

Emerging forms of precariousness related to autonomy at work: Proposals for an Empirical Typology of Self-Employment

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Abstract:

Societal, technological and economical changes in the last decades have led to the development of new work arrangements located in a « grey zone » between standard employment and classical self-employment (Cappelli & Keller, 2013a; ILO, 2016; Katz & Krueger, 2016).

Official labour market statistics must be adapted to provide researchers and policymakers with relevant data on this population (Gazier et al., 2016; National Academy of Sciences, Engineering and Medicine, 2017; ILO, 2018).

Cappelli & Keller (2013b) point out that new work arrangements are characterized by changes in the management of the work relationships (with a growing intervention of labour market intermediaries) and in the way the work is supervised (from work processes to outcomes). The concept of autonomy thus becomes a central feature of new work arrangements leading to specific configurations of risks and opportunities for individual workers concerned. This pleads for more detailed information on this topic.

Autonomy can be divided in three main dimensions: work status, work content and working conditions (Pichault & McKeown, 2019). International surveys such as the European Working Conditions Survey (EWCS) provide valuable data covering these various dimensions of autonomy.

Our paper is focused on a specific category of workers experiencing the ambiguities of autonomy at work: Independent Professionals (Ipros). Ipros provide various forms of intellectual work in the service sector through self-employment and are often regarded as a highly autonomous workforce (Leighton & Brown, 2014; McKeown, 2015) while they can also be subject to precarious situations regarding their economic dependency or freedom of choice (de Peuter, 2011; Standing, 2011; Bergvall-Kåreborn & Howcroft, 2013).

The objectives of this paper are, first, to build a set of indicators likely to measure the various dimensions of autonomy by checking their statistical independence, and, second, to provide an empirical typology of new work arrangements by using cluster analysis methods. Through the application of this analytical framework on the EWCS 2015 data, we observe various situations in terms of risk and opportunities related to autonomy, shedding light on unexpected precarious situations where Ipros face the risks of autonomy without getting the associated benefits.

Our results represent an important contribution to the ongoing debate around autonomy of independent professionals: the latter are either presented as highly autonomous workers benefitting from the flexibility of their work arrangements or, conversely, associated with precarious work arrangements and

difficult working conditions. Our results provide a nuanced typology of empirical situations, overcoming such a dichotomic vision of nonstandard work arrangements.

1. Introduction

Societal, technological and economical changes in the last decades led to the development of new employment arrangements that sits in a « grey zone » between classical statuses of self-employment and salaried work (Cappelli & Keller, 2013a; ILO, 2016; Katz & Krueger, 2016; Mandl et al., 2015). As the need for insightful data on this population is growing, official labour market statistics still must be adapted to allow researchers and policymakers to catch the phenomenon (Gazier et al., 2016, National Academy of Sciences, Engineering and Medicine, 2017). The objectives of this paper are, first, to develop and test the validity of indicators of autonomy based on the European Working Conditions Survey 2015 and, second, to provide an empirical typology of employment arrangements by using cluster analysis methods.

2. Background

a. Official statistics typologies: the classical approach

New forms of employment are commonly reported as employment arrangements that differ from the traditional open-ended salaried contract: fixed-term contract, part-time work and self-employment (Everaere 2014; Schmid, 2015; ILO, 2016). This classical approach allows statisticians produce regional or international comparisons, but fails to make visible the diversity of new forms of employment. Indeed, fixed-term contract, part-time work and self-employment are still reported as new forms of employment even though they have represented a fair share of the working arrangements for a long time. They do not help understand emerging forms of employment. Moreover, there is a wide variety of employment arrangements that fit in the same working status. Under the self-employed status for example, we find arrangements going from economically dependent one-client subcontracting to multi-client and completely autonomous independent contracting or intermediated work relations. This approach thus fails in capturing the grey zone of working arrangements that share characteristics of both traditional statuses: self-employed and salaried work. Gazier and his colleagues (2016) pointed out that the typology of employment arrangements in official statistics should be reviewed and that more relevant information should be produced, among others, on intermediated forms of employment (co-employment, subcontracting) and freedom of choice for contingent work. Cieslik (2015) showed that administrative business registers lack important information for understanding contemporary self-employment. Other international organizations and researchers pointed out the shortcomings of the existing statistical data and developed new classifications. We can identify ad-hoc and generic approaches.

b. Ad-hoc classifications

Some researchers have developed ad-hoc definitions to fit specific forms of employment such as the Independent Professionals, Interim management, Portfolio work, On-call workers, and so on (Eurofound, 2015; Katz & Krueger, 2016). These researches shed light on some specific parts of the workforce and provide a more refined and valuable insight to researchers and policymakers. However, many of the concepts used in these studies are not yet stabilized in the scientific community and are very dependent on the type of data used. This lack of international uniformization of definitions and categories between international organizations or researchers leads to a wide variety of listings of new forms of employment that brings some confusion. The lack of shared definitions and concepts and the non-exclusivity between categories usually prevent such methods to be generalized.

c. Generic typologies

Some approaches take a more general perspective. Cappelli and Keller (2013) suggest a typology of working arrangements that relies on the type of authority and control that the employer/client has over the worker. Their classification first distinguishes employment (where control is focused on the work process) and contract work (where control is focused on the outcomes) and secondly looks at the potential intervention of a third party to distinguish co-employment from direct employment or again direct contracting from subcontracting. New work arrangements are characterized by more control on the outcomes and shared supervision between different parties, sometimes becoming evanescent. In these conditions, autonomy at work becomes a central feature in many modern work arrangements. This notion will be at the core of our analysis and will be developed further in the paper.

Authority, autonomy and dependency have also played a role in rethinking international classifications of employment arrangements. The scientific and political debates around new forms of employment and their classification have led the 20th International Conference of Labour Statisticians organised by the International Labour Office (ILO) to review the International Classification of Professional Situation adopted in 1993 (CISP-93). This classification is still the international reference for official statistics and international surveys. To respond to the increasing demand of relevant data on emerging work arrangements, a new classification has been adopted at the conference (ILO, 2018). This new classification (CISE-18) will consider the type of authority and the economic risk faced by workers to create new categories, such as the « non-salaried dependents ». It also aims at shedding light on multiparty work relations. While this is certainly an important step for labour statisticians and decision-makers, the implementation of such new classification in official statistics and international surveys should unfortunately take some time.

d. Surveys and empirical typologies

For Desrosières (2005), as administrative data are made by the state to be able to manage, they better reflect the way the institutions work while surveys allow to explore society more specifically according to the needs of statisticians. International surveys such as the Labour Force Survey from Eurostat, the European Social Survey and the European Working Conditions Survey from Eurofound gather in-depth data about the labour situation of workers. By adding questions about quality of work, working conditions, vulnerability, autonomy and risks, these surveys provide information that goes beyond work statuses. There has been a lot of work to develop indicators of job quality (Eurofound, 2012), or job vulnerability (Bazilier & al., 2016) based on these surveys. Since 2012, the indices of job quality developed by Eurofound have been included in many reports. They measure earnings, job prospect, intrinsic job quality (skills and discretion, social environment, physical environment, and work intensity) and working time quality.

For the 6th wave of the EWCS, following the debates regarding new forms of employment, Eurofound extended the number of questions asked to self-employed workers, by adding questions regarding their working situation, their economic dependency or their income (Eurofound, 2017a). Some recent work extended the job quality approach to all statuses (Eurofound, 2018), showing that dependent and independent solo self-employed workers experience lower scores on employment prospects, skills and discretion, physical and social environment and work intensity while self-employed workers with employees have a relatively high job quality.

This approach by indices has led to a new form of classification. To go further and look beyond statuses and/or theoretical classifications, some researchers tried to develop an empirical approach to classifying workers. Such empirical typologies are less based on predetermined conceptual definitions and more related to the scores resulting from various dimensions and indicators. As workers belonging to the same statistical category can have very different experiences in terms of employment arrangements, empirical classifications take a bottom-up approach that groups workers sharing similar scores on several dimensions together. These classifications use cluster analysis methods.

Cluster analyses based on job characteristics of salaried workers provide interesting typologies that show which categories of workers are at risk. The first cluster analysis performed by Eurofound on job quality indices identifies four clusters: high-paid good jobs, well-balanced good jobs, poorly balanced jobs, and low-quality jobs (Eurofound, 2012). Van Aerden and her colleagues (2013) developed other measures of employment quality based on EWCS (employment instability, material rewards, worker's rights and social protection, working time arrangements, employability opportunities, collective organization, and power relations) in order to provide a typology of employment arrangements. Their aim is to show how various employment relationships differ from standard employment by postulating that de-standardization of employment is not only a matter of status but requires a multidimensional approach. Their classification identifies five clusters: Standard Employment Relationship-like jobs, instrumental

jobs, precarious unsustainable jobs, precarious intensive jobs and portfolio jobs. In Belgium, Vandenbrande and colleagues (2012) identified 22 sub-dimensions of job quality and conducted a cluster analysis that produced seven categories: saturated jobs, full-time balanced work, work with limited career prospects, work on flexible and unusual hours, emotionally demanding job, heavy repetitive work and indecent work.

While these studies revealed the variety of employment situations and the de-standardization processes of salaried work, we still lack information about self-employed workers. Recently, a deeper focus on self-employment has been provided by Eurofound for the 6th EWCS 2015. Researchers have developed new classifications of self-employment using the self-perceived status, the magnitude of economic activity and the economic dependency (Eurofound, 2017b). However, as the self-perceived status is highly dependent on national contexts, they also developed an empirical classification of self-employed workers. Building on such variables as entrepreneurialism, economic and operational dependency and economic sustainability/precariousness, the analysis classifies self-employed workers in five clusters: employers, small traders and farmers, stable own-account workers, vulnerable workers and concealed workers (Eurofound, 2017c). This approach allows policymakers and researchers identify which categories of self-employed workers are at risk. However, it seems that this classification reproduces existing categories (employers vs. solo) or sectors (farmers and traders) and therefore prevents identifying the main characteristics of new employment arrangements.

- e. Towards an empirical classification of independent professionals based on multiple dimensions of autonomy

This has led to precious insights on the diversity of self-employment situations. Yet, new forms of employment are characterized by significant changes in subordination links and in the way the work is supervised (Cappelli & Keller, 2013). As shown in several empirical studies devoted to new forms of employment, the most relevant changes in this kind of jobs can be characterized by the concept of autonomy (Leighton & McKeown, 2015; Bush & Balven, 2018). According to the conceptual matrix provided by Pichault & McKeown (2019), autonomy can be divided in three main subdimensions: work status (how the access to social protection is guaranteed), work content (which kinds of work division and coordination mechanisms are provided) and working conditions (who is responsible for skills development, income generation, time and space arrangements).

Table 1 represents these different dimensions of autonomy. Regarding *work status*, we can notice various situations that fit in between employed and self-employed work, such as co-employment and work supported by third parties (like platforms). These options can be mixed with diverse modalities in terms of social protection, number of business partners, economic dependency and freedom of choice. The *work content* may be based on broad guidelines and low control which paves the way to job crafting,

full responsibility regarding the working pace and load, flexible coordination mechanisms and strong support from the professional community against managerial intrusions. But the work content can also be based on tight controls, with few possibilities of job crafting, imposed working pace and load, rigid coordination mechanisms and no access to professional support against managerial intrusions. In terms of *working conditions*, the responsibility for skills development, income generation and space and time arrangements can be entirely left to the worker, facilitated by third-party organizations, negotiated with or imposed by the client. It is assumed that all these dimensions can vary independently from each other.

Table 1: Autonomy at work of Independent Professionals (from Pichault & McKeown, 2019)

High Autonomy		Low Autonomy	
Work status			
Independent contractor	Supported independent contractor	Temporary worker	Regular employee
Private insurance	Insurance packages via third parties	Discontinuous access to social rights	Continuous access to social rights
Diversity of clients		Economic dependency/ sole client	
Deliberate choice		Forced choice	
Work content			
Broad guidelines allowing job crafting		Detailed specifications preventing job crafting	
Work pace, workload at own discretion		Work pace, workload imposed by clients	
Mutual adjustment	Standardization of outcomes		Standardization of work processes
Standardization of norms			Direct supervision
Strong support and/or access to shared expertise and practices, high identification to a professional community		Few support and/or access to shared expertise and practices, low identification to a professional community	
Working conditions			
Self-responsibility for developing skills	Access to functional equivalents for skills development	Customized skills development plans based on ad hoc negotiations	Standardized training policies
Self-responsibility for steady income flow	Financial support offered by third parties	Individualized salary packages from interpersonal negotiations	Standardized salary grids
Self-responsibility for time and space arrangements	Access to shared facilities (co-working)	Ad hoc time and space arrangements resulting from interpersonal negotiations	Predetermined work schedules and space arrangements
High Autonomy		Low Autonomy	

In order to avoid an implicit reproduction of sector-based and/or job-based distinctions in our typology, such as in the Eurofound (2017c) study, we will focus our analysis on one single group of nonstandard workers, supposedly more homogeneous: “independent professionals” (Ipros). Ipros provide various forms of intellectual work in the service sector through self-employment. The term Ipros covers activities such as copywriting, translating, IT, marketing, consulting, creative activities, etc. They are acknowledged as the fastest growing sector in the Western economies workforce. Over the last decade, they have been growing by 45% in the EU (Eurofound, 2015).

IPros are often presented as workers having deliberately chosen the self-employed status (Leighton & Brown, 2014). According to some surveys, they are motivated by autonomy, independence and choice in their work (Leighton & Brown, 2014; McKeown, 2015). The intellectual nature of their job, as opposed to manual work, is usually seen as allowing workers to enjoy higher levels of autonomy (Sandberg & Pinnington, 2009). It seems that traditional bureaucratic control is not easily applicable to such intellectual tasks (Thompson et al., 2009; Wynn, 2016). Other researchers however question this taken-for-granted association between intellectual work and autonomy. IPros do not always individually choose to work as self-employed. Their status sometimes results from constrained choices and might lead to precarious situations and economic dependency (de Peuter, 2011; Standing, 2011; Bergvall-Kåreborn & Howcroft, 2013). Such contrasted results in the literature suggest a more nuanced approach in analysing their work arrangements.

In this paper, we will build a series of indicators of autonomy according the various dimensions of table 1, by referring to the 6th European Working Conditions Survey (2015); we will test their validity on the population of IPros. We will then use cluster analysis methods to provide an empirical typology of employment arrangements among Ipros, based on the multiple dimensions of autonomy at work.

3. Data and Methods

a. Data

EWCS is one of the most comprehensive survey regarding autonomy and its subdimensions. To narrow down our analysis on the independent professionals, we used the operational definition of Ipros by Rapelli (2012): “Self-employed workers, without employees, which are engaged in an activity which does not belong to the farming, craft or retail sectors. They engage in activities of an intellectual nature and/or which come under service sectors”. We therefore selected self-employed workers without employees in the following NACE¹ codes: Information and communication (J), Financial and insurance activity (K), Real estate activities (L), Professional, scientific and technical activities (M),

¹ Statistical Classification of Economic Activities in the European Community

Administrative and support services (N), Education (P), Human health and social work (Q), Arts, entertainment and recreation (R), Other service activities (S).

In the 6th wave of the EWCS (2015), the sample of IPros consists of 1345 workers in Europe. We used the weighting variable from the EWCS to control for survey design, post-stratification and supranational weights.

b. Methods

This methodological choice means that we were limited to a secondary analysis of existing data, not gathered in our conceptual perspective. This unavoidably led us to some redefinitions of our initial ambitions.

For each sub-dimension of the conceptual grid of autonomy presented in table 1, we looked for specific questions that can provide us with the appropriate information to develop proxy indicators. However, the EWCS survey did not provide us with relevant questions regarding two dimensions presented in the conceptual grid. Regarding the work status dimensions, there is no question related to social rights and insurances. Regarding the work content, we were able to build proxy indicators for each dimension of the grid. For the working conditions, we could not develop an indicator for skills development as the questions regarding training are only quantitative (number of days spent in training) but do not inform us about the responsibility for training (is the worker the sole responsible for his/her skills development or do the client provide possibilities for training?). This was also the case with the responsibility for spatial arrangements. We were therefore condemned to refer to one single dimension (the management of working time) to build our indicator. Moreover, due to the lack of information about intermediated work relationship, we were not able to find information about some of the possibilities developed in the conceptual grid such as supported independent contracting or financial support offered by a third-party. Table 2 synthetizes the questions and information used in the construction of each indicator.

We then aggregated these questions to build synthetic indicators using a normalized scale from 0 (less autonomy) to 1 (more autonomy) for each sub-dimension². We controlled the indicators by reviewing their distribution and descriptive statistics in order to avoid aberrant results.

First, we used univariate analyses of key dimensions to highlight the variety of Ipros' experience of autonomy (section 4.a) and we tested the potential correlations between these dimensions (section 4.b). Second, we provided an empirical typology of new work arrangements by using cluster analysis methods (section 4.c).

² For the sake of brevity, we do not develop the calculation of each indicator in this paper. Would you be interested in this process, please contact the authors for a methodological annex

Table 2: Summary of the work autonomy sub-dimensions indicators

Indicators	Questions in EWCS 2015	Information Used
Independence in the contractual arrangement (short: Contract)	Q8b	Q8b. Select the category or categories which apply to your main paid job? - Sole director of own business - A partner in a business or professional practice - Working for yourself - Working as a sub-contractor - Doing freelance work - Paid a salary or a wage by an agency
Economic independency (short: Econ. Independency)	Q9d, Q102	Q9d. Regarding your business, do you generally, have more than one client or customer? – Yes -No / Q102 - What proportion of revenue do you receive from your most important client? – Less than 50 percent – 50 to 75 percent – More than 75 percent
Choice for self-employed work (short: Choice)	Q10	Q10 - Self-employed, was it mainly your own personal preference or you had no better alternatives for work? - Mainly through own personal preferences - No other alternatives for work - A combination of both
Autonomy in work methods (short: Work Methods)	Q54b, Q61i, Q61n	Q54b. Are you able to choose or change your methods of work – Yes – No / Q61i - You are able to apply your own ideas in your work? – Always – Most of the time – Sometimes – Rarely - Never / Q61n - You can influence decisions that are important for your work? – Always – Most of the time – Sometimes – Rarely - Never
Autonomy in work pace (short: Work Pace)	Q54c	Q54b. Are you able to choose or change your pace of work – Yes – No
Coordination mechanisms (short: Coord. Mech)	Q50abcde	Q50acde. On the whole, is your pace of work dependent on – the work done by colleagues – direct demands from people such as customers, passengers, pupils, patients, etc. - numerical production targets or performance targets – automatic speed of a machine or movement of a product – the direct control of your boss
Support/Access to shared expertise (short: Support)	Q58, Q61a	Q58. Do you work in a group or team that has common tasks and can plan its work? – Yes – No / Q61a Your colleagues help and support you – Always – Most of the time – Sometimes – Rarely - Never
Responsibility for generating income (short: Earnings responsibility)	Q103abc	Q103. What do your earnings from your main business include? - Income from self-employment such as own business, profession or farm - Payments based on the overall performance of the company (profit sharing scheme) or partnership where you work - Income from shares in the company you work for
Autonomy in time arrangements (short: Worktime)	Q42	Q42. How are your working time arrangements set? - They are set by the company / organisation with no possibility for changes - You can choose between several fixed working schedules determined by the company/organisation - You can adapt your working hours within certain limits (e.g. flextime) - Your working hours are entirely determined by yourself

4. Findings

a. Ipros' experiences of autonomy

To understand the experience of autonomy by Ipros through the various dimensions of our matrix, we looked at distributions after having split continuous variables in classes to facilitate visualization and interpretation³. We select five dimensions that depict the high variety of I-Pros' experiences of autonomy⁴. Figure 1 denotes the strong proportion of IPros in a situation of economic dependency (30%). Figure 2 demonstrates that at least 17% of IPros work as self-employed because they have no alternative. Figure 3 reveals that 25% of these workers have a low to moderate autonomy regarding the way they execute their tasks while figure 4 shows that the majority of Ipros have a limited access to support from colleagues and/or managers. Figure 5 points out that 29% of them are submitted to some kind of external control over their working time arrangements.

Figure 1: Economic independency

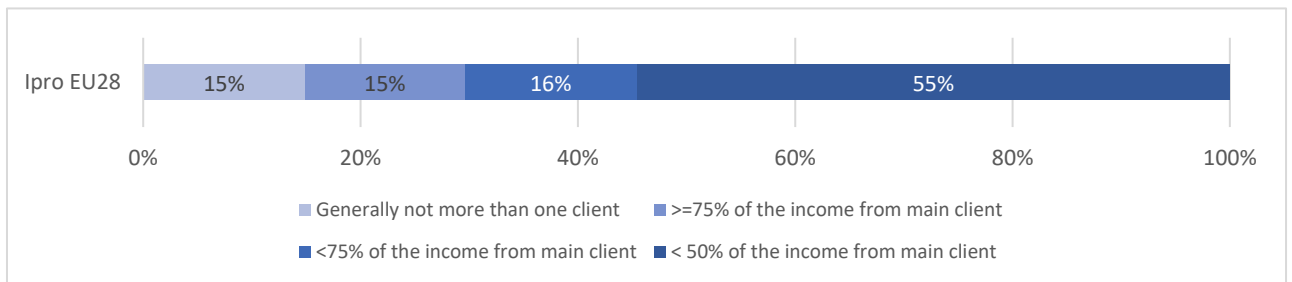


Figure 2: Choice for self-employed work

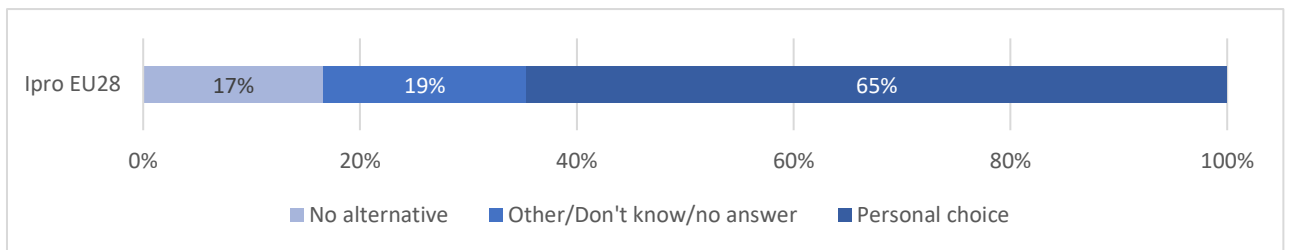
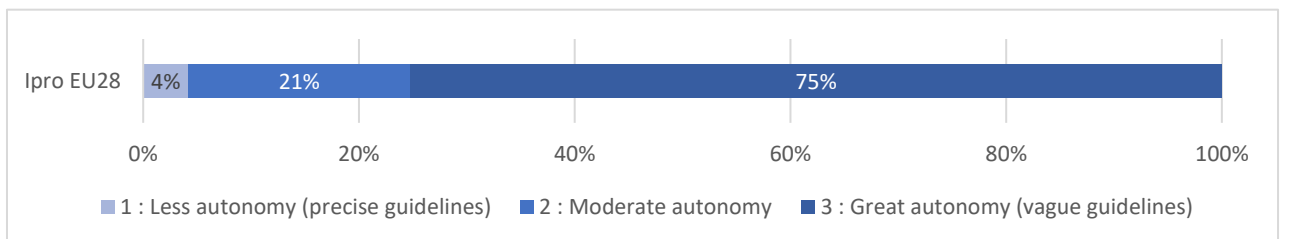


Figure 3: Autonomy in work methods



³ The classes relate to the original questions used for computing indicators shown in Table 2

⁴ Details of the distribution for each indicator are available in the methodological annex.

Figure 4: Support/access to shared expertise

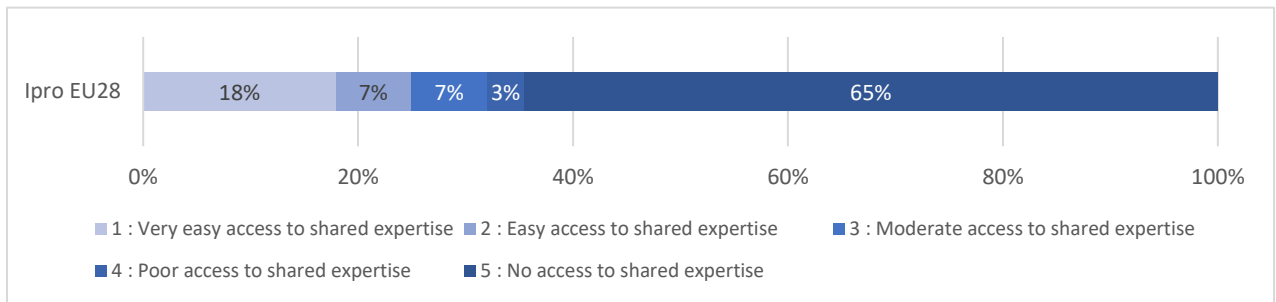
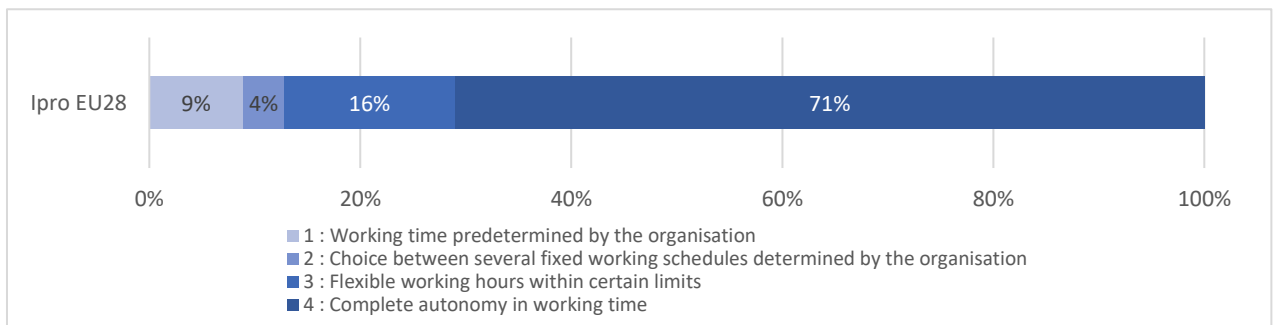


Figure 5: Autonomy in time arrangements



These results indicate that the Ipros' experiences of autonomy are diversified. While most of them seem to enjoy high levels of autonomy, there is a non-negligible part experiencing lower levels of autonomy on some dimensions. The second part of our analysis questions the relations between these dimensions.

b. Autonomy as a multidimensional concept

We then decided to test empirically whether the various sub-dimensions of the matrix can vary independently from each other. We conducted bilateral correlation analyses on these 9 sub-dimensions. Table 3 displays the correlation matrix.

Table 3: Indicators correlation matrix

	Contract	Econ. Independency	Choice	Autonomy in work methods	Work Pace	Coordination Mechanisms	Support	Earnings Responsibility	Worktime
Contract	1	-,045	-,075*	,027	,033	-,009	,311*	,224*	,089*
Econ. Independency	-,045	1	,146*	,221*	,100*	-,156*	,084*	-,050	,164*
Choice	-,075*	,146*	1	,110*	,034	-,030	-,079*	-,071*	,124*
Autonomy in work methods	,027	,221*	,110*	1	,432*	-,116*	,077*	-,050	,291*
Autonomy in work Pace	,033	,100*	,034	,432*	1	-,094*	,083*	-,029	,199*
Coordination Mechanisms	-,009	-,156*	-,030	-,116*	-,094*	1	,037	,000	-,008
Support	,311*	,084*	-,079*	,077*	,083*	,037	1	,188*	,234*
Earnings Responsibility	,224*	-,050	-,071*	-,050	-,029	,000	,188*	1	-,005
Worktime	,089*	,164*	,124*	,291*	,199*	-,008	,234*	-,005	1

* p < 0.01 (bilateral)

The results show us that most sub-dimensions are not correlated ($r < 0.10$ and/or $p > 0.05$) or weakly correlated ($r < 0.30$). However, we observe an important correlation between autonomy in work methods and autonomy in work pace ($r=0.432$; $p<0.001$). Therefore, to avoid overweighting one factor in our cluster analysis and delivering misguided results due to collinearity, we decided to merge the indicators of work pace and methods into one single new construct calculated with the mean of the two dimensions.

These preliminary results show that the various sub-dimensions of our matrix are not systematically correlated. These results support the idea that autonomy at work must be considered as a multidimensional concept as we can hardly isolate specific variables likely to predict the others. Each dimension brings its own share of new information on the autonomy at work of IPros.

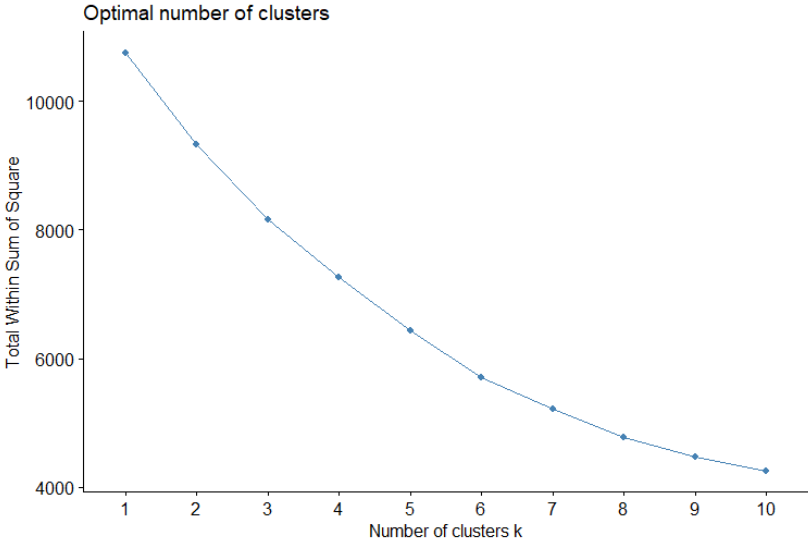
c. Building an empirical typology

i. Procedure

Building on these indicators, we looked for groups of workers sharing the same patterns of results on the various dimensions of autonomy. We used a hierarchical clustering algorithm with a consolidation of the classes using k-means algorithm. The hierarchical clustering algorithm groups observations according to their similarity. The latter is calculated with Euclidian distance and Ward’s linkage (Attewell & Monaghan, 2015). Hierarchical clustering is a bottom-up approach to clustering. In our case, each worker is considered as a single cluster at the beginning and then is successively merged in pairs of clusters that are the most similar on the different dimensions of autonomy until all clusters have been merged into one single cluster that contains all workers. Once the expected number of clusters is reached, the k-means algorithm calculates their centre and categorizes each observation according to the closest cluster centre. This consolidation of the hierarchical clustering methods is associated with more robust classifications. Before applying the clustering algorithms, indicators are standardized, missing values are imputed according to the proximity between individuals and the relations between the indicators (Josse & Husson, 2016), and the relative weight of individuals (controlling for survey design, post-stratification and supranational weights) is considered by using the weighting variable provided by Eurofound.

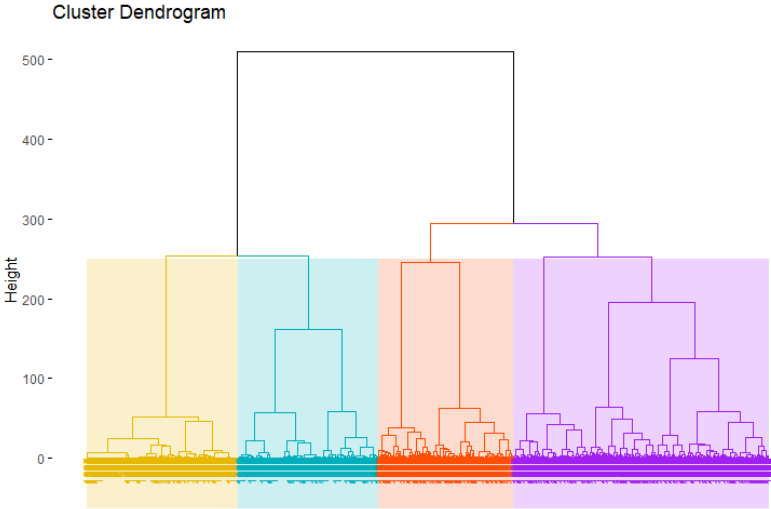
To select the optimal number of clusters, we looked for a significant breakdown in the gain of internal consistency of clusters (how similar are the members of one cluster). This can be done by calculating the heterogeneity of clusters, measured with the Total Within Sum of Squares (TWSS), and looking for a breaking point in the consistency gain, according to the “elbow” method (Attewell & Monaghan, 2015). As shown in figure 6, there is no significant drop in TWSS that would prescribe the use of a specific number of clusters.

Figure 6: Hierarchical Clustering Total Within Sum of Square



Therefore, we relied on the interpretability of clusters to choose the number of categories to produce. We tested solutions from 2 to 7 clusters. The results with 4 clusters seem to produce the most interpretable clusters. Figure 7 displays the cluster dendrogram resulting from the 4 clusters option.

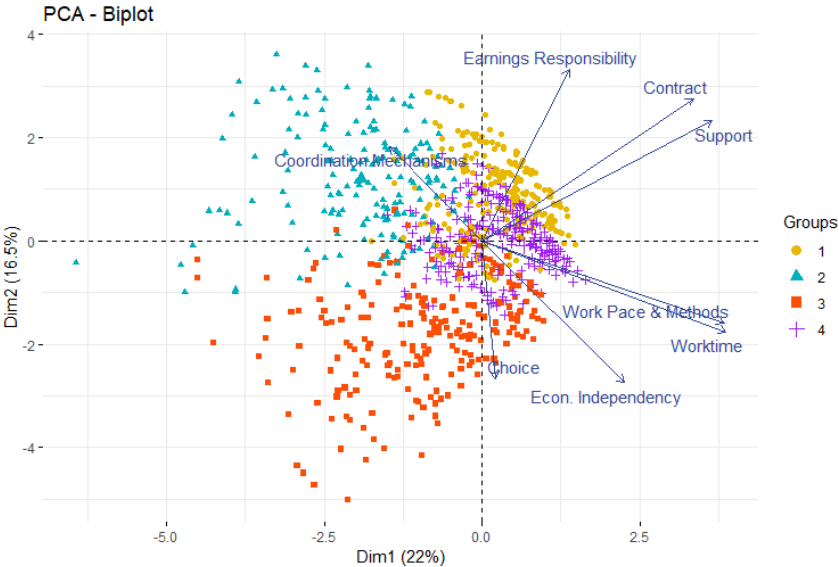
Figure 7: Cluster Dendrogram



ii. Characteristics of the clusters

The clustering algorithm produced four clusters. The results of the cluster analysis can be displayed on a factor map (Figure 8) to observe the position of the clusters regarding the different dimensions of autonomy. The factor map synthesizes the information of the eight indicators on two axes (called factors or principal components). We can observe the differences between the clusters according to their positions on the map in relation with the different indicators.

Figure 8 : Factor map with clusters



To reach a more precise understanding of our clusters, we can look at their means on each dimension of autonomy (cfr. Table 4).

The first cluster is made of I-Pros that have high scores on most dimensions of autonomy but who mostly chose to work as self-employed workers due to a lack of alternative. They are autonomous in terms of work content and working time arrangements, but they are self-responsible for generating incomes and get low support. They represent 28% of the sample in EU28. We labelled this group the “Involuntary Ipros”.

The second cluster is made of more economically dependent Ipros with less autonomy regarding their work methods, pace and working time arrangements while being self-responsible for their contract arrangements and the generation of income. Conversely, they enjoy higher support from colleagues and business partners with whom they must coordinate. This is the smallest cluster. It represents nonetheless 13% of our sample. This group is called the “Economically dependent Ipros”.

The third cluster displays lower scores in terms of self-responsibility for contractual arrangements and generation of income while enjoying higher autonomy in terms of work content. Such workers receive more support from colleagues and partners. This group accounts for about 19% of the sample. These may considered as the “Supported Ipros”

The fourth cluster is made of Ipros who are autonomous on most dimensions and chose to work as self-employed. They enjoy a large autonomy in terms of work status, work content and working conditions. We labelled this group as the “Autonomous IPros”. With 40%, they represent the majority of our sample.

Table 4: Clusters means

	Involuntary Ipros	Economically dependent Ipros	Supported Ipros	Autonomous Ipros
	N=380	N=173	N=255	N=537
Contract	,99	,98	,88	1,00
Econ. Independency	,66	,41	,75	,75
Choice	,24	,62	,84	1,00
Work Pace & Methods	,93	,51	,94	,94
Coordination Mechanisms	,57	,63	,57	,56
Support	,87	,53	,52	,82
Earnings Responsibility	,99	,97	,68	1,00
Worktime	,92	,43	,87	,92

iii. Clusters description using variables from the survey:

1. Demographics and activity:

Some demographic variables and indicators of economic activity can be associated with each cluster (cfr. Table 5). Women are slightly overrepresented in Involuntary Ipros (Ipros that chose self-employment due to the lack of alternative). In terms of education, Involuntary Ipros and Economically dependent Ipros have a higher proportion of lower education degrees (secondary education). Involuntary Ipros have the lowest proportion of highly educated workers (bachelor degree or higher) in the four clusters. Involuntary Ipros and Autonomous Ipros are concentrated in “other” service activities (+- 28% each). Economically dependent Ipros (dependent workers) are more present in health and social work sectors (22,5%) while Supported Ipros are prevailing in professional, scientific and technical activities (28,6%).

Table 5: Demographic variables and economic activity in the different clusters

Clusters		Involuntary Ipros	Economically dependent Ipros	Supported Ipros	Autonomous Ipros
Gender	Male	38,7%	43,4%	50,6%	45,8%
	Female	61,3%	56,6%	49,4%	54,2%
Second job	No other paid job	88,7%	86,7%	87,1%	91,8%
	Regular second job	4,0%	6,4%	7,1%	4,3%
	Occasional second job	6,1%	6,9%	5,9%	3,5%
	Other	1,3%	0,0%	0,0%	0,4%
Education	Lower secondary education or lower	13,9%	15,7%	5,1%	8,4%
	Upper secondary education	34,2%	25,0%	29,9%	28,7%
	Short post-secondary education	18,2%	18,0%	24,4%	20,5%
	Bachelor or higher	33,7%	41,3%	40,6%	42,5%
Economic activity (NACE)	J Information and communication	5,5%	11,0%	9,8%	8,0%
	K Financial and insurance activities	3,7%	2,9%	9,4%	3,5%
	L Real estate activities	3,7%	3,5%	6,3%	1,9%
	M Professional, scientific and technical activities	18,2%	12,1%	28,6%	21,4%

N Administrative and support service activities	11,1%	15,6%	9,4%	7,8%
P Education	10,3%	10,4%	2,7%	5,4%
Q Human health and social work activities	11,8%	22,5%	10,2%	15,5%
R Arts, entertainment and recreation	7,4%	8,7%	7,8%	8,6%
S Other service activities	28,4%	13,3%	15,7%	27,9%
Weekly hours (means)	27	28	33	31

2. Independence:

Table 6 displays the results of the clusters on two questions used by Eurofound to evaluate the dependency of self-employed workers. As expected, Economically dependent Ipros have less authority than their counterparts regarding the possibility to hire or dismiss employees. Indeed, even though we focus on self-employed workers without employees, not having the authority to hire an employee if required is an indicator of dependency or some sort of subordination according to Eurofound (2013). They are also more likely to be paid an agreed fee on a weekly or monthly basis, which is closer to a subordinated employment relationship.

Table 6: Independence variables in the different clusters

Clusters		Involuntary Ipros	Economically dependent Ipros	Supported Ipros	Autonomous Ipros
Q9a - have the authority to dismiss or hire employees	Yes	54%	35%	68%	68%
	No	46%	65%	32%	32%
Q9b - Get paid an agreed fee on a weekly or a monthly basis	Yes	38%	57%	48%	33%
	No	62%	43%	52%	67%

3. Self-employment situation:

Table 7 provides data on multiple questions regarding the subjective appreciations of the self-employment situation. Supported Ipros have a higher proportion (41%) of workers who consider themselves as financially safe in case of a long-term sickness. Only 23% of the Involuntary Ipros consider themselves as safe in this case. Supported Ipros and Autonomous Ipros are in vast majority enjoying being their own boss. This tendency is still present but less pronounced for the Involuntary and Economically dependent Ipros. 7% of the Economically dependent Ipros say they dislike being their own boss: this is by far the highest proportion in the 4 clusters. More than half of the Supported Ipros

and Autonomous Ipros consider it is easy to find new customers. Around 1 out of 5 workers in these clusters find it hard while, for the Economically dependent and Involuntary Ipros, 1 out of 3 workers find it difficult. 66% of the Autonomous Ipros do not consider it hard bearing the responsibility for running their business. This proportion is lower for the three other clusters. While more than 2/3 of the workers in clusters 1, 3 and 4 strongly agree with the statement that they are making the most important decisions about how the business is run, this proportion drops at only 42% for the Economically dependent Ipros. Moreover, 20% of the workers from this cluster disagree with this statement while it is never more than 4% for other clusters.

Table 7: Self-employment situation variables in the different clusters

Clusters		Involuntary Ipros	Economically dependent Ipros	Supported Ipros	Autonomous Ipros
Q91a - if I had a long-term sickness, I would be financially secure	Strongly agree	10,9%	12,4%	19,1%	13,9%
	Tend to agree	12,0%	15,5%	21,9%	17,6%
	Neither agree nor disagree	13,4%	14,9%	17,1%	15,1%
	Tend to disagree	21,6%	21,7%	19,5%	21,9%
	Strongly disagree	42,1%	35,4%	22,3%	31,5%
Q91b - I enjoy being my own boss	Strongly agree	64,7%	47,5%	81,5%	79,3%
	Tend to agree	19,8%	30,2%	14,6%	17,6%
	Neither agree nor disagree	13,3%	14,8%	2,4%	2,2%
	Tend to disagree	1,4%	3,7%	0,8%	0,6%
	Strongly disagree	0,8%	3,7%	0,8%	0,4%
Q91c - It is easy for me to find new customers	Strongly agree	15,3%	12,6%	16,0%	19,2%
	Tend to agree	26,6%	26,6%	35,4%	36,1%
	Neither agree nor disagree	29,2%	28,7%	28,0%	27,6%
	Tend to disagree	17,9%	19,6%	14,0%	10,9%
	Strongly disagree	11,0%	12,6%	6,6%	6,1%
Q91d - I find it hard for me bearing the responsibility for running my business	Strongly agree	8,0%	8,5%	5,2%	6,5%
	Tend to agree	15,9%	17,6%	15,3%	13,8%
	Neither agree nor disagree	22,1%	21,6%	19,0%	13,2%
	Tend to disagree	19,5%	24,8%	22,2%	23,8%
	Strongly disagree	34,5%	27,5%	38,3%	42,6%

Q91e - I make the most important decisions on how the business is run	Strongly agree	71,8%	41,9%	64,1%	79,6%
	Tend to agree	18,4%	21,3%	23,1%	15,7%
	Neither agree nor disagree	6,3%	16,8%	8,8%	3,8%
	Tend to disagree	2,3%	11,6%	1,6%	0,6%
	Strongly disagree	1,2%	8,4%	2,4%	0,4%

4. Job satisfaction and prospects:

Table 8 shows that most IPros are satisfied with their working conditions. Almost half of the Supported IPros and Autonomous IPros declare being very satisfied with their working conditions while this proportion lies around 30% for the other clusters. More than half of the Autonomous and Supported IPros also believes their job offers good prospects for career advancement. While it is the case for less than 40% of the Involuntary or Economically dependent IPros.

Table 8: Job satisfaction and prospects in the different clusters

Clusters		Involuntary IPros	Economically dependent IPros	Supported IPros	Autonomous IPros
Q88 - Satisfaction with working conditions	Very satisfied	30,9%	27,2%	49,4%	47,8%
	Satisfied	53,6%	61,8%	45,1%	46,3%
	Not very satisfied	12,7%	9,2%	5,5%	5,0%
	Not at all satisfied	2,9%	1,7%	0,0%	0,9%
Q89b - My job offers good prospects for career advancement	Strongly agree	12,8%	15,5%	38,3%	25,1%
	Tend to agree	25,3%	24,3%	27,6%	29,6%
	Neither agree nor disagree	23,3%	22,3%	17,3%	25,5%
	Tend to disagree	16,3%	18,9%	9,3%	9,1%
	Strongly disagree	22,2%	18,9%	7,5%	10,7%

5. Discussion

While most IPros enjoy high levels of autonomy on the different dimensions of our grid, our univariate analysis of indicators also pointed that there is a non-negligible part of this population with lower scores on some dimensions. This entails negative dimensions already pointed out in the literature, such as being pushed towards self-employment (Fleming, 2017), being

economically dependent (de Peuter, 2011; Standing, 2011; Bergvall-Kåreborn & Howcroft, 2013), having strict guidelines to follow or not being responsible for working time arrangements. But it also entails more positive dimensions such as having access to shared expertise and support from managers, colleagues and/or teammates. Our approach therefore provides a more comprehensive vision of autonomy at work of IPros by using multiple dimensions on the same data.

This approach leads us better understand risks and opportunities associated with the work of Ipros. Workers with high levels of autonomy (the majority of Ipros) may indeed face the following risks: no (or discontinuous) access to social protection, low access to shared expertise and support, self-responsibility for skills development and for generating a steady income flow, etc. On the other side, high autonomy may also offer benefits in terms of freedom of choice for the job status, broader guidelines allowing job crafting, self-responsibility for workload and work pace, self-responsibility for space and time arrangements, etc.

However, Ipros may obtain lower scores on some dimensions of autonomy, which leads them face some risks such as: higher economic dependency, forced orientation to casual work, strict guidelines reducing the possibilities of job crafting, less responsibility over workload and work pace, etc. There are however some benefits associated with low levels of autonomy. If most of them remain inaccessible to the majority of Ipros due to their self-employed status (secure legal status, continuous access to social protection), our results showed that a minority of these workers may enjoy support from their colleagues and managers.

Autonomous Ipros may be considered as autonomous on every dimension. They are their own boss, make the most important decisions about how their business is run, enjoy great levels of responsibility for their work content and working conditions and are relatively satisfied.

Individual situations of Ipros in clusters 1 (Involuntary) and 2 (Economically dependent) are blended with high autonomy on most dimensions and lower scores on some dimensions. Workers from Involuntary Ipros are more likely to be “pushed” towards self-employment. They are less likely to enjoy being their own boss and to be satisfied with their working conditions. Workers from Economically dependent Ipros are dependent on one single business partner and, while this might bring advantages in terms of organisational support, they do not enjoy the same levels of autonomy as other Ipros when considering work content and working conditions: they are associated with lower satisfaction scores and more precarious self-employment situations. This could result from purely transactional arrangements with client organisations. In this

perspective, the use of contract work is just a question of business optimization, via cost reduction and/or flexible responses to market variations. Client organizations are not led to invest such short-term business relationships: work arrangements are mainly focused on performances and compliance with the terms and conditions of contracts, with low consideration on the development of human capital. This ‘low road strategy’ (Gautié & Schmitt, 2010) is very frequent in mass-market industries.

Conversely, the positive scores obtained in clusters 3 (Supported) and 4 (Autonomous) probably originate from another attitude of client organizations: more emphasis is then put on skills development, individual commitment, self-determination rather than compliance with command-and-control systems, intensive communication and participation. Indeed, some organizations tend to develop such a ‘high road strategy’ (Gautié & Schmitt, 2010) with Ipros, in order to build a genuine partnership with them due to the uniqueness of their human capital (Lepak & Snel, 1999). In line with previous research (Koene & van Riemsdijk, 2005; Coyle-Shapiro et al., 2006), a survey among 375 Ipros working in a large range of Australian organizations (McKeown & Cochrane, 2017) showed that organizational support —offered either by client organizations or labour market intermediaries— significantly predicts their affective commitment, which reinforces their potential contribution to organizational performances. Workers from Supported Ipros, who enjoy higher levels of autonomy on work content and working conditions while benefiting from more organisational support are also amongst the most satisfied with their working conditions and their self-employment situation.

Therefore, the future of career management might be based on the ability of HR managers to grasp the various and changing ways through which Ipros look for and enact autonomy at work, in order to provide them with more specific and appropriate answers. By doing so, client organizations are probably led to renew their traditional career management practices towards a more inclusive approach (Cascio & Boudreau, 2017).

We must keep in mind some limitations of this research while looking at its findings. First, our empirical test was based on a secondary analysis of existing data (EWCS). We were thus unable to find relevant information for each component of our conceptual framework. Further empirical investigations will be needed in order to gather more relevant primary data according to our analytical grid. Second, the use of cross-sectional data makes it impossible to look at the evolution of self-employment arrangements over time. This also means that we cannot look for causal patterns. The associations between variables grouped in each cluster and other descriptive variables should be regarded as simple correlations. We also tried to use factual

indicators in the construction of clusters. More subjective questions about contractual arrangements and job satisfaction are needed to better understand the concrete experiences of autonomy at work: some of them were used as illustrative variables to better highlight the differences between clusters.

Still, our results represent an important contribution to the literature on new forms of employment. Our findings bring a nuanced take on the binary considerations on autonomy at work of independent professionals, either presented as highly autonomous workers benefitting from flexible work arrangements or, conversely, associated with precarious work arrangements and painful working conditions. Our findings show the added value of an empirical typology that helps better understand the experience of autonomy in nonstandard work arrangements and paves the way to the development of more appropriate policies, taking account of the diversity of IPros' working situations. It should be further validated on other datasets in order to identify relevant links between the employment arrangements for IPros and other variables such as the well-being or job quality.

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