

## **Non-standard Employment, Working Time Arrangements, Establishment Entry and Exit**

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# Non-standard Employment, Working Time Arrangements, Establishment Entry and Exit<sup>1</sup>

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## Abstract

This paper addresses the issue if and to what extent young firms differ from incumbents regarding the use of non-standard employment, trust-based working time arrangements and overtime hours in the light of the qualitative changes of employment structures that are taking place in industrialized countries, such as rising shares of non-standard employment and borders between work and private life that become increasingly blurred. Based on a microeconomic analysis of the IAB Establishment Panel, a representative survey of about 16,000 employers in Germany, we find that young establishments rely significantly more often on limited contracts and freelance work than incumbent businesses in order to hedge the higher risks and uncertainties of young firms. Likewise, trust-based working time arrangements and overtime hours are more an issue in young than in incumbent firms, indicating a higher level of subjectivated work in young firms. Additionally, we provide basic evidence that these differences are not purely transitory but on the contrary rather stable as the firms grow older, which makes young firms contribute a substantial part to the ongoing qualitative changes of employment structures.

**JEL Classification:** L26, J23, D22

**Keywords:** start-ups, trust-based working hours, overtime, team work, job quality, non-standard employment

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# 1 Introduction

Young firms differ from incumbents in many respects. A usually taken perspective considers young firms to be the driving force behind structural economic change and technological progress (see, f.i., Fritsch 2007, Shane 2009, van Stel/Storey 2004). As such, young firms often operate in new areas of business, implementing new ideas and products and opening up new markets. With regard to their internal structures and organization, they are found to be considerably less hierarchically structured and to have less routines and less codified procedures than incumbents (Penrose 1959, Garnsey 1998).

The organization and the way of work in young firms seems to differ as well, as was found by Koch et al. (2013), a qualitative study of about 50 young and incumbent firms in four different industries, who observed a greater influence of working on one's own responsibility and working in teams in young firms compared to incumbents, among others. Likewise, working time arrangements were found to be very different across firm age, with young firms having both less formalized and less rigid working schedules that were purely trust-based in most cases. In most firms – in young ones as well as incumbents – extra hours, even on a regular basis, appeared as very common there, but were even more accentuated in the young firms.

However, while there is a huge literature on the *transitions of employment relationships* (Kalleberg 2009; see also Sennett 1998) and in particular on the rise of non-standard employment relationships, only little is known about the role firm age plays in that respect. It is the aim of the present paper to fill this gap and to look up some of the above-mentioned findings of Koch et al. (2013) using representative data. Thus, we investigate (1) whether young and incumbent firms differ regarding their inclination towards non-standard employment, (2) whether young firms make more overtime and if they, (3), dispose of less formal working schedules than incumbents. The underlying motivation is to assess the role of young firms for the ongoing qualitative changes of work forms.

Last but not least, we provide evidence on how long initial differences between young and incumbent firms regarding the above-mentioned aspects might persist as the firms grow older. This may help to assess whether the differences between young and incumbent firms that we find contribute even in mid- to long-term to the qualitative changes of employment that can be observed at the macro level, namely the rising shares of non-standard employment and the growing importance of employee-centered, post-tayloristic aspects of work and work organization.

This contribution is structured as follows. Section 2 introduces our dependent variables – marginal and regular part-time employment, limited contracts, agency-based work and freelance work; overtime hours and trust-based working time – by giving an overview of related, relevant theoretical and empirical studies. Thereby, emphasis is laid on the potential benefits and shortcomings of the variables under investigation. Thereafter, we review relevant findings from entrepreneurship research and deduce hypotheses on the relationship between each of our dependent variables and firm age, establishing a link between macro-level trends in the labor market and entrepreneurship research. Section 3 introduces the data and deals with measurement issues, while section 4 presents the results of our analyses. Section 5 concludes.

## 2 Related literature and hypotheses

As the focus of the present paper is on firm-level flexibility, it may be useful to first clarify how we understand the term “flexibility”. Relying on the work of Atkinson (1984), we distinguish between two kinds of flexibility: numerical and functional flexibility. While numerical flexibility uses the number of workers and working hours as strategic variables to provide the firm with the necessary input of adequately qualified labor (see also Kossbiehl 1997, p. 403, cited in Becker and Jörges-Süß 2002, p. 129), functional flexibility aims at increasing the individual workers’ ability to respond to changing environments, tasks and organization of work. In times of volatile and rapidly changing economic environments flexibility in its various facets can be perceived as a key aspect for the performance of firms (see Atkinson 1984 and Valverde et al. 2006).

Concerning numerical flexibility, firms may, among others, choose to make use of certain forms of non-standard employment as well as to practice overtime hours and trust-based working schedules. Typical methods for the improvement of a firm’s *functional* flexibility include, but are not limited to, hiring high-qualified employees as well as practicing vocational training and advanced training. Besides, specific forms of non-standard employment as well as overtime hours and trust-based working time arrangements may have an impact on functional flexibility, too, as we will see later on.

Generally, firm strategies aiming at achieving (numerical and functional) flexibility can be separated into internal and external strategies, depending on whether or not a firm relies on the external labor market to satisfy its needs. While marginal employment such as mini jobs<sup>3</sup> and midi jobs as well as limited contracts, agency-based work and freelance work thus have to be regarded as external means for flexibility, regular part-time as well as overtime hours and trust-based working time arrangements aim at increasing firm flexibility in an internal way. Both internal and external strategies have often been subject to controversial societal debate, raising concerns about working conditions, pay, distress etc. that can be associated with them (EUROFOUND 2011, Kalleberg 2009, OECD 2008 and 2012). According to Hohendanner and Bellmann (2007) for about 80% of German establishments in 2002 the most important strategy aiming at flexibility were internal strategies, and first of all overtime hours. Flexible working time arrangements, which includes trust-based working time, was declared the most important instrument by about 11%. As for external strategies, hires and fires were considered most important by 14% of the establishments, while for limited contracts, helps, agency-based work and subcontracted work (which includes freelance workers) this was the case for 7%. As firms may use more than one strategy to adapt their work force, their corresponding shares in the economy can be much higher and have grown quite dynamically (see, f.i., Keller and Seifert 2011 or Kalleberg 2000), which further increases the importance of the topic.

Combining several strategies to flexibilization seems worthwhile for firms, since each strategy has its specific benefits and shortcomings (see e.g. Dütsch and Struck 2007, Pfeifer 2005, cited in Dütsch and Struck 2007, or Hohendanner and Bellmann 2007 who find complementary relationships between several means of flexibilization), and our investigation on the relationship between their usage and firm age should certainly differentiate between the various kinds. In the following, we will thus give, at first, an overview of the relevant literature in order to assess the specific advantages and disadvantages that the variables under investigation in this paper may provide for firms in general, i.e. independent of their age. Thereby, a major emphasis is laid on whether they are suitable to the aims of numerical and functional flexibility and whether they bring about benefits on the cost side, but other characteristics will be mentioned as well, as far as they are relevant in the context of our analysis. Note that the distinction between these categories may be fuzzy at times, as, e.g., some of the characteristics of non-standard employment forms can belong to more than one category and categories are closely related to each other. Thereafter, we will assess the role that our dependent variables may play for young firms.

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<sup>3</sup> Mini jobs and midi jobs will be explained in more detail in section 2.1.

## 2.1 Marginal and regular part-time employment

As for *numerical flexibility*, marginal part-time (mini jobs and midi jobs), i.e., jobs that are characterized by low average working hours (usually still lower than those of regular part-timers), among others<sup>4</sup>, give the employer the ability to easily increase or decrease the working hours in his firm by up- and downgrading the working hours of the corresponding employees.<sup>5</sup> Another advantage for numerical flexibility arises, as the working times can be shifted along the daily schedule whenever additional labor input is needed (see Thurman und Trash 1990, cited in Kalleberg 2000, p. 344, and Keller und Seifert 2006, p. 237). Extending opening hours can be an additional benefit of using part-time employment (Sightler & Adams 1999, cited in Kalleberg 2000, p. 344). These points hold for regular part-time as well, although the ability of increasing and shifting the working hours of regular part-timers is less accentuated, albeit still present, because they usually work more hours than marginal part-timers. Besides, Wanger (2006), cited in Hohendanner and Janik 2008, p. 473, and Voss-Dahm 2010, p. 257, consider part-time work to be especially advantageous in case of temporally limited labor demand and temporal shortages of labor.

With regard to the *cost side*, marginal part-time employment bears fewer search and hiring costs than traditional, full-time employment, since marginal part-timers are usually meant to perform low-skilled tasks, which means that searching need not be very intensive (Kalina and Voss-Dahm 2005; see also Kjeldstad and Nymoer 2012). The same applies to regular part-time employment, albeit, again, in a less pronounced way. Thus, Pfeifer (2007) argues that the higher the quasi-fixed employment costs are (for which qualification may be considered an indicator), the less probable is it that a firm uses part-time employment (p. 69). Note that the usage of part-time employment for low-skilled jobs implies also that firms that employ part-timers should have a lower *functional flexibility*, on average. As for the costs of employment, marginal and regular part-time can both be considered to be less costly than traditional, full-time employment. First, marginal part-time is advantageous because of largely reduced payments to the social security system as well as to the tax authorities. Regular part-time bears instead higher ancillary labor costs than marginal employment (but still lower ones if compared to traditional, full-time employment, see, f.i., Becker and Jörges-Süß 2002, p. 132). Second, several studies have shown that there are considerable wage gaps between both marginal and regular part-timers and full-time workers, with respect to regular wages as well as fringe benefits (see, f.i., Tilly 1996, Ferber and Waldfogel 1998, Corcoran et al. 1984 and England et al. 1999, cited in Kalleberg 2000, p. 347.”). Regarding firing costs, there are, at least in theory, no differences between part-time and full-time workers, as the same employment protection laws apply to both of them. However, it may be possible that these prescriptions are circumvented, particularly with marginal part-time employees, as they may not be aware of this fact and/or not willing (or able) to sue their former employer for a job with a monthly wage of up to 450€ (mini job) or between 451 and 800€ (midi job) per month, respectively (Ochs 1999, p. 227).

A special benefit from part-time work arises in the case that employees wish to work less than full-time, e.g. in order to obtain a better work-life balance (Dütsch and Struck 2010, p. 256f.; Kalleberg 2000, p. 344; Wanger 2006, cited in Hohendanner and Janik, p. 473; Voss-Dahm 2010, p. 257; Bellmann et al. 2009). Indeed, Dütsch and Struck (2010) argue that regular part-time should not be considered “non-standard” because its implementation resorts largely to the needs and demands on part of the employees, rather than employers (p. 270). To respond to employees’ wishes for part-time employment can be an important measure to enhance employee loyalty.

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<sup>4</sup> Besides the low number of working hours, mini jobs and midi jobs can be characterized by a monthly wage of not more than (currently) 450€ and between 451 and 800€, respectively. Furthermore, they share the fact that only reduced payments to the social security system have to be made, along with a negligible all-inclusive tax. Payments to social security increase linearly for midi jobs until the full contribution rate is reached at a wage 800€ per month. See also Bellmann et al. (2005) for more explanation.

<sup>5</sup> Note that, while generally applicable, hiring and firing (marginal) part-timers is not as easy. In fact, it is just as easy as hiring and firing full-time employees, because the employment protection law explicitly applies to part-timers as well. In Germany, small establishments with currently up to ten employees are not subject to the employment protection law, making dismissals generally easier for them (Burgert 2006).

Regarding the relative importance of flexibility and cost advantages described above, empirical analyses find that firms use (marginal) part-time for reasons of numerical as well as functional flexibility. Thus, Bellmann et al. (2009) find that both growing and shrinking firms make use of part-time employment due to its advantages with regard to numerical flexibility. Likewise, Pfeifer (2007) finds evidence that firms use part-time in order to adapt to changing workloads (p. 68). Hohendanner and Bellmann (2007) find that the cost advantages of part-time employment are more important than its flexibility advantages.

## 2.2 Limited contracts, agency-based and freelance work

Regarding *numerical flexibility*, limited contracts as well as agency-based and freelance work can provide firms with important benefits, since they allow the employer to easily increase and decrease the amount of labor input by circumventing the employment protection legislation. While in the case of limited contracts, this is done by specifying the end of the employment relationship *before* a new worker is hired, agency-based workers and freelance workers are not even officially employed by the firm demanding their services, but are enrolled with another firm, the temporary employment agency, or self-employed, respectively. Thus, firing costs are much lower for these employment forms than for traditional, full-time, unlimited employment, which reduces the barrier faced by employers who wish to hire more workers and who are subject to the employment protection legislation (see footnote 5). Therefore, adapting to changing environments, as f.i. given by fluctuations in the demand for a firm's products or services, can be an important driving force determining the usage of these employment forms (Dütsch and Struck 2010, p. 10; Boockmann and Hagen 2001, 2002, 2005; de Graaf-Zijl 2005; Loose und Ludwig 2004, p. 326; Dütsch an Struck 2007, S.11; Wierlemann 1995, cited in Dütsch and Struck 2007; Dütsch und Struck 2010, S. 256; Hohendanner and Janik 2008; Hohendanner and Bellmann 2007; McGregor and Sproull 1991, cited in Stanworth and Stanworth 1995, p. 222).

While in general (but not exclusively), limited contracts are well suited to adequately fill temporary vacancies of a firm's core personnel (e.g. maternity leaves, sabbaticals etc.) or other foreseeable fluctuations in work load (e.g. limited duration of projects, patterns of demand changing with seasons or with the business cycle – Bellmann et al. 2009, p. 361; Boockman and Hagen 2001, Promberger 2006, p. 266), agency-based work has the additional strength of lower search costs, since all efforts are outsourced to the temporary employment agency (Spermann 2011, p. 21; Burda and Kvasnicka 2006, p. 196). Likewise, dismissals of agency-based workers are temporally more flexible than dismissals of limited contract workers (Boockmann and Hagen 2005, p. 318). As such, agency-based work can also cope with *unforeseeable* changes in work load like, f.i. illness (see also Boockmann and Hagen 2001, p. 12, as well as Bellmann et al. 2005, p. 34). Besides obtaining numerical flexibility, *functional flexibility* can, in general, also be obtained with limited contracts, agency-based work and freelance work, provided that adequately skilled employees that are willing to work in these employment forms are readily available (Boockmann and Hagen 2001, p. 1; de Graaf-Zijl 2005, p. 26).<sup>6</sup> While this seems (perhaps still) not to be the case for agency-based work (Boockmann and Hagen 2001, p. 10; Promberger 2006, p. 256),<sup>7</sup> the use of limited contracts is widely spread among high-qualified employees (Boockmann and Hagen 2005), and freelance workers are often, though not always, highly qualified as well (Koch et al. 2011). Thus, limited contracts and freelance work may be used to increase functional flexibility as well, namely by acquiring high-skilled and specialized workers for a limited amount of (project-related) time and a special field, in which the core personnel is lacking knowledge. Also, limited contracts allow for an easier restructuring of the firm,

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<sup>6</sup> See also Krause (2010), p. 309, who argues that acquiring knowledge from external workers is the more important, the lower the half-value period of knowledge is. This should be particularly important for young firms, as they frequently operate in volatile environments and open up new markets and are prone to unexpected challenges with regard to knowledge.

<sup>7</sup> Therefore, Bellmann and Promberger (2002), cited in Boockmann and Hagen (2005), p. 318, argues that agency-based workers are almost exclusively applied to routines tasks. See Dütsch and Struck (2010) and de Graaf-Zijl (2005) for empirical evidence in that respect.

once they are gone (Dütsch and Struck 2007, p. 10), which can be an advantage, f.i., when attempting to renew a firm's work flows.<sup>8</sup>

Looking at the cost side in a little more detail, agency-based work has by far the lowest search costs among these three forms of employment, as already mentioned (Promberger 2006, p. 265; Bellmann et al. 2005, p. 54; Spermann 2011, p. 21; Burda and Kvasnicka 2006, p. 196; de Graaf-Zijl 2005, p. 5). As for limited contracts and freelance work search costs can be expected to be higher (Promberger 2006, p. 266, Boockmann and Hagen 2011, p. 12), but still lower than for traditional, full-time, unlimited employment, since the ability to circumvent the usual employment protection laws (see also Hohendanner and Janik 2008, p. 472f.) can lead firms to practice some sort of 'trial and error', at least to some extent. In a similar vein, several studies point to (the possibility of) using limited contracts for screening new employees, thus enlarging the normal probationary period (Boockmann and Hagen 2005, 2008; Güell and Petrongolo 2007 and Varejão and Portugal 2003, cited in Boockmann and Hagen 2008, p. 1001; Bellmann et al. 2009; Giesecke und Groß 2007; Dütsch and Struck 2007, 2010). This appears to be particularly important with positions requiring very high-qualified employees and in sectors where an objective control of employees' achievements is not easily possible (Boockmann and Hagen 2005, p. 318; Dütsch and Struck 2007, p. 11). In these cases, search costs for limited contract workers should rise, as is the case with standard, unlimited employment. While dismissal costs are, in general, very low in each of these three employment forms<sup>9</sup>, the dismissal of agency-based workers is temporally more flexible, which makes them a perfect instrument to cope with (unforeseeable) changes in demand (see Hohendanner und Bellmann 2007, p. 34).<sup>10</sup> Furthermore, the risk of quits on part of the employees is not born by the borrowing firm, but by the temporary employment agency (Burda and Kvasnicka 2006, p. 196).

With regard to employment costs, each of the three employment forms is associated with different benefits. While a firm can save the social security contributions by having freelance workers, there is evidence of a wage gap for both limited contracts and agency-based work, when compared to standard employment. This wage gap holds even after controlling for education, tenure and other important covariates (Boockmann and Hagen 2001, p. 2).<sup>11</sup> Boockmann and Hagen (2001) even find evidence that employees with limited contracts earn less than agency-based workers (p. 12). Spermann (2011, p. 25) notes that costs for vacation, illness and public holidays do not occur with agency-based workers; neither do supplementary grants nor costs for personnel administration (Bellmann et al. 2009). Also, the risk of being sued in case of enforced redundancies can be minimized with agency-based workers (Burda and Kvasnicka 2006, p. 297). The downsides of limited contracts and agency-based work on part of employment costs are given by training costs and intermediation payments, respectively (Nollen 1996, Nollen and Axel 1996, cited in Kalleberg 2000, p. 354; Keller and Seifert 2006, p. 236; see also Carey and Hazelbaker 1986 and Segal and Sullivan, cited in Kalleberg 2000, p. 348). Another disadvantage of agency-based contracts can consist in a poor matching of agency-based workers and positions to be filled (de Graaf-Zijl 2005, p. 4).

The rather loose connection between employer and employee that is embedded in limited contracts can lead to lower identification of employees with the firm they are working for, which may have negative effects on employee motivation (Marsden 2004, cited in Tünte et al. 2009, p. 8). The same reasoning applies to freelance

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<sup>8</sup> The same reasoning applies to trust-based working time (Hoff 2002, cited in Singe and Croucher 2003, p. 497).

<sup>9</sup> See, among others, Dütsch and Struck (2010, p. 10). De Graaf-Zijl (2005) mentions the special aspect of severance payments that do not apply to limited contract workers. Boockmann and Hagen (2001), in natural experiment, find evidence for a lower demand for limited contracts when the dismissal protection is lowered.

<sup>10</sup> Autor (2000 [2003]), cited in Boockmann and Hagen (2001), finds evidence for the importance of dismissal costs for the demand for agency-based workers.

<sup>11</sup> Theoretical reasons underlying this wage gap can result from different bargaining powers of employees with limited and unlimited contracts as well as from efficiency wage theory, see Boockmann and Hagen 2005, p. 309).



work and agency-based contracts.<sup>12</sup> Likewise, Geary (1992), cited in Kalleberg (2000), p. 354, points to a considerable source of conflict between employees with limited and unlimited contracts within a firm.

### 2.3 Overtime hours and trust-based working time

Regarding numerical flexibility, overtime hours represent one of the most frequently used firm strategy to cope with rising demand (Bellmann et al. 2005, Hohendanner and Bellmann 2007, Loose und Ludwig 2004), and particularly firms enjoying a good profit situation happen to use it (Loose and Ludwig 2004, p. 326).<sup>13</sup> This should be due to the fact that the employees that are already working in a firm have acquired firm-specific knowledge necessary for the completion of tasks that external workers cannot have (see, f.i., Promberger 2006, S. 265 for the case of agency-based workers). While this makes overtime hours preferable to hiring outside workers in many situations, it has also several limitations. The first one is given by the fact that employees cannot work endlessly (see, f.i., Burda and Kvasnicka 2006, p. 197), and their productivity may decrease if overtime hours are made during a longer period of time. Thus, there are natural limitations to using overtime hours, notwithstanding, as Kaiser and Pfeifer (2001) note, the fact that “many [collective wage] agreements include paragraphs that restrict the amount of overtime work [...]” (p. 322).<sup>14</sup> Also, Boockmann and Hagen (2001) point to the fact that “since works councils have to agree to the introduction of overtime, companies with works councils may be prevented from using overtime as an instrument of adjustment.” (p. 13). Second, if overtime hours are not compensated via time-off, as is the case for roughly one fifth of all establishments in Germany (see Loose and Ludwig 2004, p. 330), they do not allow to cope with downward volatility that goes beyond stopping to make overtime, at least not if the personnel is to be held in the firm. Third, variable employment costs rise when overtime hours are made (though not the fixed ones), at least if employees are financially compensated for making overtime. According to Loose and Ludwig (2004), 14% of German establishments in 2002 use financial compensation as a general rule and another two fifths allow for both compensatory time-off and financial remuneration of overtime hours. Thus, the problem seems to apply to many firms in Germany. In the case that employees even negotiated overtime premia with their employers (Kaiser and Pfeifer 2001, p. 322; Singe and Croucher 2003, p. 496), overtime hours can become quite expensive, and, hence, hiring outside workers may become a viable alternative again. Clearly, overtime premia should be more likely in firms with collective bargaining agreements and works councils (see also Eichhorst et al. 2010). However, making overtime does not involve additional search costs, and dismissal costs do not change either. Overtime can be considered to be more likely with high-qualified employees and with firms aiming at quality leadership (Kaiser and Pfeifer 2001, p. 325; Bellmann et al. 2009, p. 5f.; Nienhüser 2007, p. 58), and the more motivated employees are, the more willing may they be to accept overtime hours (compare Beckers 2008 who concludes that overtime hours are more likely to be made by motivated workers, among others).

Trust-based working hours, as a special kind of flexible working time arrangements, on the other hand, are also a widely used means to obtain flexibility. According to Bellmann et al. (2005) 15% of all establishments in West Germany made use of them in 2004 (p. 61f.). They convey specific advantages for obtaining numerical flexibility. Employees who manage their working hours themselves will automatically stay longer in the firm, if needed. Similarly, they will work less during times of reduced work load, without the employer having to permanently monitor their individual workloads. Thus, besides the workforce can adapt to changing patterns of demand just like with overtime hours and compensatory time-off, trust-based working time arrangements can

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<sup>12</sup> Dütsch and Stuck (2010, p. 256) provide the opposite reasoning for agency-based work, arguing that its use can boost motivation and productivity of the core personnel. However, Erlinghagen (2008), cited in Bellmann et al. 2009, p. 383, doubts the usefulness of such a ‘negative’ motivation pattern. See also Parent-Thirion et al. (2007), cited in Bellmann et al. (2009), p. 383, who find that employment stability of employees in limited contracts is perceived lower.

<sup>13</sup> Likewise, Bellman et al. (2005) provide evidence that larger firms use overtime hours more intensively (p. 61). See also Kaiser and Pfeifer (2001).

<sup>14</sup> See also Boockmann and Hagen (2001), p. 13.

additionally help to reduce monitoring and administrative time recording costs for employers (see also Beckmann and Hegedüs 2011, p. 1; Hoff 2002, cited in Singe and Croucher 2003, p. 497). A drawback is given, however, by the fact that employees have to be responsible and foresighted enough to decide on their own working hours (see also Beckmann and Hegedüs 2011). This is consistent with the work of Nienhüser (2007) who derives that flexible working time arrangements in general can be supposed to be used particularly in firms pursuing a long-term, internal employment strategy.

The costs for searching and dismissing employees are not altered by the use of trust-based working hours, but employment costs are, both directly and indirectly. Thus, flexible working time arrangements in general allow the employer to circumvent overtime premia (Keller and Seifert 2002, p. 96; Wanger 2006, p. 2; Eberling et al. 2002, p. 7). Furthermore, the self-responsible disposal of one's working hours may have indirect effects on employment costs by enhancing employees' focus on results and productivity. Beckmann and Hegedüs (2011), f.i., find trust-based working time arrangements to have beneficial effects on establishment productivity and profitability. Beyond, as Beckmann and Hegedüs (2011), referring to Singe and Croucher (2003), note, "employers can use trust-based working time as a tool for recruiting and retaining qualified employees" (p. 4). Additionally, trust-based working time arrangements provide a powerful tool to improve employees' work-life balance (Wanger 2006, p. 2, Beckmann and Hegedüs 2011, p. 3, Singe and Croucher 2003, p. 496), thereby enhancing employee loyalty as well as the attractiveness of the firm. Last but not least, they may directly promote employee motivation (Beckmann and Hegedüs 2011, p. 2f., Singe and Croucher 2003, p. 497).

However, the above-described, potentially positive effects of trust-based working time on both firms and employees are challenged by the "work intensification hypothesis" (Beckmann and Hegedüs 2011), which is concerned about the potentially increased pressure on workers, prolonged working hours and thus decreasing worker motivation and organizational performance (p. 4). As a consequence, works councils and labor unions may be willing to avoid trust-based working time because they fear employees could start 'exploiting' themselves in this purely output-controlled working scheme (Beckmann and Hegedüs 2011, p. 21).

## 2.4 The role of firm age for flexibilization

A well-documented result in entrepreneurship is that firm failure rates decrease monotonically with firm age, being highest for young firms and decaying almost exponentially for the incumbents (see, f.i., Stinchcombe 1965 and Freeman et al. 1983). Thus, the risk of exiting the market is particularly high for young firms, and the first few years can be characterized by a tough process of survival of the fittest. In an attempt to understand this negative relationship between firm failure rates and firm age, the organizational ecology literature generated the concept of the liability of newness. According to this theory, young firms differ from incumbents in that they lack essential resources, such as internal structures, reputation, channels of distribution and access to knowledge and networks (Penrose 1959, Garnsey 1998; see also Baptista et al. 2007), and, of course, venture capital (see e.g. Mayer and Goldstein 1961, May 1981). It is thus an elementary feature of young firms that basically no mature structures have been established yet, and that everything is uncertain and evolving. This has, of course, important implications for the way of work in young firms (see also Koch et al. 2013). Crucially, the immature structures require a high degree of functional flexibility, as a functional division of work may not have been established yet, because the tasks that have to be performed cannot be clearly specified and keep changing and because even the business area in which the firm is operating can be subject to unforeseen developments. At the same time, the factors causing the liability of newness put additional pressure on young firms to adapt their work force numerically and to lower their costs. Specifically, as young firms are less differentiated than incumbent ones, downward volatility of demand can be a problem for them. The following paragraphs will try to give a more detailed picture about what we can reasonably hypothesize about the role of firm age for the usage of each of the flexibilization strategies investigated in this paper.

As seen above, **marginal employment** brings about advantages with regard to numerical flexibility. Particularly, midi jobs allow to cope with upward volatility (e.g. of demand for the firm's products and services), but their role for tackling downward volatility is less accentuated, when a firm is subject to the employment protection

legislation, which is essentially the same for marginal employees as for standard, full-time employees. However, as most start-ups are small, they are not subject to the employment protection law (see also footnote 5). In this case, it is generally easier to dismiss employees, and it is equally easy to dismiss a standard, full-time working employee as to dismiss a marginal employee. Thus, the only additional advantage for coping with downward volatility that marginal employment bears is given by the fact that they are usually low-qualified workers, which are used for routine tasks. It should be easier for an employer to dismiss a low-qualified worker than a (high-)qualified one, as his/her productivity is lower and he/she does not constitute an essential asset of the firm in the sense of human capital. If needed later, the employer can trust to easily find another low-qualified, marginal employee on the labor market. As downward volatility is particularly a problem for young firms, marginal employment may be beneficial to them, albeit the advantage given by their additional numerical flexibility may be only low, since the argument of larger numerical downward flexibility applies, to a lesser extent, to incumbent businesses as well. Additionally, the fact that marginal employees are usually low-qualified and suited for routine jobs primarily may pose a crucial obstacle for their use in young firms, since young firms have not yet established internal structures and routines, and everything, even the most essential parts of the business like its operating field, f.i., keeps changing. Thus, there are only very few, if any, routine tasks in young firms, and therefore, employing marginal workers like *midi jobbers*<sup>15</sup> may be of almost no use for them. Rather, young firms are known for their intensity of knowledge and technology, which makes *functional flexibility* a greater issue for them than numerical flexibility. With regard to the cost advantages of marginal employment as described above, particularly firms with bad economic outlooks should be interested in marginal employment, but this should be independent of whether a firm is young or mature. However, the crucial argument remains that there are less routine tasks in young firms and therefore we would expect young firms to demand less marginal employment than incumbents.

**Regular part-time employment** is characterized by higher volumes of work compared to marginal part-time, and employees working in regular part-time usually have higher qualificational attainments than marginal part-time workers. This makes regular part-time employees more able to provide the firms with functional flexibility, which is particularly important for young firms as already described above. Yet, qualification levels are still not as high as with full-time employees since employers are interested in having their (high-)qualified personnel in full-time positions in order to make the most out of their productivity (see above). And furthermore, regular part-timers are constrained by lower working hours than full-timers, which makes it more difficult to assign to them exactly the same, often long-lasting tasks of full-time employees. Put together, this reasoning implies that regular part-time should be used by young firms almost as much as by incumbents, and the additional cost advantages of part-time work due to the wage gap relative to full-time workers (see above) should not alter this view, as they apply equally to young and incumbent firms, once the profit situation of the firms is held constant.

**Limited contracts** are particularly well-suited to satisfy a temporary labor demand whose start and end date are known a priori, as f.i. is the case with project-based work or maternity leaves. By circumventing the employment protection legislation they essentially lower dismissal costs. However, as the employment protection law in Germany is not applicable to most of the young firms (see footnote 5), this should not be of much concern for them. And for the larger young firms, to which it applies, the advantage should be largely gone, once one controls for the profit situation of the firms. The same holds for the lower employment costs of limited contracts, provided by lower hourly wages in comparison to employees with unlimited contracts. However, there is a crucial advantage with limited contracts, insofar as they allow a firm to acquire functionally flexible, high-qualified personnel, since limited contracts are widely used, quasi 'accepted', among high-qualified employees (see above). Often, limited contracts are also filled by young people at the beginning of their career, f.i. in science. As argued above, functional flexibility is of crucial importance to young firms due to their specific situation, and therefore one can expect young firms to use limited contracts as an instrument of

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<sup>15</sup> This holds even more for marginal employment in the form of mini jobs, i.e. jobs with still lower volumes of work.

flexibilization more frequently than incumbents. The possibility of limited contracts to enlarge the normal probationary period further strengthens this aspect, since particularly for young firms, it should be crucial to obtain a good matching between job position and employee, since the initial period in which they are located is particularly in grade of shaping all content of the young firm and to build the corner stone of its future activities.

The main general benefits of **agency-based work** lie in its quick availability and the costs for searching and hiring which are still lower than with limited contracts and freelance work. Furthermore, dismissal costs as well as employment costs are lower for the reasons described above. Therefore, firms with a weak financial situation can have an increased interest in using agency-based work. This could be related to firm age, since young firms often lack financial resources (see above), but once the profit situation of the firms is controlled for, we expect not to see a systematic difference between young and incumbent firms – at least not for reasons of preserving money. Besides, as already noted above, agency-based workers usually have a low qualification level, which means, that a firm cannot use them to enhance its functional flexibility (which would be in the genuine interest of young firms). As already noted above, routine jobs can be expected to be scarce in young firms, and therefore they have only very limited opportunities for agency-based workers. All in all, we suppose that agency-based work is quite unattractive for young firms, and that incumbents use it at least as often (or seldom) as young firms do.

Similar to limited contracts, **freelance work** has certain advantages regarding numerical flexibility, whereby the speed of adjustment is quite comparable to limited contracts and lower than with agency-based work. Additionally, freelance work bears lower employment costs, because no contributions to the social security system have to be made, which can be quite an advantage, even compared to limited contracts and agency-based work where hourly wages are lower than in traditional employment. Likewise, hiring and firing costs are low. While this surely implies that one should control for the profit situation of the firms, once this is done, we would not expect any longer a systematic difference between young and incumbent firms – at least not because of the cost argument. But apart from that, freelance workers are often (though not always, see above) highly qualified specialists which can be used to supply specific knowledge to the firm demanding their services. Since young firms are less differentiated than incumbents, this should be of quite some relevance to them. Furthermore, firms can enhance their functional flexibility by using high-qualified freelance workers. Since this lies in the genuine interest of young firms, we expect them to rely on freelance workers more frequently than incumbents.

**Overtime hours** have, among others, the advantage of providing the employer with numerical flexibility, as seen above. Thereby, the speed of adjustment is higher than with most of the non-standard forms of employment, perhaps it is even higher than with agency-based work at times, when employees are spontaneous and committed enough (at least the last point should be a smaller problem in young firms according to the results in Koch et al. 2013). But more importantly, overtime hours are made by the core personnel, which is advantageous because it is already introduced in the contents of the work to be performed and, besides, has already acquired firm-specific knowledge that an external worker cannot have. Particularly, when the additional tasks to be performed during the overtime hours are non-routine tasks (like it is often the case in young firms, since they still lack routines), this will be of advantage. As overtime hours are relatively expensive, the profit situation of the firm should play an important role determining its use of overtime hours. But once the profit situation is controlled young and incumbent businesses should be equally keen on saving money and thus to use or not use overtime hours. Yet, the above argument remains, and all in all, we should expect young firms to use overtime more frequently than incumbents, because they need a larger amount of functional flexibility and their employees are highly intrinsically motivated.

**Trust-based working time** represents a radical change from an input-based system of control towards a purely output-based one, underlining and enhancing the individual employee's self-responsibility. As such a regime requires employees that are able to cope with this requirement and as young firms have a higher need for functional flexibility, anyway, i.e. due to their immature and evolving structures and routines, it is almost

perfectly suited to the specific situation of young firms, and we would expect young firms to practice trust-based working hours more frequently than incumbents. At the same time, trust-based working time allows for a certain degree of numerical flexibility, just like overtime hours with compensatory time-off, but cheaper, since there are no overtime premia any longer, which can be an advantage, since young firms are subject to a greater downward volatility of demand, because they are not (yet) as differentiated as incumbent businesses. Again, the positive effects that trust-based working time appears to have on both employee and firm productivity (see above) should be an issue for incumbents as well as young firms, once that the profit situation of the firms is controlled for.

Generally, as firms grow older, their characteristics may change, f.i. the newness of their products and services or their financial and competitive situation may change, and this, in turn, may alter their freedom of scope and their behavior. As a result, one and the same firm can, in principle, have different outcomes with respect to the forms of work at different ages. On the other hand, the adaptive ability of the firms may be a decreasing function of firm age. This can easily be understood by noting that while the aging of a firm means it accumulates rules and routines, this is not equivalent to *exchanging* them. Rather, only new ones are added to those that did already exist. Thus the existing ones are retained, even if perhaps they are obsolete, inefficient or simply not suitable to today's situation, just because one tends not to throw away such examples of "bad practice" or because sunk costs involved in past decisions do not allow to throw them away. Such an inertial behavior can lead even to competency traps, meaning that newer, better suited technologies are not adopted, because one has acquired knowledge of another, outdated technology and wants to keep the putative competitive advantage involved in this knowledge (see, f.i., Hannan & Freeman 1984, Ranger-Moore 1997 as well as Nelson and Winter 1982 and Stinchcombe 1965 for the concepts of organizational imprinting and path dependence).

The question which one of these two effects will prevail is important with regard to the effects that the aging and replacement of firms may have at the macro level. Thus, if young firms really showed a greater usage of certain non-standard employment forms than incumbents, are these differences permanent or will they rather vanish when the firms grow older? – In case the adaptive ability of the firm was actually found to decrease with firm age because of the accumulation of rules and routines and a strong influence of their initial conditions, this would mean that changes at the macro level of the economy like f.i. the often-cited rise of non-standard employment could be explained to a greater extent by changes in the firm-level microstructure, i.e. the replacement of grown-up firms with e.g. low levels of non-standard employment for new firms with high levels thereof, rather than by changes *inside* continuing firms.

While we cannot rule out either one of these possibilities in our empirical analyses due to small sample size (see section 3), we do provide a basic empirical assessment on which of the hypotheses is more plausible. Apart from that, Späth (2013) provides a similar analysis as the one presented in this paper that is concerned with the link between firm age and the use of marginal employment (mini jobs) and uses a large representative data set that allows controlling for cohort effects. There, evidence is found for the importance of both initial conditions and behavioral aspects, which suggests an interpretation of our results that suites both of the above hypotheses. In fact, we argue that there is no reason to believe that the processes of adaptation (i.e. changes within the organizations) and selection are mutually exclusive (see also Amburgey et al. 1993 and Baum 1996, cited in Demers 2007, p. 31 who provides an excellent overview of the literature on organizational change). Notwithstanding these empirical facts and issues, it is useful to also have a basic assessment of which of the two effects is more plausible for our dependent variables from a theoretical point of view. As a new firm gains access to resources like reputation, knowledge and networks, and as its external and internal structures become more stable and their competitive situation changes during the first years, we expect one and the same firms to do less overtime during the course of their life. This insight is further strengthened by the possibility that the employers' and employees' motivation and identification with the firm might shrink as it grows older. With respect to working time arrangements, we expect the firms to be confronted with high opportunity costs, when trying to establish more formal arrangements than trust-based working time, because

this requires to weigh up the pros and cons of different systems and technical solutions, to implement one of them and to teach the employees on how to use the new system. Also, while aging, the firms accumulate rules and routines, which makes them more inertial and procrastinated, and therefore, firms may prefer to stick to the systems they already have got, even if it may not be suited to the firm any longer. Similarly, if a firm wants to introduce non-standard forms of employment, we expect high opportunity costs to take place, due to information costs involved in weighing up the pros and cons of each form, investigating into judicial issues and so forth. On the other hand, only little information costs should accrue when a firm wants to replace non-standard employment for standard employment. Yet, since in general the founders' personal attitudes greatly affect their firm (see f.i. Wiklund et al. 2009, Ling et al. 2007 or Nelson 2003) and are deemed unlikely to change drastically, we expect young (as well as incumbent) firms to stick to roughly the same initial composition of standard and non-standard employment forms.

### **3 Data and measurement**

To analyze different forms of work and working time arrangements in young and incumbent establishments, this study uses the IAB Establishment Panel. Data access was provided via on-site use at the Research Data Centre (FDZ) of the German Federal Employment Agency (BA) at the Institute for Employment Research (IAB) and subsequent remote data access. The IAB Establishment Panel is a representative survey among more than 16,000 employers that is conducted on a yearly basis since 1993 (for a detailed overview see Fischer et al. 2008). It is developed by the Institute for Employment Research and comprises many topics on behalf of the demand side of the labor market, most of which are asked regularly every year. These regular topics are amended by particular topics concerned with current economic issues like, f.i., the financial crisis in 2008/09. The regular topics range from aspects like personnel structure, stocks and flows over investments and innovations to working time arrangements and provide a detailed picture of the actual situation in the establishments.

The unit of observation is given by establishments, i.e. local units of production which can but need not coincide with the headquarters of an enterprise. This, however, should be a minor problem for our analysis as most of the German firms consist of one establishment, merely (about 98%, see Koch and Krenz 2010). The disproportionately stratified sample is drawn from the IAB establishment file which encompasses every establishment in Germany on the basis of mandatory notifications by which employers must indicate their number of employees along with some further characteristics to the social security system. The information therein can be considered as of very high quality, since it is used to calculate the amount of social security payments employers and employees have to make. However, the IAB Establishment Panel contains only information on establishments that had at least one employee subject to social security in the year before each wave (when the sample was drawn). This may lead to an underestimation of the number of establishments in Germany, since establishments that purely consist of marginal employees, family workers or civil servants are not covered. The fact that the sample was drawn on the basis of snapshot data (June 30 of the year preceding each annual survey) may on the other hand lead to an overestimation of the number of establishments and employees due to higher seasonal employment during summer.

As a prerequisite for the analyses in this paper, the IAB Establishment Panel contains information on the age of the establishments, which is collected via a series of questions and filters that partially change across waves and can – for the sake of simplicity – be described only in part here. For the period of analysis in the present paper establishments are asked whether they were founded after 1990 and if so, in which year precisely. Importantly, the IAB Establishment Panel allows us to restrict our analysis to originary start-ups, since it contains information on the type of foundation (start-ups, spin-offs and changes of ownership).<sup>16</sup> Due to low

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<sup>16</sup> Some problems arise as the information on the year of foundation is not fully consistent within some establishments, which may be due to different persons being surveyed in different years or generally imperfect

numbers of observations for single years and cohorts, this paper distinguishes between young and incumbent establishments, where establishments up to a maximum age of five years are classified as young and the rest is considered as incumbents.<sup>17</sup> This necessary aggregation of several founding cohorts into a group of ‘young’ establishments implies also, that we cannot additionally control for cohort effects, unfortunately. Since one possible source for the ongoing macroeconomic trends (rise of non-standard employment and new forms of work, including trust-based working time arrangements and overtime hours) is the replacement of exiting incumbents by young establishments, a further distinction is made leading to our final key variable that compares young establishments that will survive the next five years with continuing and discontinuing incumbents.<sup>18</sup> This proceeding helps us to better differentiate between two effects that young firms may have on our dependent variables at the macro level: a supplementary effect that stems from the possible differences between continuing young and continuing incumbent firms, and a replacement effect that may come into being when exiting incumbents are replaced by young firms that act differently with respect to our dependent variables, e.g. have more freelance workers. Naturally, the replacement effect can be considered to be stronger than the supplementary effect, since the young firms’ weight is increased by the exiting incumbents, while the supplementary effect just measures the difference between young and incumbent continuing firms (with continuing incumbents being clearly more numerous than the young establishments).

Besides information on the year and type of establishment start-up, the IAB Establishment Panel contains information on the number of employees working in non-standard employment forms, concretely the number of marginal part-time workers (mini jobbers and midi jobbers<sup>19</sup>), regular part-time workers<sup>20</sup>, limited and agency-based contracts and freelancers. Concerning the working time arrangements, one can distinguish, among others, establishments with and without trust-based working hours. A further variable captures whether or not overtime hours were practiced during the previous year. As non-standard employment is consistently covered since 2002 and the classification of industries is not consistent over the period of the panel, we restrict our analyses to the time period 2002 to 2008, albeit we do not totally neglect information from other years that do not depend on the industry variable (like the year of foundation and exit from the market).

Since most establishments in Germany and, in particular, young establishments are very small, an issue that arises is how to measure the usage of non-standard employment. While extensive margins (whether or not an establishment has employees of the kind considered) seem more appropriate to small firms, they are less suitable for the larger ones. For shares of, say, employees with limited contracts it is the other way around. As most of the young establishments are very small, we will present results stemming from analyses of the

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knowledge of the founding period. However, as these are only rare cases they are omitted from the analyses in the present paper.

<sup>17</sup> This classification resorts to the study by Brixy et al. (2006) who find that after about five years the initial differentials in labor turnover and wages between a cohort of start-ups and a control group of incumbent firms have vanished.

<sup>18</sup> Since we have only access to the wave 2010 at the latest, we cannot know if an establishment survives the next five years for the years beyond 2005. Therefore, an additional robustness check was included that considered establishments that would (not) die during the next year, rather than the next five years. The results were nearly the same.

<sup>19</sup> For midi jobs, i.e. jobs with a gross wage between 401 and 800€, only reduced taxes and payments to the social security system have to be made. These payments increase with the wage until the standard rate of payments is reached.

<sup>20</sup> While in principle a distinction could be made between mini jobs, midi jobs (= marginal part-time employment) and regular part-time employment we consider only midi jobs separately from the other two. This is due, at first, to the fact that mini jobs are not adequately covered in our data set, since establishments consisting purely of mini jobbers are excluded from the sample, which may have severe consequences for the findings on this variable. See Späth (2013) for an analysis of marginal employment that uses the Establishment History Panel, which is more appropriate for the analysis of this question. Second, due to data shortcomings, calculating the number of regular part-timers leads to insensible information in about 9% of the observations and omitting them from the analyses would result in a severe reduction in the number of young firms.

extensive margins, where we restrict the sample to establishments with up to 20 employees, as larger (incumbent) establishments might easily disturb these analyses. However, we are still able to make inference on about 94% of all young (and 86% of all incumbent) establishments in Germany by using this approach. Furthermore, we perform robustness checks running fractional logit models<sup>21</sup> with the share of limited contracts, agency-based workers etc. as dependent variables. The results are practically the same as the ones presented in the following and are available from the author upon request.

In order to isolate the effect of our key variable, we control for establishment size, a dummy for West/East Germany, 1-digit industry dummies and year dummies. Furthermore, we additionally control for the existence of work councils, the profit situation of the previous year and the firms' legal form; the personnel structure is captured via the inclusion of the number of female as well as of unqualified and low-qualified employees as further regressors. The disproportionate sampling procedure is taken into account as well. Because of the small number of young firms in our sample we are unfortunately not able to additionally take into account cohort effects as already noted above. Likewise, because of the multicollinearity issue that would arise between age, year and cohort effects if we tried to add an establishment-fixed effect (which would comprise the cohort effects), we have to rely on pooled probit models with standard errors clustered at the establishment level. This should of course be borne in mind when interpreting the results of our regressions.

## 4 Results

After data cleansing, our sample consists of about 5,600 establishments per year, of which 600 are young, i.e. aged up to five years, and the remaining 5,000 are incumbents (see table 1). Further distinguishing between establishments that will exit the market during the next five years and others that will not, we have about 500 continuing young establishments in each year, whereas only about 100 young establishments per year will exit the market within the next five years.<sup>22</sup> Also on the incumbent side, most of the observations in our sample belong to continuing establishments, which leaves about 500 incumbents per year that will cease to exist during the next five years. Evidently, we have to keep in mind the sometimes small number of observations when we interpret our results. However, the data set used can be considered as best suitable to the topic of our analysis (see section 3). While the number of young establishments that will soon exit the market is always low, the number of young, continuing establishments is increasing over time and the number of discontinuing incumbents is decreasing.

**Table 1: Observations related to young and incumbent, continuing and discontinuing establishments (sample)**

	2002	2003	2004	2005	2006	2007	2008	Total
young, continuing	417 7.9%	446 7.7%	451 8.2%	533 9.6%	575 10.4%	643 11.3%	699 12.4%	3,764 9.6%
young, discontinuing	86 1.6%	104 1.8%	114 2.1%	85 1.5%	103 1.9%	104 1.8%	84 1.5%	680 1.7%
incumbent, continuing	4,239 80.0%	4,643 80.2%	4,363 79.7%	4,448 79.7%	4,420 80.1%	4,583 80.5%	4,592 81.4%	31,288 80.2%
incumbent, discontinuing	555 10.5%	597 10.3%	547 10.0%	517 9.3%	423 7.7%	365 6.4%	270 4.8%	3,274 8.4%
Total	5,297 100%	5,790 100%	5,475 100%	5,583 100%	5,521 100%	5,695 100%	5,645 100%	39,006 100%

Source: IAB Establishment Panel, author's calculations. Only establishments with up to 20 employees are used.

<sup>21</sup> See Papke and Wooldridge (1996).

<sup>22</sup> On the implications of right censoring see footnote 18.



The average size of an establishment as given by table 2 is about seven employees during the period 2002-2008, with quite some variation across firms. Almost three fifths of our observations belong to the West of Germany, and about five percent of the establishments with up to 20 employees have a works council. The average establishment has about 14% unqualified or low-qualified employees, while the share of women amounts to roughly two fifths. About two thirds of the observations belong to the service sector, one fifth to manufacturing, and 13% to the building sector. The industry shares are only subject to little temporal changes (see table 6 in the appendix).

**Table 2: Summary statistics for metric independent variables (sample)**

	size (no. of employees)	West Germany dummy	works council dummy	no. of unqualified and low-qualified employees	no. of female employees
n	44,546	44,546	43,981	44,544	44,533
mean	7	0.584	0.052	1	3
median	6	1	0	0	2
sd	5	0.493	0.217	2	3

Source: IAB Establishment Panel, years 2002-2008, author's calculations. Only establishments with up to 20 employees are used.

The distribution of establishments that report a (very) good profit situation in the last year, a satisfactory one, or make indications on the lower end of the scale ("fair", "poor") is almost equal (table 3). Across years, the shares of good and very good profit situations rise about seven percentage points, while the share of establishments in a "fair" or "poor" profit situation decreases about 9 percentage points, indicating that the economic situation of German establishments was perceived better. Half of the observations belong to individually-owned firms, about one third is constituted by limited liability companies or limited commercial partnerships with a limited company as a partner and the remaining legal forms are distributed quite equally (see table 7 in the appendix).

**Table 3: Profit situation of firms (% , sample)**

	2002	2003	2004	2005	2006	2007	2008	Total
very good	3.1	2.5	2.4	3.2	3.1	5.0	4.1	3.4
good	24.1	21.4	20.6	21.4	23.4	31.3	30.0	24.7
satisfying	34.6	34.9	34.9	34.7	36.8	36.6	36.8	35.6
fair	23.1	23.3	24.6	24.5	22.8	18.2	19.0	22.2
poor	15.1	17.9	17.4	16.3	13.8	8.9	10.1	14.2
total	100	100	100	100	100	100	100	100
n	5,641	6,223	5,926	6,111	6,041	6,283	6,280	42,505

Source: IAB Establishment Panel, 2002-2008, author's calculations. Only establishments with up to 20 employees are used.

With regard to our dependent variables, table 4 presents some summary statistics, broken down by young and incumbent (dis)continuing establishments. Although we must not over-interpret these descriptive statistics, we see that by trend a lower fraction of young establishments has (marginal) part-time employment and agency-based work, but limited contracts and freelance workers are demanded more frequently by young firms. Likewise, young firms seem to practice overtime hours more frequently than incumbents and trust-based work (although the difference is not very big), and appear more likely to have trust-based working time. Overall, nearly half of the establishments in our sample indicated to make overtime hours, which underlines their fundamental importance for firm-side flexibility. One fifth of the establishments in the sample relies on midi jobs. Likewise, trust-based working time is practiced by slightly less than one fifth of the establishments in our sample, followed by limited contracts to which about 11% of the establishments resort. Agency-based work plays a minor role, with only about 2% of the establishments in our sample accruing to it.

**Table 4: Non-standard work forms, overtime hours and trust-based working time (sample)**

have/practice ... (1 = yes)		midi jobs	marginal and regular part-time jobs	limited contracts	agency-based work	freelancers	overtime hours	trust-based working time
young, continuing	n	3,337	3,756	3,756	3,764	3,764	2,581	1,714
	mean	0.216	0.565	0.131	0.019	0.071	0.476	0.212
	median	0	1	0	0	0	0	0
	sd	0.412	0.496	0.337	0.137	0.257	0.5	0.409
young, discontinuing	n	592	680	679	680	680	489	301
	mean	0.179	0.468	0.141	0.012	0.054	0.483	0.156
	median	0	0	0	0	0	0	0
	sd	0.384	0.499	0.349	0.108	0.227	0.5	0.364
incumbent, continuing	n	26,929	31,258	31,240	31,288	31,288	22,191	13,309
	mean	0.212	0.631	0.117	0.02	0.042	0.476	0.173
	median	0	1	0	0	0	0	0
	sd	0.409	0.482	0.322	0.139	0.201	0.499	0.378
incumbent, discontinuing	n	2,715	3,271	3,270	3,274	3,274	2,386	1,231
	mean	0.178	0.526	0.103	0.015	0.045	0.415	0.142
	median	0	1	0	0	0	0	0
	sd	0.382	0.499	0.304	0.12	0.207	0.493	0.349
total	n	33,573	38,965	38,945	39,006	39,006	27,647	16,555
	mean	0.209	0.613	0.118	0.019	0.045	0.471	0.175
	median	0	1	0	0	0	0	0
	sd	0.406	0.487	0.323	0.137	0.208	0.499	0.38

Source: IAB Establishment Panel, 2002-2008, author's calculations. Only establishments with up to 20 employees are used.

Looking at the regression results for the demand for non-standard employment forms, which are presented in table 5, we find, first of all, that West German firms appear to have a higher probability to have employees working part-time as well as employing freelancers, but a lower inclination towards limited contracts. Whether a firm has a works council increases its inclination towards having agency-based contracts. One possible explanation could be that works councils increase firing costs for the regularly employed employees and therefore make the need for lowering these costs more urgent. Also, works council can have an interest to 'allow' for some portion of agency-based work in order to protect the core personnel (see section 2). The same argument applies to limited contracts, yet their coefficient is not statistically significant. For the use of freelancers, however, we find a negative effect of works councils, which could, in turn, reflect a general tendency of works councils to avoid freelance workers. The role of works councils for having midi-jobbers and for marginal and regular part-time taken together could be motivated by the same argument (see also Düll und Ellguth 1999a, 1999b, cited in Pfeifer 2007 who find the same results). Not surprisingly, we find that firms that belong to the service sector industries have a higher inclination towards every form of non-standard employment except agency-based contracts than comparable firms in manufacturing (see, f.i., Bellmann et al. 2005 and Voss-Dahm et al. 2010 for similar results). Thereby, the industry effects can get quite large, f.i. with firms that are active in (business) services showing a propensity to have freelancers which is 8.9 percentage points higher than that of manufacturing firms. In the building sector, the probability of having part-time workers and freelancers is significantly lower than in manufacturing, but limited contracts are used significantly more frequently.

**Table 5: Pooled regression results**

dependent variable: have/practice ... = 1	midi jobber	marginal and regular part-timers	limited contracts	agency-based contracts	free-lancers	overtime hours	trust-based working time
West Germany	0.001 (0.007)	0.128*** (0.008)	-0.040*** (0.005)	0.002 (0.002)	0.009*** (0.003)	-0.022** (0.010)	0.075*** (0.007)
has works council	-0.073*** (0.013)	-0.095*** (0.020)	0.007 (0.009)	0.016** (0.007)	-0.017*** (0.005)	0.097*** (0.021)	0.006 (0.017)
mining/energy (ref.: manufacturing)	-0.028 (0.029)	-0.028 (0.033)	0.029 (0.020)	-0.007 (0.007)	0.007 (0.009)	0.169*** (0.041)	0.086*** (0.033)
building sector	-0.009 (0.011)	-0.031*** (0.012)	0.027*** (0.007)	-0.000 (0.004)	-0.008** (0.003)	0.046*** (0.016)	-0.032*** (0.010)
trade and repair	0.027*** (0.010)	0.034*** (0.011)	0.013** (0.006)	-0.017*** (0.003)	0.005 (0.004)	-0.043*** (0.014)	0.008 (0.010)
transport and telecommunication	0.005 (0.015)	0.008 (0.018)	0.001 (0.010)	-0.015*** (0.005)	-0.011*** (0.004)	0.053** (0.024)	0.023 (0.017)
financial and insurance sector	0.043* (0.023)	0.044* (0.024)	0.004 (0.013)	-0.019*** (0.005)	0.081*** (0.016)	-0.079*** (0.028)	0.140*** (0.026)
(business) services	0.010 (0.010)	0.047*** (0.012)	0.016** (0.007)	-0.017*** (0.003)	0.089*** (0.007)	-0.020 (0.015)	0.149*** (0.012)
other services	0.071*** (0.010)	0.056*** (0.012)	0.063*** (0.008)	-0.012*** (0.003)	0.045*** (0.006)	-0.018 (0.015)	0.041*** (0.011)
size (no. of employees)	-0.001 (0.001)	0.005*** (0.001)	0.009*** (0.001)	0.004*** (0.000)	0.007*** (0.000)	0.025*** (0.001)	-0.001 (0.001)
no. of unqualified and low-qualified employees	0.009*** (0.001)	0.022*** (0.002)	0.004*** (0.001)	-0.001** (0.000)	-0.005*** (0.001)	-0.016*** (0.002)	-0.008*** (0.002)
no. female employees	0.016*** (0.001)	0.058*** (0.002)	0.002*** (0.001)	-0.004*** (0.000)	-0.006*** (0.001)	-0.013*** (0.002)	0.003** (0.001)
very good profit situation (ref.: satisfactory)	-0.002 (0.014)	-0.002 (0.015)	0.009 (0.010)	0.015*** (0.005)	0.029*** (0.007)	0.100*** (0.019)	0.100*** (0.020)
good profit situation	-0.010 (0.006)	-0.007 (0.007)	0.003 (0.004)	0.006*** (0.002)	0.008*** (0.003)	0.049*** (0.009)	0.021*** (0.008)
sufficient profit situation	0.014** (0.007)	0.000 (0.007)	-0.004 (0.005)	-0.003* (0.002)	0.001 (0.003)	-0.044*** (0.010)	-0.001 (0.008)
unsatisfactory profit situation	0.017** (0.008)	-0.019** (0.008)	-0.002 (0.005)	-0.005** (0.002)	0.007* (0.004)	-0.036*** (0.012)	0.009 (0.010)
young, continuing (ref.: incumbent, continuing)	0.017* (0.009)	-0.011 (0.010)	0.032*** (0.007)	0.002 (0.003)	0.021*** (0.005)	0.033** (0.013)	0.029*** (0.010)
young, discontinuing	-0.002 (0.020)	-0.060*** (0.020)	0.055*** (0.016)	-0.002 (0.006)	0.017 (0.011)	-0.002 (0.031)	-0.006 (0.022)
incumbent, discontinuing	-0.027** (0.010)	-0.034*** (0.012)	0.001 (0.008)	-0.001 (0.003)	0.010 (0.006)	-0.030* (0.015)	-0.006 (0.012)
young, continuing – incumbent, discontinuing	0.044***	0.023	0.030***	0.003	0.012	0.063***	0.035**
N	32,575	37,766	37,746	37,616	37,803	21,886	16,253
pseudo-R squared	0.0455	0.1877	0.1072	0.1755	0.1421	0.0719	0.0682

Source: IAB Establishment Panel, author's calculations. Average marginal effects. Standard errors in parentheses, clustered at the establishment level. Regressions included dummy variables for legal form and year and controlled for disproportionate sampling. Sample restricted to establishments with a maximum of 20 employees. The number of observations may vary across models due to different survey coverage and omission of perfect predictor cases.

The qualification and gender structure of the employees are highly significant for all models. As expected, the firm's inclination towards marginal and regular part-time is the higher, the higher the share of unqualified and low-qualified personnel is. Likewise the propensity to have freelancers as well as to practice overtime hours and trust-based working time is the lower, the higher the share of unqualified workers is. The fact that the coefficient for the share of unqualified and low-qualified workers is negative in the regression for limited contracts reflects findings that limited contracts are not only widely used among high-skilled employees, but also with low-qualified workers, and must not be interpreted as if high-skilled employees did not work in limited contracts. Likewise, the negative coefficient for unqualified employees in the regression for agency-based work should reflect the importance of low-qualified employees for agency-based contracts rather than that of the high-qualified and is most likely due to the fact that we cannot differentiate between unqualified and low-qualified personnel throughout the whole sample period.

Interesting patterns can be found by looking at the profit situation of the firms. While a (very) good profit situation has no significant effect on the probability to have midi-jobbers, part-timers and limited contracts, they are associated with a higher inclination towards agency-based contracts and freelancers, stressing their advantages as numerical flexibility buffer. This is further underlined by the fact that overtime hours are also more likely in establishments with a (very) good profit situation. Though generally, marginal and regular part-time work as well limited contracts should be able to enhance numerical flexibility as well, we do not find such an effect in our regressions. On the other side of the coin, firms with a bad profit situation have less agency-based contracts on average, which indicates that they discharge their external personnel during times of little work load. In a similar vein, midi jobs are used more frequently in firms with a profit situation that is comparably worse than "satisfactory", which should be due to the cost advantages that result from reduced payments to the social security system and lower hourly wages.

Considering our key variable that distinguishes between young and incumbent firms that will or will not die during the next years, we find interesting effects as well. While midi jobs, limited contracts and freelance work are used significantly more frequently by young, continuing firms than by continuing incumbents<sup>23</sup>, we do not find such an effect for part-time work and agency-based contracts, which is almost perfectly in line with our previous hypotheses. Because of the special situation of young firms that stems from a lack of resources like internal routines and structures, knowledge and networks (see section 2), the need of young firms for functional flexibility is much more urgent than that for numerical flexibility. Limited contracts and freelance work can tackle both at a time and should thus be very attractive for young firms, for which it is not sufficient just to be efficient by lowering costs and raising numerical flexibility but which need to go ahead and tackle their fundamental problems as postulated by the liability of newness. Incumbents, on the other side, are more differentiated and operate under more stable internal circumstances and thus do not have such a strong need for functional flexibility. It is a little surprising, though, that our results point to a significantly higher inclination of young firms to using midi jobs as well, which we would have expected to be the other way around, as young firms are lacking routine tasks and thus should not have much interest in employing the mostly low-qualified midi jobbers. This may suggest that midi jobbers do not require routine-only, repetitive jobs but are used for not-so-routine jobs as well are, more than we hypothesized.<sup>24</sup> However, the effect is only significant at the ten percent level and we should be careful with this interpretation.

Referring to working time arrangements, our results are in line with the findings in Koch et al. (2013) on the usage of trust-based working hours and overtime: the probability that trust-based working time is practiced and that overtime hours are made is significantly higher for young, continuing establishments than for continuing incumbents. Both instruments are particularly well-suited for young establishments, because of immature structures and lacking routines, a low degree of differentiation and a corresponding high need for

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<sup>23</sup> See also Uzzi and Barsness (1998) who find a significantly higher tendency towards limited contracts for young firms in a representative sample of British firms.

<sup>24</sup> Note that this does not completely contradict our hypotheses, since we argued that with rising volume of work employees tend to have higher qualification levels.

functional flexibility. The core personnel is adequately qualified, knows about the contents of work and can work on its own responsibility. Likewise, when tasks still have not completely evolved, keep changing continuously and cannot be specified a priori due to the possibility of unexpected developments in the work process, the use of an output-based control scheme for employees like trust-based working time appears as a natural consequence for the organization of work.

Thus, due to their different behavior regarding the choice to have midi jobbers, employees in temporally fixed contracts and freelancers young firms may contribute to the change of employment structures at least in the short run – i.e. even if they were to alter their behavior and become like the current incumbents when they age. This possible macro effect becomes even clearer when we consider the difference between the effect for the continuing young establishments and that for the incumbent, discontinuing ones. As we find a significant and negative effect for midi jobs for the latter, the gap between young, continuing firms and incumbents exiting the market gets still larger than the one between the young continuing firms and the continuing incumbents. Thus, the incumbent, discontinuing establishments (that use midi jobs less frequently than the continuing incumbents) are replaced by young continuing establishments that use midi jobs *more* frequently than the continuing incumbents and hence, midi jobs get more frequently used in the economy.

While the same replacement effect can be found for limited contracts, overtime hours and trust-based working time, this is not the case for freelance work. However, it must be emphasized that while the replacement effect described above may have a stronger impact at the macro level than the supplementing effect given by the comparison between young and incumbent firms that both continue in the market, the supplement effect can still result in changes at the macro level, too. Therefore, we conclude that young firms may contribute to the rising shares of freelance work in the economy as well (besides midi jobs, limited contracts, overtime hours and trust-based working time), but for part-time work and agency-based contracts this seems not to be the case.

However, this conclusion rests on the assumption that there are no changes *inside* (young and incumbent, continuing and discontinuing) establishments with regard to non-standard employment. While initial conditions are strongly believed to be a very important factor determining a firm's behavior (when it is still young and shapeable)<sup>25</sup>, it is an open question to what extent this is the case and to what extent specific circumstances that change with a firm's age also may influence its behavior. The weaker the role of the initial conditions, the less enduring would be the young establishments' contribution to the ongoing macro changes. While we cannot separate these two effects in our pooled regressions due to small sample size, figures 1 to 4 give a little advice on how to deal with this issue. They present the results from further regressions where we compare establishments that were young in 2002 with establishments that were already incumbents at that time, following them over the period 2002 to 2008 while repeatedly measuring the differences with regard to their probability of having midi jobs, limited contracts and freelance work as well as their inclination towards overtime hours.<sup>26</sup>

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<sup>25</sup> For literature related to this topic of organizational imprinting and path dependence see Stinchcombe (1965) and Nelson and Winter (1982).

<sup>26</sup> As we do not have information on trust-based working time prior to 2004, when two of five cohorts of the establishments that were young in 2002 already have become incumbents in our definition, such an analysis would be less meaningful for this variable.

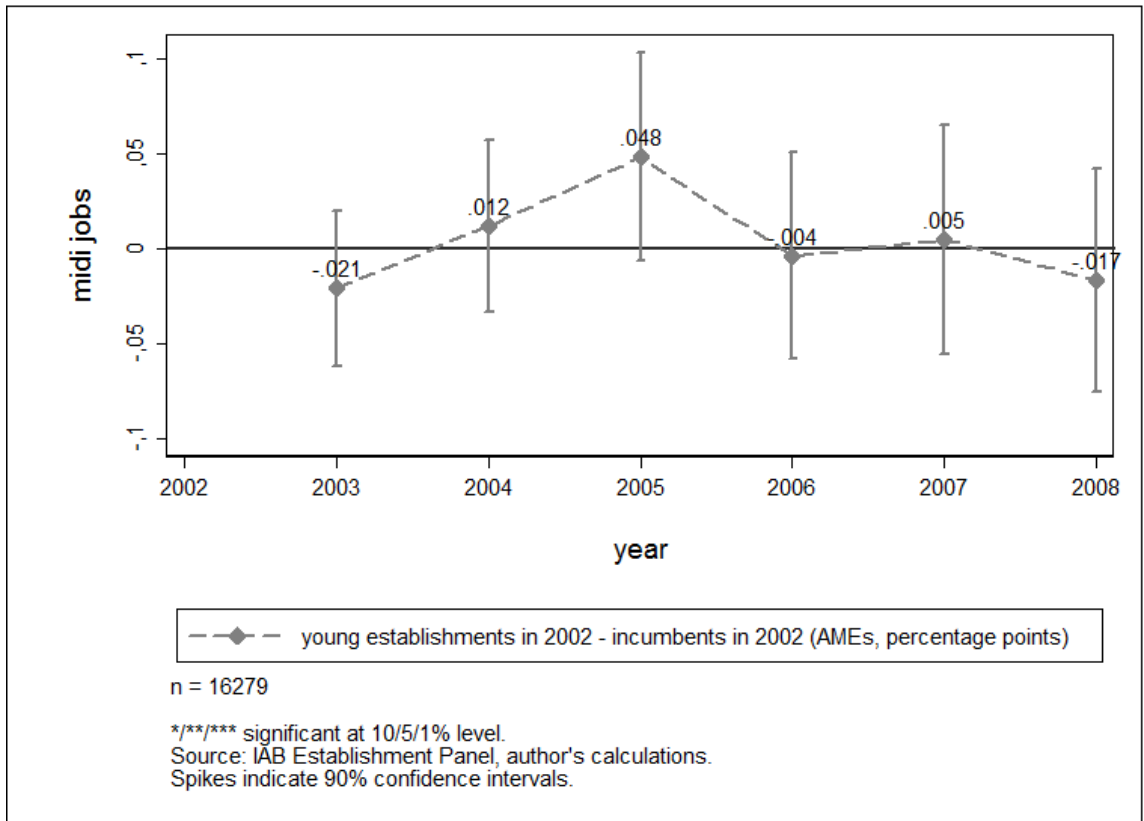


Figure 1: Average marginal effects, cohort approach, midi jobs

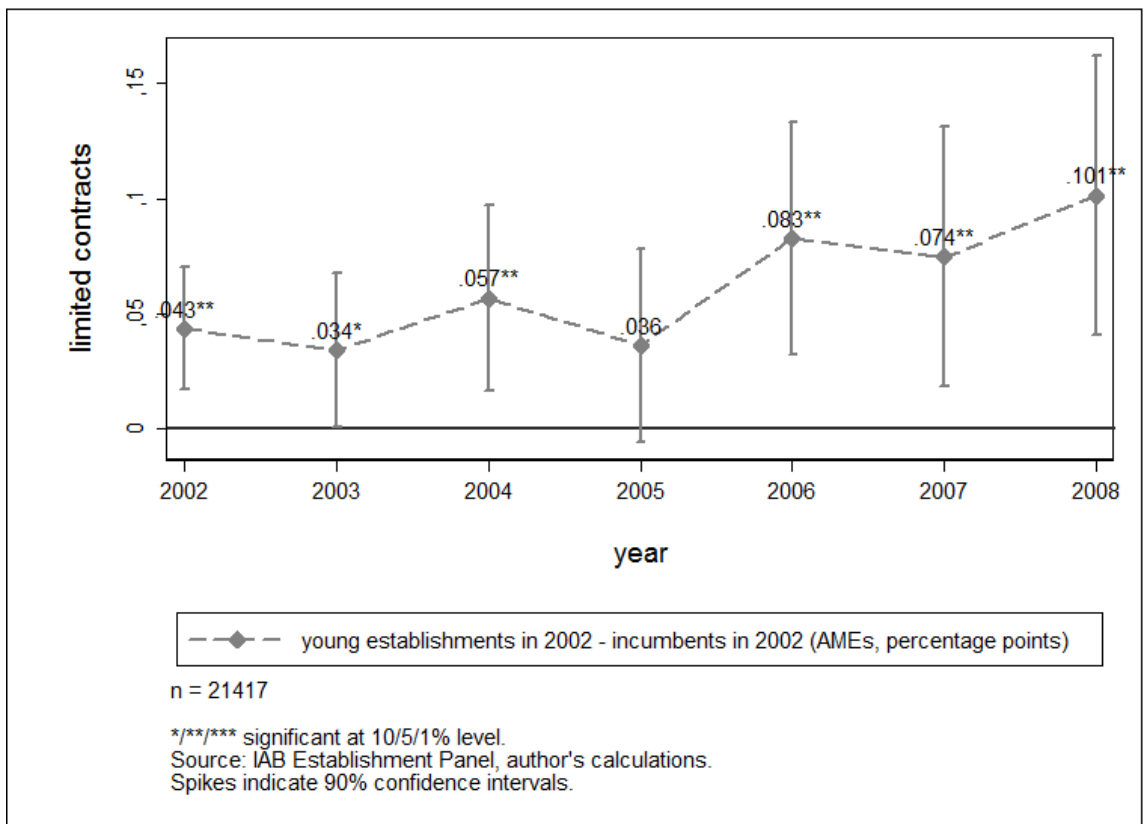


Figure 2: Average marginal effects, cohort approach, limited contracts

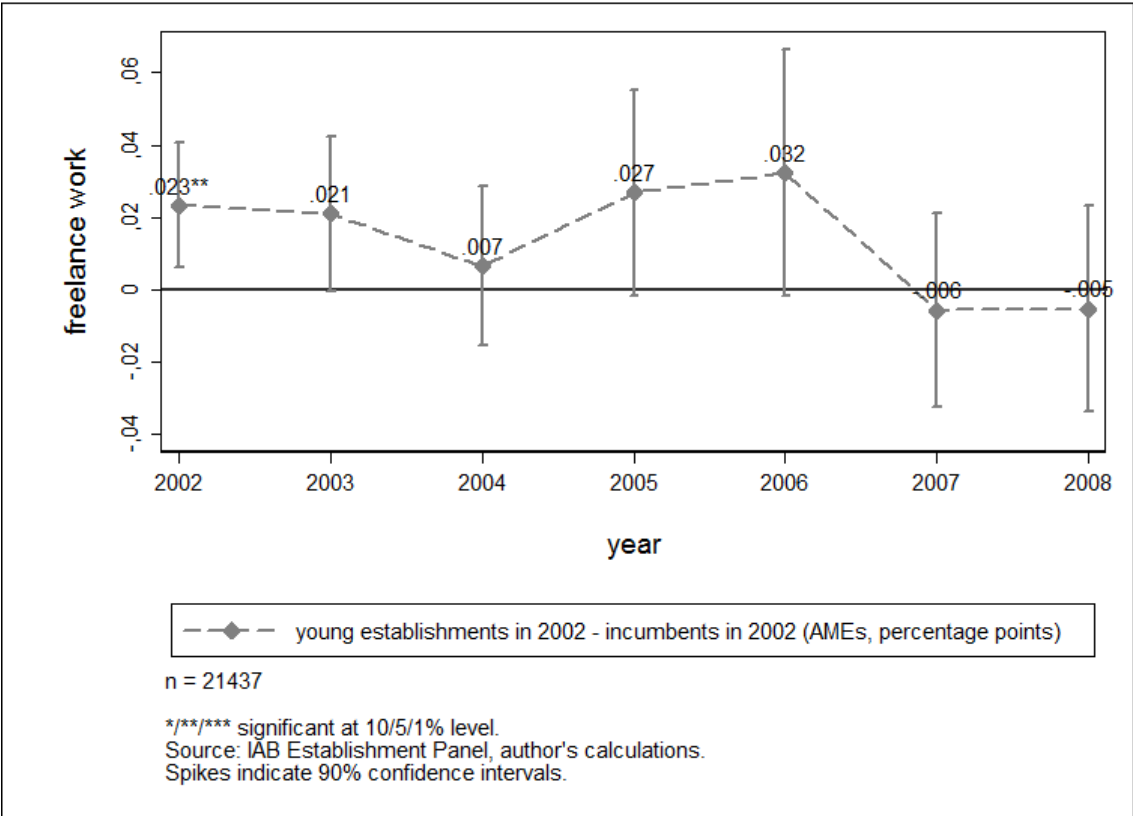


Figure 3: Average marginal effects, cohort approach, freelance work

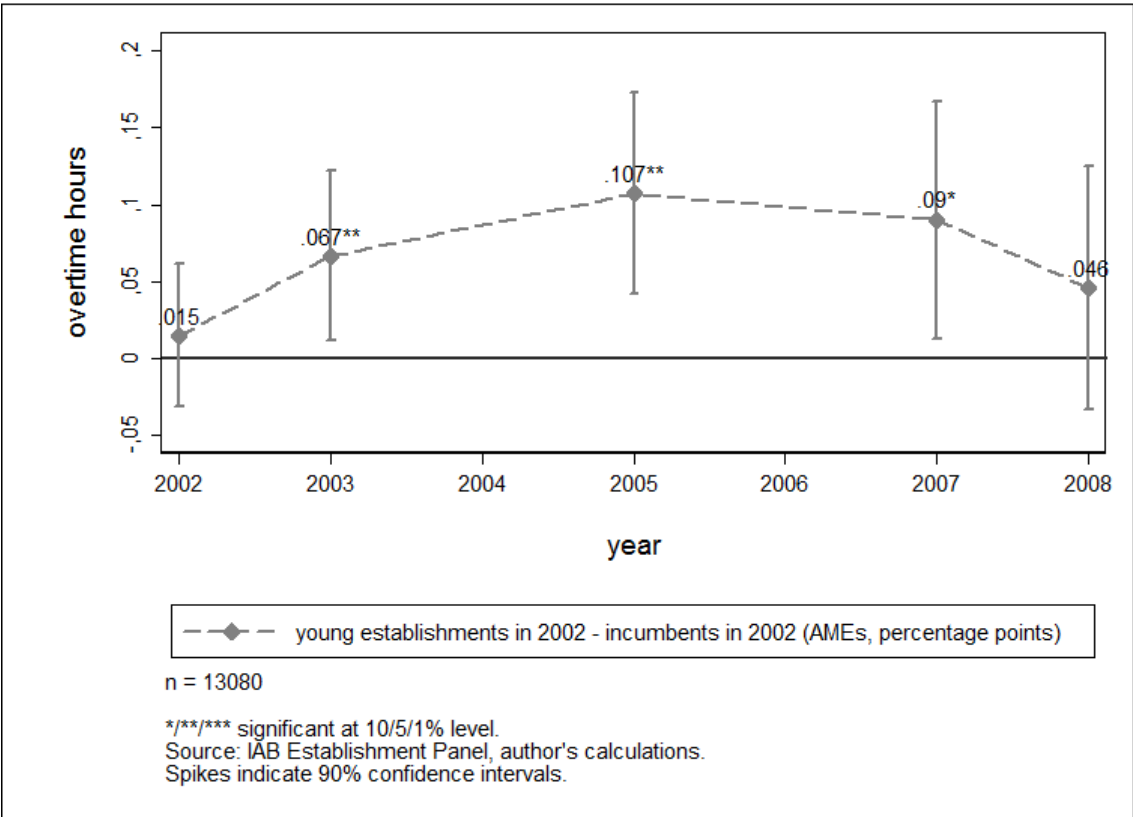


Figure 4: Average marginal effects, cohort approach, overtime hours

While we find that the inclination towards using limited contracts is in almost every year significantly higher for those establishments that were young in 2002, we do not find such significant effects for midi jobs. While this may also indicate the presence of strong initial conditions, since the size of the effects is very stable<sup>27</sup>, it casts some doubt upon the young establishments' role for midi jobs at the macro level. On the other hand, we may interpret the figure for freelance work as quite persistent initial conditions, although the effects found just miss to become significant and after five years drop sharply, meaning that by intuition the contribution of young firms to the rising importance of freelance work at the macro level may be quite persistent in the mid-run, although effects are not fully significant.

As for the establishments' usage of overtime hours<sup>28</sup> the results are not quite clear. Failing to be significant in 2002 and 2008, the initially young firms do have a significantly higher probability to use overtime hours from 2003 to 2007. Therefore, we cannot make a sensible statement on the stability of the effect found in our pooled regressions.

Generally, one must not overstate our results on the persistency of our key effects, as they rest on a very small sample and very few cohorts for the young establishments. Selection issues can surely arise in that, say, (young) establishments with a higher propensity to use limited contracts may have a higher chance to survive. Nevertheless they may provide a little guidance on how far-reaching the possible macro effects of the young establishments could be. Additionally, Koch et al. (2013) provide further qualitative indication and intuition for the existence of a strong mechanism of organizational imprinting.

## 5 Summary and conclusions

Building on the prior qualitative evidence in Koch et al. (2013) this paper addresses the question whether young and incumbent firms differ regarding their usage of several forms of non-standard employment – midi jobs, part-time employment, limited contracts, agency-based and freelance work – as well as regarding their inclination towards trust-based working and overtime hours. Furthermore, we compare continuing young firms to incumbents that will exit the market during the next years in order to get an assessment of whether changes in the composition of the establishments, i.e. the replacement of incumbent, exiting establishments for young continuing ones, has an effect on the ongoing qualitative changes in employment structures, such as the rising shares of non-standard employment and an increasing role of autonomous work and more flexible working time arrangements that are associated therewith. To that aim this study uses the IAB Establishment Panel, a representative survey of about 16,000 German employers.

Our main results are as follows. At first, we find evidence that young firms use midi jobs, freelance work and, particularly, limited contracts significantly more frequently than comparable continuing incumbents, while we do not find significant effects for part-time and agency-based work. To interpret this result, we argue that the profound challenges faced by young firms due to their newness and the considerable lack of resources like routines, structures, access to networks and knowledge or immature customer relationships, among others, have two diverging effects for the employment strategy of young firms: the need for numerical and functional flexibility at the same time. Importantly, we argue that functional flexibility plays an even greater role for young firms than numerical flexibility. Thus, it is not sufficient for a young firm to simply raise its numerical flexibility via elevated shares of (regular and marginal) part-time employees and agency-based work, since this will not help to push the young firm forward and to solve its essential problems. Limited contracts and freelance work, on the contrary, appear as particularly suited to both numerical *and* functional flexibility.

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<sup>27</sup> The effect for the young establishments' inclination towards midi jobs that we found in the pooled regression was also only significant at the ten percent level. Furthermore, since midi jobs are not covered in our data before 2003 the cohort 1997 is already six years old, which might explain that the significance is lost here.

<sup>28</sup> Since trust-based working hours are not covered before 2004, our data do not allow to assess the persistence of their effect for establishments aged five years or less in 2002.



Second, we find that young establishments have a higher probability of using overtime hours, and also, trust-based working time is practiced more frequently by them than by comparable incumbents. This is, again, due to the fact that these instruments of flexibilization are able to enhance both numerical and functional flexibility. Trust-based working time is particularly well-suited for young firms, since they are lacking internal routines and structures and tasks are not easy to specify, as everything, even the most fundamental issues of the firms' business activity, keeps changing. Trust-based working time can deal essentially well with these issues, as it puts emphasis on the employees' self-responsibility by implementing a completely output-based control scheme. Given our results, young establishments may contribute to the ongoing qualitative changes of employment structures that take place at the macro level.

To stress this point of our analysis, we also compare young, continuing establishments with incumbent ones that will exit the market during the next five years. Thereby we distinguish between the supplementary effect that entering firms which differ from continuing incumbents have on the usage of midi jobs, limited contracts and freelance work as well as on overtime hours and trust-based working time at the macro level, and a further replacement effect that is given by young, continuing establishments that replace incumbents leaving the market. Both effects are found to be highly significant in most cases, indicating that young firms play an important role for the qualitative changes of work that are taking place in industrialized countries. Furthermore, while our data do not allow to truly assess how persistent the differences are that we find between young and incumbent establishments, we give a little guidance on that issue by means of cohort analyses. Their results point to a strong influence of initial conditions on the firms' decision which kind of labor to choose and how to obtain functional (and numerical) flexibility. While the evidence of these cohort analyses must not be over-interpreted due to the low numbers of young firms in our data, they may indicate that the described differences between young and incumbent firms are not purely transitory but on the contrary rather persistent. This underlines once again that young firms have an impact on the change of employment structures that should not be neglected.

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## Appendix

**Table 6: Sample distribution by industry (%)**

	2002	2003	2004	2005	2006	2007	2008	Total
mining/energy	1.5	1.8	1.6	1.6	1.5	1.4	1.3	1.5
manufacturing	21.9	20.7	20.2	20.9	20.0	19.8	19.5	20.4
building sector	14.1	13.0	13.9	13.2	12.7	13.0	12.6	13.2
trade and repair	18.7	18.5	19.0	19.3	19.9	20.6	20.7	19.6
transport and telecommunication	3.4	4.0	4.1	4.2	4.1	4.2	4.3	4.1
financial and insurance sector	2.7	2.8	2.7	2.5	2.6	2.5	2.5	2.6
(business) services	15.2	16.4	15.9	15.7	15.4	14.9	14.5	15.4
other services	22.4	22.8	22.7	22.7	23.9	23.7	24.6	23.3
total	100	100	100	100	100	100	100	100
n	5,953	6,484	6,178	6,378	6,362	6,597	6,594	44,546

Source: IAB Establishment Panel, 2002-2008, author's calculations. Only establishments with up to 20 employees are used.

**Table 7: Sample distribution by legal form (%)**

	2002	2003	2004	2005	2006	2007	2008	total
individually-owned	51.9	51.7	52.4	52.6	53.6	55.3	55.4	53.3
partnership	8.0	7.6	6.5	6.3	6.4	6.1	6.7	6.8
limited liability/	32.7	33.3	34.0	34.2	32.7	32.1	31.3	32.9
capital corporation	2.0	1.7	1.4	1.4	1.4	1.1	1.1	1.4
public corporation	2.5	2.4	2.5	2.5	2.4	2.3	2.3	2.4
other	2.9	3.3	3.2	3.1	3.6	3.1	3.3	3.2
total	100	100	100	100	100	100	100	100
n	5,853	6,399	6,119	6,256	6,229	6,575	6,563	43,994

Source: IAB Establishment Panel, 2002-2008, author's calculations. Only establishments with up to 20 employees are used.

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