expect the share of managers declaring no affiliation in REPOSE while their firm pays contributions to be larger (and not lower) among multi-establishment firms than among mono-establishment ones. We conclude that establishment-level affiliation is likely to be a limited phenomenon and make the hypothesis, in what follows, that establishments not declaring affiliation in firms that pay contributions are mistaking the affiliation status of their firm.

A simple model of misreporting. From (i) the conflicting responses across establishments in the same firm and (ii) the rate of affiliation in REPOSE establishments that belong to a firm that pays contributions to EAs in the tax return, it is possible to deduce the rate of false positive and false negative responses in the REPOSE survey, and in turn, to propose an estimate of EA affiliation that corrects for these non-symmetric errors.

To this aim, denote $\theta_j \in \{0;1\}$ the true EA membership status in firm j . We can assume that θ_j is distributed according to a Bernoulli law $B(p)$ with p the membership rate among French firms with 10 employees or more. Denote p_1 the probability that the manager do not report EA membership when $\theta_j = 1$ (false negative) and p_0 the probability that the manager does report EA membership when $\theta_j = 0$ (false positive). We assume that firms that declare paying contributions to EAs in the tax returns are indeed affiliated to EAs, so that p_1 can be deduced among such firms by simply considering the (weighted) share of establishments that do not declare being affiliated. We also assume that the probabilities of false positive and false negative are constant across firms, so that the value of p_1 above can be extrapolated to other firms affiliated to EAs, even when they do not pay contributions in the tax returns.⁸ The membership rate m_r observed in the data can

⁸One may argue that managers are less likely to be aware of membership in firms that do not fill the tax returns correctly and do not report paying contributions. In that case, the true value of p_1 would be even higher.

easily be expressed as a function of these parameters:

$$m_r = p(1 - p_1) + (1 - p)p_0 \quad (1)$$

Following Askenazy & Grenet (2009), the probability of observing different combinations of responses for a pair of establishments belonging to the same firm j can also be expressed as a function of the above parameters, assuming that the responses of the establishments' managers are independent from each other:

$$\begin{cases} P_j(\{(1,1)\}) = & \theta_j(1 - p_1)^2 + (1 - \theta_j)p_0^2 \\ P_j(\{(0,0)\}) = & \theta_j p_1^2 + (1 - \theta_j)(1 - p_0)^2 \\ P_j(\{(0,1)\}) = & 2\theta_j p_1(1 - p_1) + 2(1 - \theta_j)p_0(1 - p_0) \end{cases}$$

Taking expectations over firms j and using only the first equation, we get that m_{11} , the share of firms where both establishment declare having EAs is

$$m_{11} = p(1 - p_1)^2 + (1 - p)p_0^2 \quad (2)$$

The equations for m_r and m_{11} have two unknown parameters p and p_0 that depend on three known parameters m_r , m_{11} and p_1 . Expressing p_0 as a function of other parameters in equation 1, we get:

$$p_0 = \frac{m_r - p(1 - p_1)}{1 - p} \quad (3)$$

Substituting p_0 by this expression in equation 2 yields:

$$p = \frac{m_{11} - m_r^2}{(1 - p_1)^2 - 2m_r(1 - p_1) + m_{11}} \quad (4)$$

We use the value of m_r provided in Table 1 using establishment weights: $m_r = 0.502$. This value is very close to that obtained using only establishments in firms that have exactly two establishments in the survey. For m_{11} we consider the weighted share of pairs of establishments in the same firm for which both of them have declared an affiliation to EAs: $m_{11} = 0.36$. To get an empirical estimate of p_1 , we restrict the sample to the pairs of

firms above (so that we measure false positive and false negative on a similar sample) and compute it as the weighted share of establishments that are not affiliated in REPOSE among those that belong to a firm paying contributions in the tax returns: $p_1 = 0.12$. Using these values in equations (3) and (4), we get $p = 0.43$ and $p_0 = 0.21$. These numbers, if we are willing to extrapolate them to the whole REPOSE sample, mean that:

- Once accounting for asymmetric measurement error, the actual share of establishments affiliated to EAs is 43% rather than 50%.
- When an establishment is affiliated to EAs, there is a probability of 12% that the employer does not declare it.
- When an establishment is not affiliated to an EA, there is a probability of 21% that the employer does declare an affiliation.

Note that this correction downward of the rate of affiliation in REPOSE tends to bring REPOSE statistics at workplace/firm level closer to official one. Assuming that the approximation of the affiliation rate in smaller workplaces obtained from REPOSE should be corrected downward due to measurement error in the same proportion as the affiliation rate for workplaces with 11 employees or more,⁹ one gets a final estimate of around 31-33% for private workplaces/firms of at least one employee,¹⁰ which is not too far from the official statistics of 25% in Langevin (2019).

Consequences of measurement error for econometric analysis. Measurement error in EA affiliation can lead to attenuation bias in the evaluation of the effects of EAs. We now discuss this point, starting with analyses based on cross-sectional data. Denote β the effect of EA affiliation EA_j in firm j on some firm outcome y_j and consider the OLS estimate $\hat{\beta}$ of β obtained by regressing this outcome on EA affiliation measured with error

⁹To back-up this somewhat simplistic hypothesis, one has to assume that the rate of false positives and false negatives is constant with workplace or firm size, so that correcting for these leads to shift downward the profiles observed in Figure 3 without changing their shape.

¹⁰These numbers are obtained by reducing by 14% the workplace or firm level coverage rates provided in Table 4.

as above (we ignore identification issues to focus on the sole role of noise in EA affiliation):

$$y_j = \beta EA_j + \epsilon_j$$

When errors on EA_j are not orthogonal to its true value (the classical measurement error case) but defined as false positive and negative as we have done in the previous section, it is possible to show the following result:¹¹

$$plim \hat{\beta} = \beta \frac{1 - p_1 - m_r}{1 - m_r}$$

Taking the values of p_1 and m_r obtained in the previous section, we get $\hat{\beta} \approx 0.76\beta$. Hence, estimates of the effect of EA affiliation on various outcomes in cross-sectional analysis are likely to be attenuated by about 25%.

For analyses based on panel data, measurement error can be even more problematic. We discuss this point based on the example of the small panel of 367 establishments that are observed both in REPOSE2011 and REPOSE2017. 245 declare being affiliated both years and 40 none of these years. 37 are affiliated in 2011 but not in 2017, and 45 are not affiliated in 2011 and become affiliated in 2017. The share of establishments declaring a different affiliation status in 2011 and 2017 is therefore 22%. This is actually smaller than the share of inconsistent answers among pairs of establishments belonging to the same firm in 2017. If we think it is as likely (or even a bit less likely) to observe conflicting responses regarding the firm EA affiliation in the same establishment over a seven year time span than in two establishments of the same firm the same year, then establishments declaring a different status at two points in time may largely represent errors (rather than true changes in affiliation), likely preventing researchers to do any meaningful analyses using a panel of establishments. This conclusion, however, may not apply to panels of firms.

¹¹See for example https://econ.lse.ac.uk/staff/spischke/ec524/Merr_new.pdf p. 11

Discussion and conclusion

This paper compares statistics on EAs' coverage in France established either (i) from surveys of firm workplaces—where affiliation status is collected from top executives or HR managers—, (ii) from the number of affiliates declared by the main EAs, and (iii) from firm accounting data that includes information on the contributions paid to EAs. At first look, the conclusions obtained from these various sources are drastically different, calling for being very cautious when trying to assess EAs' representativeness.

However, a more careful examination of the data that takes into account the differences in the firms covered and how the information is collected in the available data sources suggests that some sources are better than others. First, the accounting data appears as a promising exhaustive source to measure which firms pay contributions to EAs, but the results from that source are systematically off track as compared to those from other sources, and our various tests suggests that it cannot provide a very reliable measure of EAs' actual coverage. Further work would be necessary to better understand the reasons why the coverage rate obtained in the accounting data is so low.

Second, the information directly provided by EAs matches relatively well statistics established from a survey in which managers are asked if their firm is affiliated to a pre-defined list of EAs. In contrast, when managers are asked about affiliation to EAs in general (as in the ECS), they tend to under-report their actual affiliation rate. Overall, our examination therefore suggests that the most reliable sources are the reporting directly made by EAs and surveys where affiliation is carefully measured. Based on such a survey covering workplaces of eleven employees or more (the REPONSE survey), we propose (i) a reweighting technique that make it possible to establish statistics representative at firm-level, and (ii) extrapolations valid for workplaces (or firm) with less than ten employees. This allows us to estimate that the share of workplaces or firms with at least one employee covered by EAs is likely to range between 36 and 39%.

Further examination of such surveys however reveals that there is a lot of (non-symmetric) measurement error in the data, implying that the average EA membership rate could be

further corrected and that more sophisticated econometric analysis (e.g. of determinants or consequences of EA affiliation) should be considered with caution, in particular due to the risk of attenuation bias. These additional corrections lead us to reduce further our estimated coverage rate of EAs at workplace or firm level to 31-33%. Despite the large extent of measurement error in survey data, a comparison of the determinants of EA affiliation in two distinct surveys in which affiliation is measured differently lead to conclusions that correspond to some extent, allowing us to remain somewhat optimistic on the appropriateness of using existing survey data to analyse the role of EAs.

A way to mitigate the problems related to measurement error is also to use richer information than just a single indicator of affiliation. This is what is done for example by Amossé et al. (2012) who aggregate different variables that capture both direct firm affiliation and other forms of participation in French EAs (such as a personal involvement of managers). Such an approach, on top of limiting measurement error issues, is better suited to capture the plurality of ways in which employers can get involved in EAs.

The key implication of the present study is that data collection on EA coverage needs to be improved. Getting less noisy measures of affiliation that can be combined with other pieces of information on firms is essential to deepen our understanding of EAs. There are several ways to make progress in that direction that apply to all countries. First, firms should be asked about affiliation to a pre-defined list of EAs in their country. Second, headquarters of multi-site firms should be surveyed rather than local managers. Third, surveys should target the industrial relations department of firms. Alternatively, the information on EA affiliation should be cross-checked with the most competent staff in the firm.

Our study finally reveals that local managers know little about the affiliation status of their firms. Does this reveal that EAs only provide limited services to firms? To better understand this point, it would be interesting to ask directly to various executives (e.g. top CEOs, local site manager, head of the human resources department) if they are aware of the reasons why their firm is affiliated to an EA. Such data would be essential to quantify the extent to which EAs indeed provide to firms the services they are known to

offer in theory.

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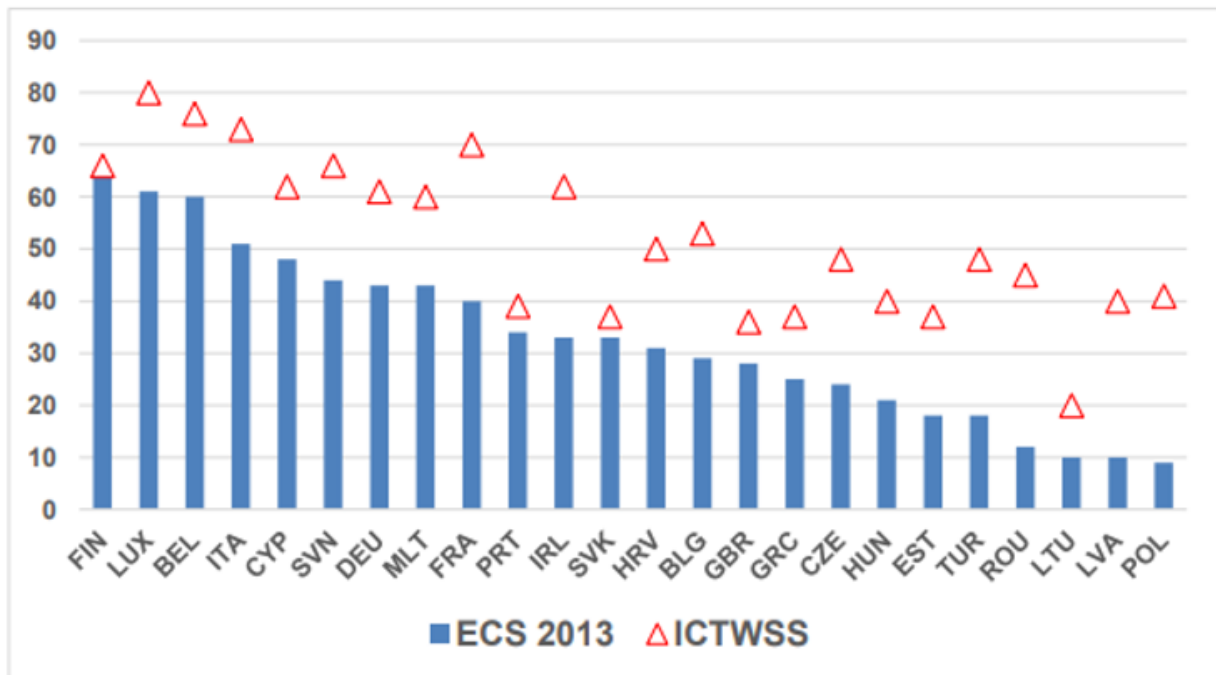
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Figures and Tables

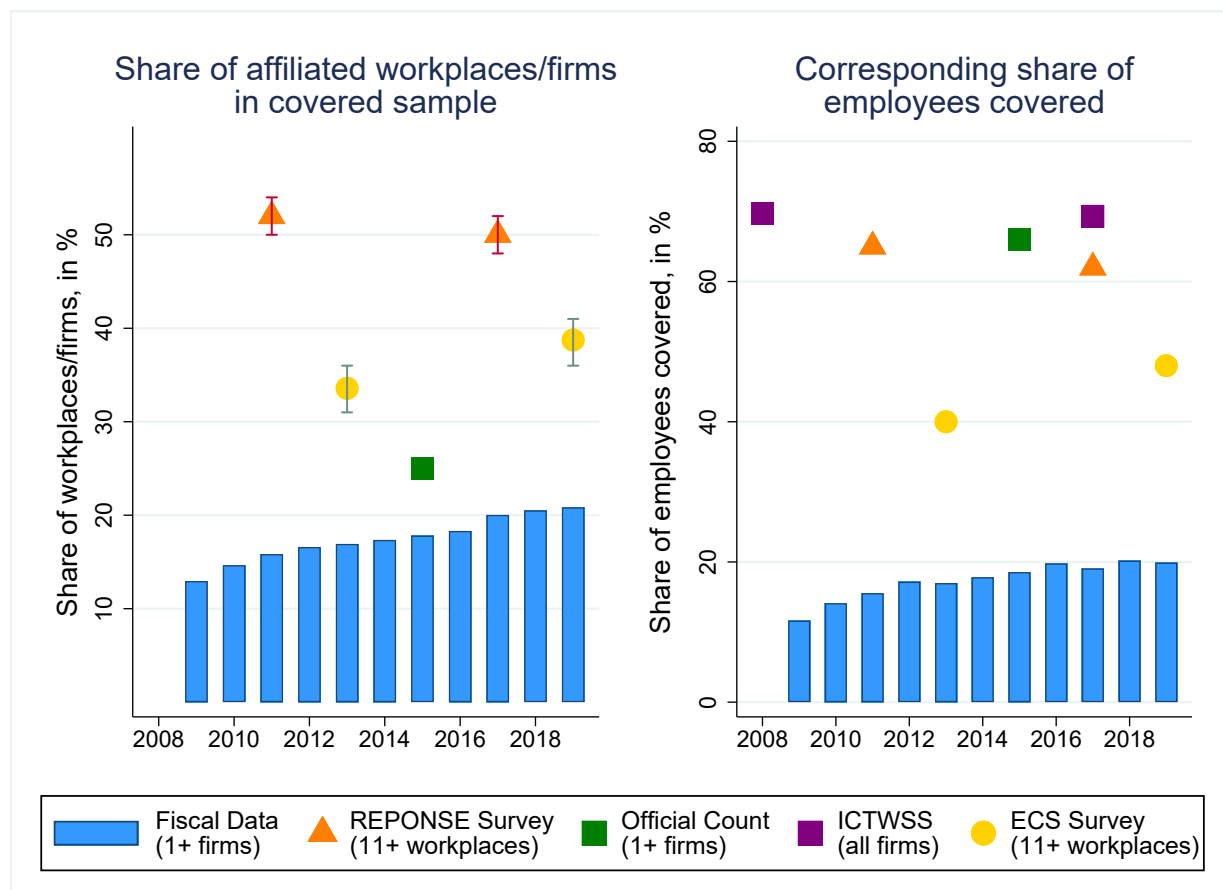
Figure 1: Percentage of employees working in a company member of an employer organisation



Source: Figure taken from Visser (2021) (see Figure 1 p. 166).

Note: The figure displays in 24 European countries the percentage of employees working in a company member of an employer organisation according to the ECS 2013 survey and in the ICTWSS statistics.

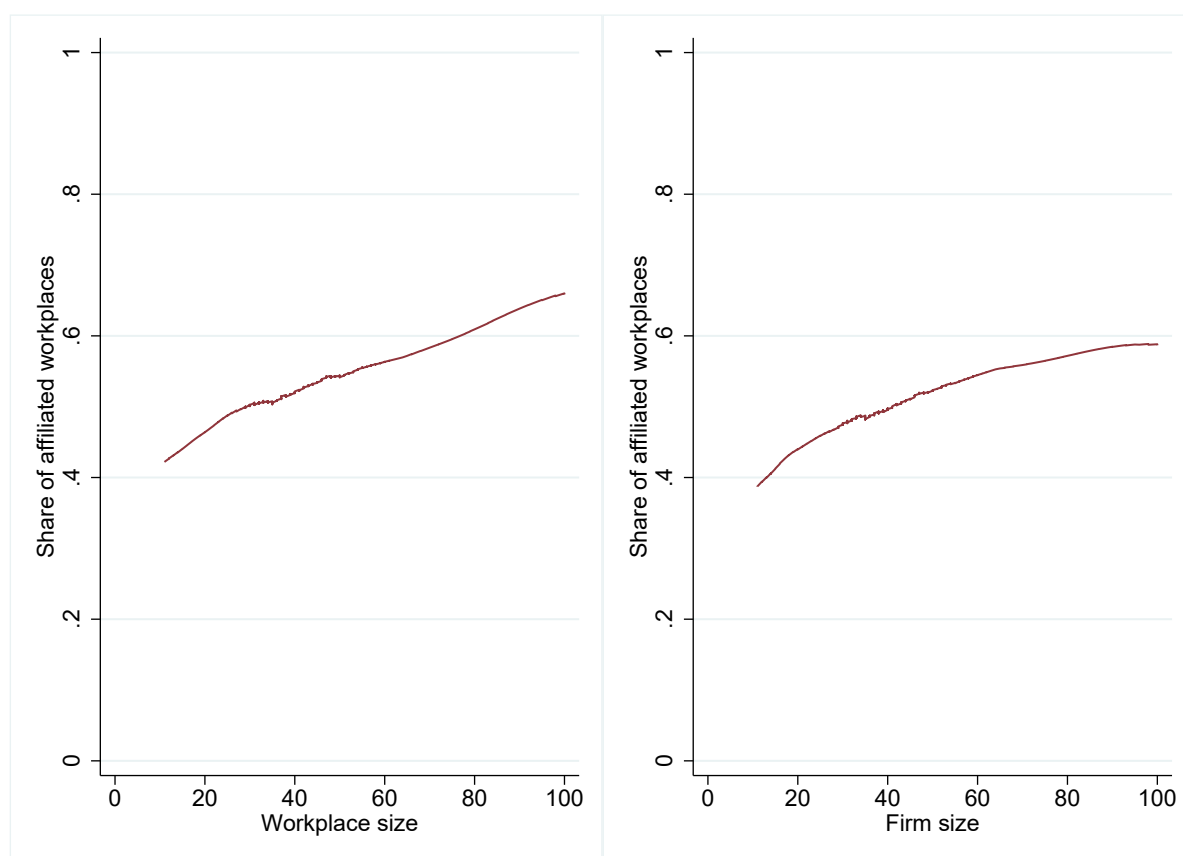
Figure 2: Share of private firms or workplaces affiliated to EAs since 2008 in the available data sources for France (statistics available for different samples) and corresponding number of employees covered



Sources: BICIS-BIRCN, Reponse Survey, ECS, ICTWSS, Langevin (2019).

Notes: The left panel of the Figure displays the share of firms or workplaces that are affiliates or pay contributions to an EA. The statistics are representative for the sample covered by each data source (see the legend and Table 1), implying that the different statistics cannot be directly compared. The 95% confidence intervals capturing sampling uncertainty are provided for the statistics established from non-exhaustive survey data. The right panel of the Figure displays the corresponding share of workers covered by EAs according to each data source and on the sample covered by this source. Estimates come from the different data sources available for the recent period. These data sources are described in detail in the text.

Figure 3: Share of private workplaces affiliated to EAs as a function of workplace or firm size



Sources: REPOSE 2017.

Notes: The Figure shows how the share of workplace affiliated to EAs varies as a function of either workplace or firm size. Workplace and firm size are retrieved from the DADS: it is measured as the headcount of employees present in the workplace/firm on December 31st 2016. The Figures are obtained by performing locally weighted regressions of an indicator variable for a workplace being affiliated to EAs on workplace size (left panel) or firm size (right panel) with a bandwidth of 0.8.

Table 1: EA membership on various subsamples of the population of French firms: Summary of the existing evidence

Source	Producer	Sample	Year	Number of firms/workplaces in sample	% of affiliated firms or workplaces	% of employees in them
<i>Surveys of Establishments:</i>						
REPONSE 2017	Labour department	11+ private workplaces	2017	335,801	50.2%	62.5%
ECS 2019	Eurofound	11+ private workplaces	2019	335,801	39%	50%
<i>EAs listings:</i>						
ICTWSS	OECD/AIAS	private firms	2017	4,710,400	NA	69.3%
Official Count	Langevin (2019)	1+ private firms	2015	1,235,900	25%	66%
<i>Admin. Fiscal Data:</i>						
Firm tax returns	Treasury Directorate	1+ private firms	2017	1,235,900	20.1 %	19.1%

Notes: This table provides the characteristics of the available data sources and the coverage of EAs that can be obtained from these sources. For the REPONSE and ECS surveys, we use establishment survey weights to establish the share of establishments covered. In other data sources, the statistics directly provide the share of firms covered. 11+ and 1+ mean that the corresponding source covers workplaces of 11 employees or more and firms of 1 employee or more, respectively. The number of firms of 1+ or 0+ employees in 2017 is taken from Insee official statistics. The number of establishments with 11+ employees is obtained by the author using the DADS establishment.

Table 2: Affiliation rates in REPNSE 2017 and the tax returns 2017 for various subsamples

	REPNSE 2017			Tax returns 2017		
	<i>share of ...</i>	Workers	Workplaces	Firms	Workers	Firms
All firms	—	—	—	—	19.05	14.41
At least one employee	—	—	—	—	19.07	20.06
At least one empl., affiliated if has paid contribution any year between 2016 and 2018	—	—	—	—	25.64	25.51
11+ employees	62.54	50.21	48.20	18.85	22.4	
Correcting for double counting	62.55	50.46	48.47			
<i>Mono versus multi-establishment firms (with 11 or more employees):</i>						
Multi (11+ employees)	66.89	54.58	52.58	17.63	22.27	
Mono (11+ employees)	55.82	46.73	47.07	21.40	22.15	
<i>Firms (with 11 or more employees) affiliated and non-affiliated to a group:</i>						
Do not belong to a group	52.97	47.41	45.86	22.34	23.44	
Belongs to a group	68.08	53.9	53.85	16.48	19.36	
Belongs to a group, affiliated if any firm contribute	—	—	—	52.76	38.98	
All firms, affiliated if any firm contribute	—	—	—	40.47	27.37	
<i>Estimates by firm or establishment size brackets:</i>						
1 to 10 employees	—	—	—	20.58	19.1	
11 to 50 employees	46.95	44.94	44.91	22.72	22.65	
51 to 250 employees	61.92	60.65	59.08	22.82	22.67	
More than 250 employees	70.56	66.55	68.76	15.6	18.35	

Notes: The table provides the coverage of EAs in the 2017 REPNSE survey and the 2017 tax returns. Weighting strategies are used to show either the number of firms, establishments or workers covered by EAs. Coverage is provided for various subsamples of the data and various definitions of what affiliation to EAs is which are described in the text. Comparisons across data sources, subsamples and methodological choices provide insights on the factors affecting EAs coverage rates and their differences across data sources.

Table 3: Determinants of EAs affiliation in REPNONSE 2017 and in the 2019 European Company Survey (ECS): results from linear probability models

	(1)		(2)	
	REPNONSE	ECS	REPNONSE	ECS
Manufacturing	REF	REF	REF	REF
Construction	0.0452 (0.0337)	0.0254 (0.0546)	0.0482 (0.0338)	0.0548 (0.0537)
Trade	-0.240*** (0.0253)	0.0558 (0.0392)	-0.234*** (0.0254)	0.0431 (0.0385)
Services	-0.123*** (0.0187)	0.00289 (0.0352)	-0.118*** (0.0187)	0.0152 (0.0346)
< 20 employees	REF	REF	REF	REF
20-49 employees	0.0563* (0.0308)	0.0537 (0.0344)	0.0502 (0.0308)	0.0309 (0.0339)
50-99 employees	0.136*** (0.0324)	0.112*** (0.0431)	0.0996*** (0.0334)	0.0285 (0.0437)
100-249 employees	0.207*** (0.0309)	0.243*** (0.0482)	0.141*** (0.0339)	0.116** (0.0509)
250-499 employees	0.245*** (0.0338)	0.280*** (0.0472)	0.141*** (0.0399)	0.118** (0.0525)
500-999 employees	0.324*** (0.0311)	0.290*** (0.0727)	0.213*** (0.0384)	0.0885 (0.0773)
≥ 1000 employees	0.357*** (0.0365)	0.203 (0.143)	0.244*** (0.0429)	-0.00566 (0.144)
< 5 y.o.	REF	REF	REF	REF
5 to 10 y.o.	0.0416 (0.0307)	-0.0342 (0.0845)	0.0399 (0.0308)	-0.0213 (0.0828)
11 to 20 y.o.	0.0308 (0.0295)	0.0170 (0.0391)	0.0251 (0.0296)	0.0351 (0.0384)
21 to 50 y.o.	0.0117 (0.0296)	0.0961 (0.0740)	0.0152 (0.0298)	0.132* (0.0728)
> 50 y.o.	0.0392 (0.0622)	0.155** (0.0781)	0.0474 (0.0618)	0.187** (0.0766)
Union Delegate			0.0500** (0.0221)	0.113*** (0.0388)
Work Council			0.0833*** (0.0219)	0.182*** (0.0362)
Observations	3,605	1,331	3,600	1,331
R-squared	0.091	0.066	0.097	0.105

Notes: The Table shows the results from two different linear probability models estimated either using REPNONSE 2017 or the ECS 2019. The dependent variable is an indicator for the workplace being in a firm affiliated to EAs (as declared by the surveyed manager). Explanatory Variables are constructed similarly in both datasets. Standard errors in parenthesis. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 4: Estimating the aggregate affiliation rate to EAs from REPONSE

	Workplace level analysis			Firm level analysis		
	1-10 workers	11+ workers	1+ workers	1-10 workers	11+ workers	1+ workers
<i>Workplace/firm level coverage:</i>						
Share of workplaces/firms	0.820	0.180	1.000	0.838	0.162	1.000
Affiliation rate (%) scenario 1	36.91	50.21	39.30	36.76	48.20	38.62
Affiliation rate (%) scenario 2	33.99	50.21	36.91	33.81	48.20	36.15
Affiliation rate (%) scenario 3	37.57	50.21	39.85	37.46	48.20	39.20
<i>Worker-level coverage:</i>						
Share of workers in such workplaces/firms	0.207	0.793	1.000	0.158	0.842	1.000
Affiliation rate (%) scenario 1	38.26	62.54	57.51	38.13	62.54	58.67
Affiliation rate (%) scenario 2	35.71	62.54	56.99	35.54	62.54	58.27
Affiliation rate (%) scenario 3	38.58	62.54	57.58	38.48	62.54	58.73

Notes: The Table provides estimates of affiliation rates to EAs at workplace, firm or worker level. The estimates for workplaces or firms of 1 to 10 employees and workers in such workplaces/firms are obtained by extrapolating the affiliation rate observed in REPONSE 2017 under various scenarios. Under scenario 1, we fit EA affiliation on a third order polynomial in workplace or firms size for workplaces between 11 and 100 employees and apply the predicted probability to workplaces or firms of size 1 to 10 separately for each integer size. Under scenario 2, we fit EA affiliation on a second order polynomial in workplace or firms size for workplaces between 11 and 50 employees. Under scenario 3, we fit EA affiliation on workplace or firms size for workplaces between 11 and 30 employees. Under each scenario, we then take the weighted average over all workplaces or firms between 1 and 10 employees. The weights are the number of workplace or firms of each integer size (panel a), or the number of employees in these workplace/firms (panel b). We finally get an overall affiliation rate for workplaces/firms of 1 or more employees (and workers in these workplaces/firms) by taking the average of the affiliation rates obtained for REPONSE in 11+ workplaces/firms (see Table 2) and that extrapolated for smaller workplaces/firms. The average is weighted by the number of workplaces/firms/workers in each of these two groups. The number of workplaces/firms (and number of workers in workplaces/firms) in each group is obtained from the DADS “établissements”.

Table 5: Conflicting responses between establishments from the same firm

	Affiliation to EAs		CFDT firm union delegate		Firm-level Pension plan	
	N	%	N	%	N	%
<i>Panel A: All firms having at least two establishments responding to the question</i>						
All say no	11	6.1	18	31.0	69	29.6
All say yes	92	51.4	23	39.6	117	50.2
Some yes, some no	76	42.5	17	29.3	47	20.2
<i>including half yes, half no</i>	46	25.7	6	10.34	23	9.9
Total	179	100	58	100	233	100
<i>Panel B: Firms with exactly two establishments in the survey</i>						
Both do not respond	6	4	94	62.7	0	0
Only one responds	43	28.7	30	20.0	5	3.3
Both say no	8	5.3	12	8.0	52	34.7
Both say yes	55	36.7	11	7.3	75	50.0
One yes, one no	38	25.3	3	2.0	18	12.0
Total	150	100	150	100	150	100

Notes: The table provides a description of conflicting responses between establishments of a same firm regarding firm-level affiliation to EAs and other firm-level outcomes related to collective bargaining.

Table 6: Affiliation status in the tax returns and REPONSE for year 2017

	Not affiliated in REPONSE	Affiliated in REPONSE	Total
Does not contribute (tax returns)	907 <i>36.8%</i>	1,557 <i>63.2%</i>	2,464 <i>100%</i>
Contribute (tax returns)	200 <i>29.5%</i>	477 <i>70.5%</i>	677 <i>100%</i>
Total	1,107 <i>35.2%</i>	2,034 <i>64.8%</i>	3141 <i>100%</i>