

Times of change: what drives the growth of work arrangements in Germany?

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Published online: 26 July 2013

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Abstract Since the beginning of the 1990s, the composition of work arrangements has significantly changed. Whereas non-standard work arrangements such as part-time or temporary employment grew over time, standard work lost in importance. However, data from the German Labour Force Survey does—at least for the recent past—not show a clear indication for a much greater speed with respect to changes in the composition of work arrangements. In addition, developments are also driven by a long-term trend. Shift-share-analyses suggest that shifts in the demographic or industry composition of employment were only of minor importance as a driving force for the trend. This means that factors related to the behaviour of the parties involved have obviously played a decisive role. In this context it is important that Germany is a country with regulations creating incentives for an increased use of nonstandard work arrangements. Of relevance in this context are high social security contributions, a considerable level of employment protection, a stronger activation of unemployed due to recent labour market reforms and a still dominant male bread winner model.

Zeiten des Wandels: Was treibt das Wachstum atypischer Erwerbsformen in Deutschland?

Zusammenfassung Seit Anfang der 1990er Jahre hat sich die Zusammensetzung der Erwerbsformen grundlegend verändert. Während atypische Formen der Erwerbstätigkeit, wie Teilzeitarbeit oder befristete Beschäftigung, an Bedeutung gewannen, verlor das sog. „Normalarbeitsverhältnis“ dagegen an Boden. Jedoch legen Daten des Mikrozensus nahe, dass sich das Tempo des Wandels in der jüngeren Ver-

gangenheit nicht wesentlich beschleunigt hat. Darüber hinaus zeigt sich, dass die Entwicklungen auch von einem längerfristigen Trend getragen werden. Shift-Share-Analysen deuten allerdings daraufhin, dass die veränderte Zusammensetzung der Erwerbstätigkeit nach Sektoren und soziodemographischen Merkmalen den Wandel der Erwerbsformen nur unwesentlich getrieben haben. Das bedeutet, dass Verhaltensänderungen der Wirtschaftssubjekte eine entscheidende Rolle für die Entwicklung gespielt haben. In diesem Zusammenhang ist wichtig, dass die Regulierungen in Deutschland spezifische Anreize zu Gunsten atypischer Beschäftigung setzen. Relevant sind hier relativ hohe Sozialversicherungsbeiträge, ein ausgeprägter Kündigungsschutz, eine zuletzt verstärkte Aktivierung von Arbeitslosen und eine noch immer bestehende Vorherrschaft des sog. „Ernährermodells“.

1 Introduction

After the reunification Germany went through difficult times concerning its economic and employment situation. Comparatively long periods of economic slack and severe labour market problems were for a long time the order of the day. Since 2005 the picture has changed significantly. The German economy went back on track. Employment increased continuously and unemployment came down tremendously. Main reasons for the improvement were an increased competitiveness of manufacturing companies, ongoing moderate wage increases, and effective labour market reforms (Möller 2010; Burda and Hunt 2011; Merkl and Wesselbaum 2011; Akyol et al. 2013). The labour market reforms imply a comprehensive institutional switch including a stringent activation of unemployed and increased labour market flexibility.

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The varying labour market development in Germany during the last two decades was accompanied by an altered composition of employment (Keller and Seifert 2011; Schmid 2011). In particular, we recognize a greater spread of work arrangements (Wingerter 2012). Certain types of nonstandard work such as part-time employment, fixed-term contracts, and agency work grew over time. By contrast standard work—usually defined as a permanent full-time employment, excluding temporary work agencies—lost in importance (Osterman 2000; Houseman and Osawa 2003).

However, these changes did not only take place in Germany but also in most other OECD countries (Eichhorst et al. 2010; Allmendinger et al. 2012). A comparison to countries in the Western world shows that Germany is a special and interesting case in this respect for two reasons. First, according to OECD and CIETT figures nonstandard work arrangements are strongly represented in Germany.¹ In 2011, the share of part-time employment in Germany (22.1 %) lay well above the OECD average (16.5 %). The same is true for agency workers. The particular rate for Germany in 2011 amounted to 2.0 % whereas the average for the total world (which represents mostly industrial countries) was 1.5 %. Only the share of temporary employed prime-agers (25 to 54 years) was in 2011 close to the OECD average (Germany: 10.0 %; OECD: 9.9 %).

Secondly, Germany is also of interest from an international comparison point of view because the share of nonstandard work grew faster than in most other countries of the Western World. The part-time employment rate in Germany rose by 7.9 percentage points from 1995 to 2011 compared to 4.9 percentage points of the OECD average for the corresponding period, the rate of German temporary employed prime agers by 3.5 percentage points in relation to 1.6 percentage points of the OECD average, and the rate of German agency workers by 1.5 percentage points compared to 0.8 percentage points of industrial countries.²

In view of recent developments the general question arises why nonstandard work grew over time. Most of the relevant literature mentioned a whole bunch of more or less interrelated reasons for the change (Houseman and Osawa 2003). A first explanation might be that growth in nonstandard work may reflect changes in the demographic or industry composition of employment. For example, it is argued that an increase in the labor force participation of women may explain a considerable part of the increase in part-time employment in certain countries (Gustafsson et al. 2003). In addition, a complex set of factors related to the economic and employment situation, to the level and the types of government taxes, to regulations dealing with employment protection, to competitive pressures on companies to increase

workforce flexibility is seen as important for the growth of nonstandard work (Rubery 2005).

This paper will particularly deal with the changing composition of work arrangements in Germany. Its contribution lies in the examination of the main drivers of the ongoing developments. In this respect we will focus on the impact of changes in employment by industries, gender, age groups and skill levels. In addition, we will discuss how far relevant labor market institutions in Germany may have created specific incentives for using non-standard work. In this context we will have a closer look at the period following the comprehensive labor market reforms and investigate how far this may have induced a greater speed with respect to changes in the composition of work arrangements.

The paper is organized in six sections. Section two identifies potential driving forces by referring to the literature. The third section focuses on long-term trends in work arrangements in Germany. It covers developments of certain work arrangements as well as of particular categories such as standard and nonstandard work and focuses on the development during the last two decades. The analyses are mainly based on the German Labour Force Survey. Section four raises the question how far shifts in the demographic and industry composition of employment were of any importance for the ongoing changes. The results in this section are based on shift-share-analyses. The fifth section offers information about the institutional background in Germany and tries to find hints how far the regulatory framework and particularly recent reforms might be of relevance for (changes in) the behaviour of the parties involved. Finally, section six is going to summarize the main results and to draw conclusions also with respect to possible future developments.

2 Work arrangements and potential driving forces

Work arrangements can be distinguished by several characteristics (Osterman 2000; Houseman and Osawa 2003). A first differentiation can be made by separating employment into self-employed and dependent employed. The group of self-employed consists of those self-employed who employ workers (employers), one-person-businesses and related family workers. Main elements of employment relationships are the number of working hours, the level of employment security, the degree of assignment to a particular employer and how far they allow access to the social security system (Mückenberger 1985a, 1985b). (Dependent) Workers can therefore be engaged full-time or part-time, with permanent or fixed-term contracts, being directly employed or through a temporary work agency, and with unlimited or limited access to different areas of social security such as pensions, health insurance or unemployment benefits.

Often two main categories of work arrangements are formed: standard and nonstandard work (Osterman 2000;

¹ See OECD 2012 and ciett.org/index.php?id=162.

² The increase concerning temporary agency workers covers the period 1996 to 2011.

Houseman and Osawa 2003; Mückenberger 1985a, 1985b, 2010). Standard work is usually considered as working full-time in a permanent job which in addition offers full access to the social security system and implies a clear assignment to a certain employer (Rubery 2005). Consequently, deviations from this type of employment are classified as non-standard. Empirical findings show that compared to standard workers there is a greater risk for nonstandard workers to lose employment, to be part of the low wage sector, of being excluded from additional (also fringe) benefits as well as from firm based-training (Autor 2001; Dütsch 2011; Kalleberg 2011; Mertens and McGinnity 2004; Jahn and Pozzoli 2011).

Nevertheless, if such a rather simple categorization is related to the concept of decent work there are limits. Some examples may illustrate this. In certain periods of the life course such as education or family work, part-time employment might be of particular interest for individuals because it offers an opportunity to reconcile different activities in an appropriate manner (Holler and Trischler 2010; Addabbo and Favaro 2012). Furthermore, in some cases flexible jobs may offer even more employment security than permanent jobs, e.g. if a fixed-term contract implying a certain probability of transition into permanent employed is compared with a permanent job bearing a high risk of being dismissed (Boockmann and Hagen 2008). In addition, standard work does not necessarily guarantee a decent income. Hourly wages can be rather low and therefore even full-time workers may be dependent on benefits to make their living (Dietz et al. 2009).

Nonstandard work should also not necessarily be treated equal as precarious work. The latter is usually associated with a comparatively high risk of achieving or maintaining a permanent income as a basis of an individual's or household's livelihood (Fudge and Owens 2006). Often cumulated risks are involved in this context such as insecure employment, low hours, poor pay and a limited access to the social security system are of relevance here too (Keller et al. 2011). Of particular importance in this respect is how far individual workers are in a precarious status or in a precarious biography and less whether a certain work arrangement can be considered as potentially precarious. Moreover, in order to assess precariousness of work a broader view is necessary. It needs to involve the individual's household and also how far more flexible jobs offer opportunities of transition into a more decent job (Schäfer 2010; Grün et al. 2010; Dieckhoff 2011; Caliendo et al. 2012a).

The identification of potential driving forces for the changes in the composition of work arrangements would, first of all, require a convincing theoretical foundation. However, there is nothing rather comprehensive available yet. We can make use of some rudimentary fragments which may help to identify relevant issues in this context. In order to

explain changes in the composition of work arrangements Neubäumer and Tretter (2008) carry out a transaction cost approach. The choice of work arrangements by the parties involved would then be dependent on the benefits of a single work arrangement for the particular party compared to other alternatives.

While using nonstandard work arrangements employers are confronted with a trade-off because they need to take into account costs and benefits of certain work arrangements (Houseman 2001; Sesselmeier 2007). Direct wages, additional costs for social security and costs of hiring and firing need to be weighed against the workers' productivity. Nonstandard work usually has certain (cost) advantages compared to other alternatives in this respect. Firstly, it can be used to save labour costs. This might, e.g., be the case if a firm employs agency workers which are not covered by its particular pay agreement. Secondly, nonstandard work arrangements may also lead to lower labour costs for regular workers because extra payments to regular workers for overtime might not be necessary to the same extent. Thirdly, particularly fixed-term contracts and temporary agency work reduce costs of hiring and firing. Such an option is of particular relevance in an institutional framework in which dismissal protection legislation applying to standard workers is comparatively strict. The different types of temporary employment can be used as a recruiting device and may therefore increase the efficiency of matching labour supply and demand (Osterman and Burton 2005; Boockmann and Hagen 2008). Fourthly, nonstandard work arrangements offer more flexibility to adapt available personal resources to variations in product demand (Bentolila and Saint-Paul 1992; Nunziata and Staffolani 2007; Nienhüser 2008; Picchio 2012). And finally nonstandard work arrangements can be seen as a kind of buffer to protect core workers. In doing so, firms can combine both the advantages of internal labour markets and flexible labour (Alewell 1993; Osterman and Burton 2005; Pfeifer 2009).

Another possible source of shifts in work arrangements might be changing preferences of workers. Although we can assume that for most individuals nonstandard work will not be their first choice, one can imagine situations in the course of life in which preferences might switch to a more flexible type of employment. Workers may have an (increasing) interest to combine work with other activities such as education and training, family work or with periods of inactivity such as retirement (Addabbo and Solinas 2012; Bratti and Staffolani 2012). Also risk preferences may change over time. Sometimes a fixed-term contract with a well known employer might be recognized as a kind of stepping stone for a successful working career. The same may be true for unemployed for whom flexible employment may offer an easier access to the labour market (Hagen 2003).

A peculiarity of the labour market is that preferences of employers and workers may not always go in line. Therefore, the interaction between the parties involved is another potential driving force for changes in the composition of work arrangements. An important issue in this respect is the relative market power of the parties involved (Houseman and Osawa 2003). Of relevance in this context is how far there is a surplus of applicants related to the available jobs in a certain labour market segment or vice versa. Periods of economic slack and high unemployment can therefore push nonstandard work at the expense of standard work. During such periods of excess supply at the labour market, employers can more easily enforce nonstandard work arrangements.

Another important driver of changes in the composition of work arrangements may be the institutional framework. It defines the scope of opportunities for firms and workers. Regulatory changes with respect to certain types of work arrangements influence their attractiveness in absolute terms as well as in relation to other work arrangements. For example, a strict dismissal protection may favor nonstandard work such as fixed-term contracts because it may cause an incentive to circumvent permanent jobs (Kahn 2010; Dieckhoff and Steiber 2012; Garz 2012, 2013). The same is true if social security contributions for specific types of dependent employment are high. Such non-wage labour costs can be seen as a push factor for nonstandard types of work which are not fully or not at all covered by social security such as self-employment (Osterman and Burton 2005). Direct incentives towards nonstandard work may, in addition, stem from a deregulation aiming at a more intensive use of nonstandard work arrangements or from labour market policies providing and pushing low-level gateways into the labour market.

Finally, a changing composition of work arrangements may also take place without any changes in worker's and employer's preferences, without any variations of market power between the parties involved and without any institutional reforms. This can be the case if employment grows in particular segments of the labour market and nonstandard work can be found in these segments more or less often. Of relevance in this context are changes in the composition of employment such as a higher participation of female workers, the continuous aging of the workforce, an increase in the demand of skilled workers and the growth of employment in services. The importance of such changes as a potential driver of changes in the composition of work arrangements can be investigated by the use of shift-share-analyses (see for more details Sect. 4).

3 Long-term trends in work arrangements

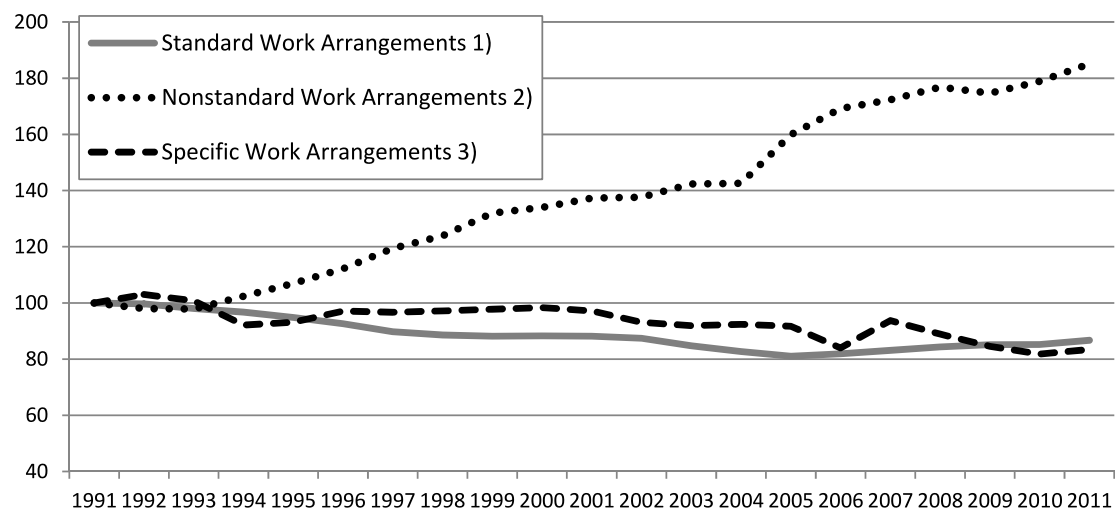
In order to display long-term trends in work arrangements it makes sense to use a data source which offers suitable

time series and covers most types of work arrangements. The German Labour Force Survey meets these requirements to a considerable extent. It fully covers the development of regular part-time employment, fixed-term contracts and one-person businesses. However, there are two deficiencies:

- Firstly, a specific type of part-time employment, the so-called "marginal" part-time employment, has been and is still under-reported in the German Labour Force Survey. This is particularly true in the 1990s and less in the first decade of the 21st century. The peculiarities of "marginal" part-time employment in the German case are twofold. On the one hand, there is a certain tax-free wage threshold which was fixed during the period 2003 to 2012 at 400 Euros. On the other hand, although employers have to pay a flat rate to the social security system, "marginal" part-time workers earning a wage below this threshold will not necessarily receive benefits from the social security system. During the two decades under investigation concepts of recording "marginal" part-time employment in the German Labour Force Survey were changed which need to be taken into account while interpreting the trends (Körner 2011).
- Secondly, agency work is for most of the period under investigation (1991 to 2005) not covered by the German Labour Force Survey at all. Therefore, data from a particular agency survey provided by the Federal Employment Agency (Bundesagentur für Arbeit) is incorporated in the analyses. The latter does offer a time series from 1991 to 2011 for total numbers of agency workers as well as decompositions by gender, age and skill level. Because agencies and not their users are covered in the survey the data source does not give any information about the industry distribution of agency workers. At least for the recent past the data offer information about the share of part-timers amongst agency workers. However, this is not the case for the period 1991 to 1996. The particular share during this time has therefore been estimated by a fixed percentage of 2 %. Finally, there is no information available about the share of agency workers employed on a fixed-term basis. Because of this, representatives of the agency industry were asked and provided rough estimates about the share of agency workers with a temporary contract. On the basis of this information, the share has been fixed by one quarter for the period 1991 to 2003 and one third for the period since 2004.

The German Labour Force Survey offers the opportunity to categorize work arrangements. Using this data we can define and distinguish three main types: standard work arrangements, nonstandard work arrangements and specific work arrangements (see for more information Table 2 in the Appendix).

Figure 1 illustrates parts of Table 3 in the Appendix. It shows that standard work arrangements and specific work



- 1) Standard work arrangements include self-employed (without one-person-businesses and related family workers) as well as workers with a permanent contract (>31h a week).
 2) Nonstandard work arrangements include employed with less than 32 hours a week, non-permanent workers (>31h), „marginal“ part-time workers, agency workers and one-person-businesses.
 3) Specific work arrangements include apprenticeships, soldiers, alternatives to military services and related family workers.
 Source: Destatis 2012 (Labour Force Survey); own calculations

Fig. 1 Development of certain categories of work arrangements in Germany, 1991–2011—indices (1991 = 100)

arrangements loose in importance over time in absolute and relative terms. By contrast we observe a continuous and strong growth of nonstandard work arrangements. Since 1991, standard work arrangements declined by a number of 3.5 million employed or roughly 13 %. By far the largest part of the drop took place in the 1990s. Only 1.5 percentage points of the reduction refer to the second decade (2001 to 2011). Since 2005 we even observe an increase of 1.5 million workers with standard work arrangements. With respect to certain types of standard work arrangements we recognize a differentiated picture. Whereas the number of self-employed grew almost continuously during the two decades, the number of permanent employees with weekly working hours close to full-time (more than 31 hours a week) and who are not involved in agency work decline at least until the mid of the first decade of the 21st Century.

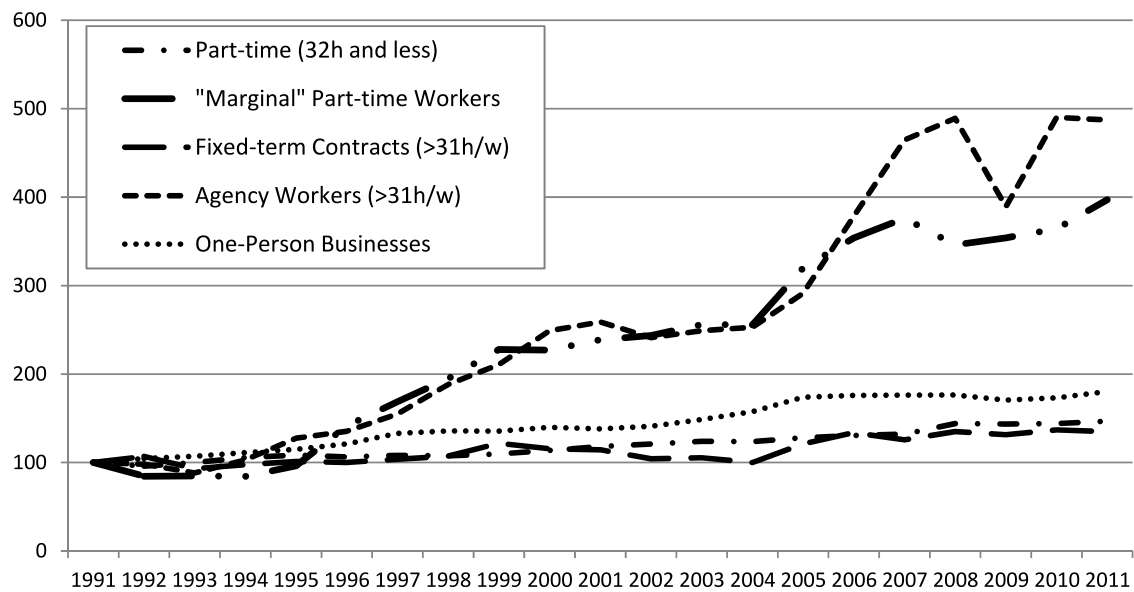
At the same time nonstandard work arrangements got a much greater weight. We observe a strong growth of 6.8 million or 85 % between 1991 and 2011. In contrast to the development of standard work both decades show a rather similar growth trend. During the second decade growth in non-standard work was only slightly higher than in the first decade (3.8 million versus 3.0 million). Concerning certain nonstandard work arrangements developments indicate a remarkable variation. Although all types of nonstandard work grew faster than total employment some of them show a considerable strong increase. This is particularly true for marginal part-time workers (+297 %) and agency workers (+387 %), excl. part-time workers and temporary workers,

for which numbers in 2011 were many times higher than in 1991 (see Fig. 2). However, with respect to “marginal” part-time workers changes in recording have to be born in mind. This to some extent underestimates as well as overestimates the actual growth of this type of employment. The figure may underestimate the growth of “marginal” part-time workers because other data sources, e.g. provided by the Federal Employment Agency, indicate a higher level than the German Labour Force Survey (Körner et al. 2011). However, due to changes in recording over time within the German Labour Force Survey parts of the reported growth cannot be regarded as an actual increase.

Just as standard work arrangements also specific work arrangements decline during the last two decades. The reduction amounted to 0.43 million or 16.5 %. Most of the decrease concerning this category of work arrangements refers to the second decade. This is mainly due to a decline of related family workers particularly in agriculture and a reduction in military and alternative services. By contrast, the number of apprentices kept rather constant over time.

4 Shifts in employment and their Impact

As mentioned above one possible reason for a long-term trend towards nonstandard work may be considerable changes in the composition of employment. Of relevance in this context are a higher participation of female workers, the continuous aging of the workforce, an increasing demand of



1) Nonstandard work arrangements include employed with less than 32 hours a week, fixed-term contracts (>31h), „marginal“ part-time workers, agency workers and one-person businesses.

Source: Destatis 2012 (Labour Force Survey); own calculations

Fig. 2 Development of specific nonstandard work arrangements (see 1) in the legend) in Germany, 1991–2011—indices (1991 = 100)

skilled workers, and a stronger role of employment in services (Rubery 2005; Holman and McClelland 2011).³

First of all, we will look at the incidence of work arrangements by different characteristics. Then we will carry out shift-share-analyses in order to assess the role of a changing composition of employment for the development of work arrangements.

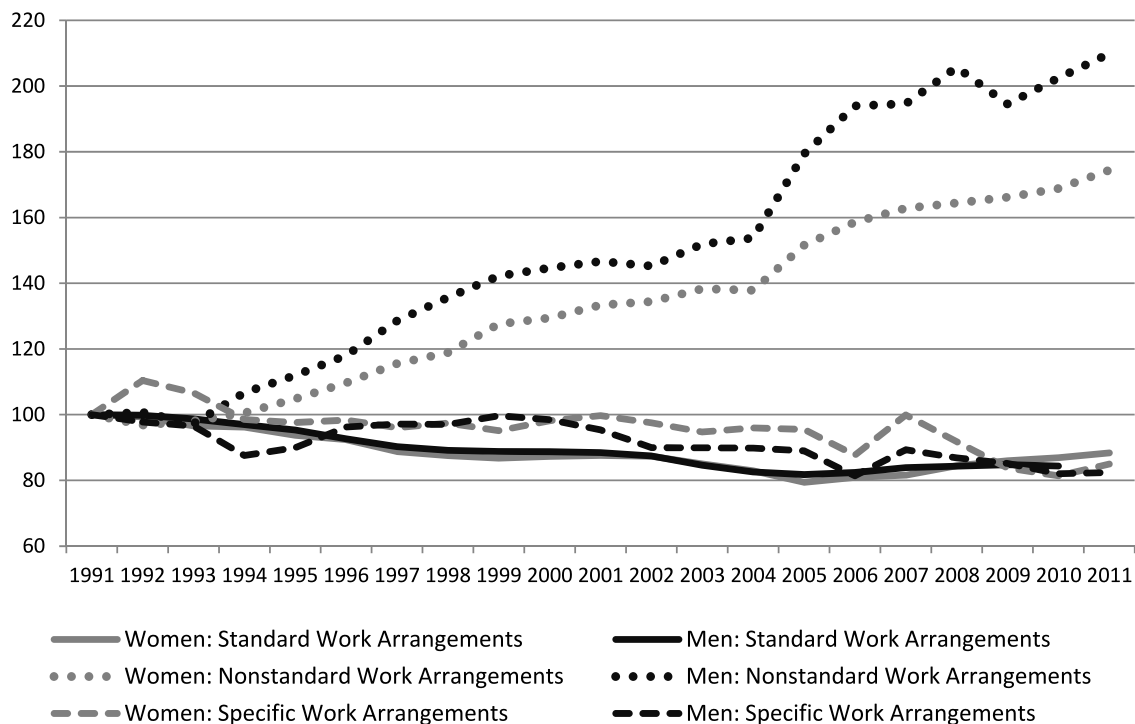
4.1 Work arrangements by different characteristics

The first issue we are looking at is work arrangements by gender. This is of particular relevance because the share of women within the labour market (as % of total employed) increased from 41.6 % in 1991 to 46.1 % in 2011 and in absolute terms from 15.4 million to 18.4 million. At the same time male employment went down by 0.14 million. In general, the probability of women is much higher to be employed in a nonstandard type of work than in standard work whereas the opposite is true for men (Fig. 3 and Table 4). In 2011, 15.2 million men had a standard work arrangement compared to 7.7 million women. Concerning nonstandard work arrangements women were ahead with 9.7 million in relation to men with 5.0 million. The stronger representation of women within nonstandard work arrangements is nothing new. However, in the meantime the majority of women's

work arrangements are nonstandard. This has to do with the fact that we do find high shares of women in those types of nonstandard work arrangements which are of large importance in absolute terms. The share of women in regular part-time employment (less than 32 hours a week) was in 2011 nearly 87 % and in marginal part-time employment 70 %. By contrast men are stronger represented in agency work with more than 31 hours a week (75 %), one-person-businesses (64 %) and fixed-term contracts with more than 31 hours a week (58 %) than women.

Another important structural component of employment are age groups. In this context we have to bear in mind that developments over time are also influenced by the ongoing process of an aging population, i.e. that over time young cohorts are getting smaller and correspondingly older cohorts larger. An interesting observation in this context is the increasing labour market participation of older workers during the last two decades. In total numbers the group of workers aged 55 and older has almost doubled between 1991 and 2011. If we look at the distribution of work arrangements amongst age groups we do observe two things. Firstly, in 2011 the share of nonstandard work arrangements does not vary greatly between age groups (see Fig. 4 and Table 5). Secondly, standard work arrangements are declining within all age groups and particularly strong with respect to young workers (15–24). However, the incidence of certain nonstandard work arrangements differs. Whereas one-person-business (like employers) are strongly represented in

³In addition, also occupational groups differ with regard to the incidence of non-standard employment (see for more details: Marx 2011).



1) Standard work arrangements include self-employed (without one-person-businesses and related family workers) as well as workers with a permanent contract (>31h a week).
 2) Nonstandard work arrangements include employed with less than 32 hours a week, non-permanent workers (>31h), „marginal“ part-time workers, agency workers and one-person-businesses.
 3) Specific work arrangements include apprenticeships, soldiers, alternatives to military services and related family workers.
 Source: Destatis 2012 (Labor Force Survey); own calculations

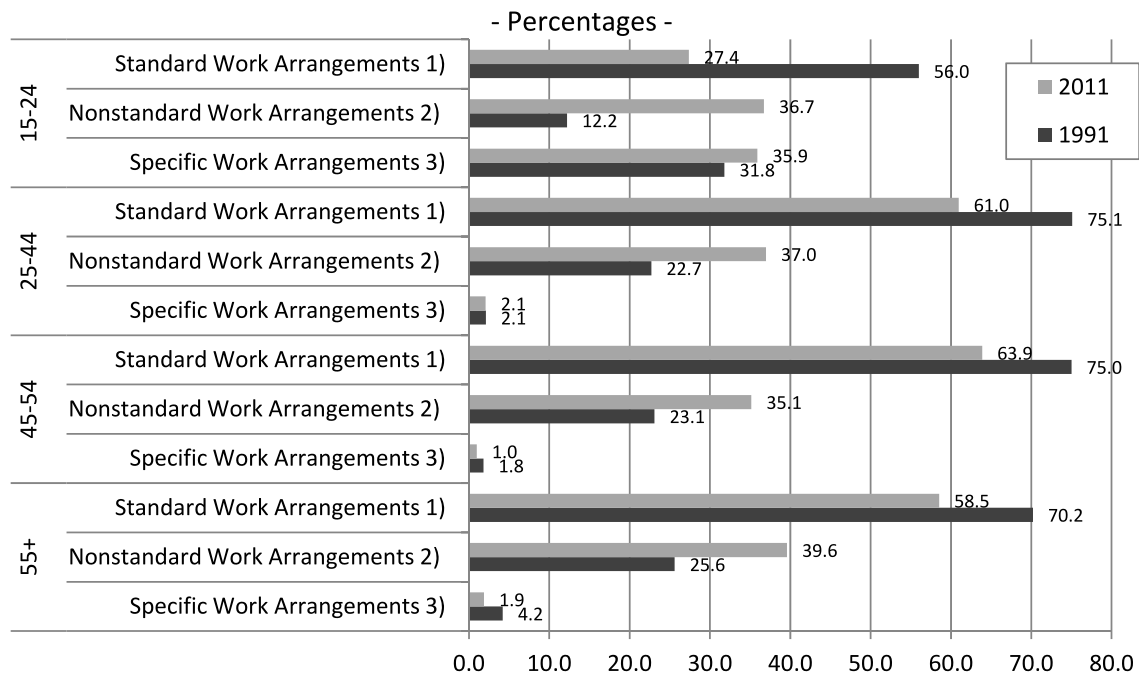
Fig. 3 Categories of work arrangements by gender, 1991–2011—indices (1991 = 100)

the group of older workers (55+) we do find younger workers (15–44) more often in agency work or with a fixed-term contract (each with more than 31 hours a week). Concerning marginal part-time employment we observe two poles, one is young workers (15–24) and the other older workers (55+). This is mostly because this type of employment offers additional earning opportunities in particular for pupils, students and pensioners (Fertig and Kluve 2006). For no age group nonstandard work arrangements have risen as they did for young workers. This suggests that these types of employment go along with the transition of young workers into the labour market. Findings show that young academics and apprenticeship graduates are often recruited on a fixed-term basis or through a temporary work agency (Achatz et al. 2012).

The third major shift in employment concerns skill levels. During the last two decades there is on the one hand a clear trend towards more employment of academics and apprenticeship graduates (see Fig. 5 and Table 6). On the other hand the number of unskilled workers decreased. In 2011, the share of skilled workers with a standard work arrangement is two times higher than the corresponding share of unskilled workers. By contrast the share of nonstandard

work arrangements amongst academics (33.2 %) and apprenticeship graduates (35.3 %) are much lower than for unskilled workers (47.0 %). The latter group also showed the largest increase of nonstandard work arrangements since 1991 compared to the other two groups. A closer look at certain types of work arrangements again indicates differences with respect to the distribution by skill level. Academics are more often self-employed than the two other groups. Unskilled workers and academics can be more often found with fixed-term contracts (>31 hours a week) than apprenticeship graduates. Unskilled workers are also highly represented within marginal part-time employment as well as agency work (>31 hours a week). The figures indicate that the existence of skills is getting more and more important for individuals in order to achieve a standard work arrangement (Achatz et al. 2012).

Finally, the incidence of work arrangements also differs significantly by industries. The share of standard work arrangements is highest within production (secondary sector) which is largely covered by collective agreements. At the same time the share of nonstandard work arrangements is rather low in this part of the economy. The tertiary sector (services) shows the highest and most growing incidence



1) Standard work arrangements include self-employed (without one-person-businesses and related family workers) as well as workers with a permanent contract(>31h a week).

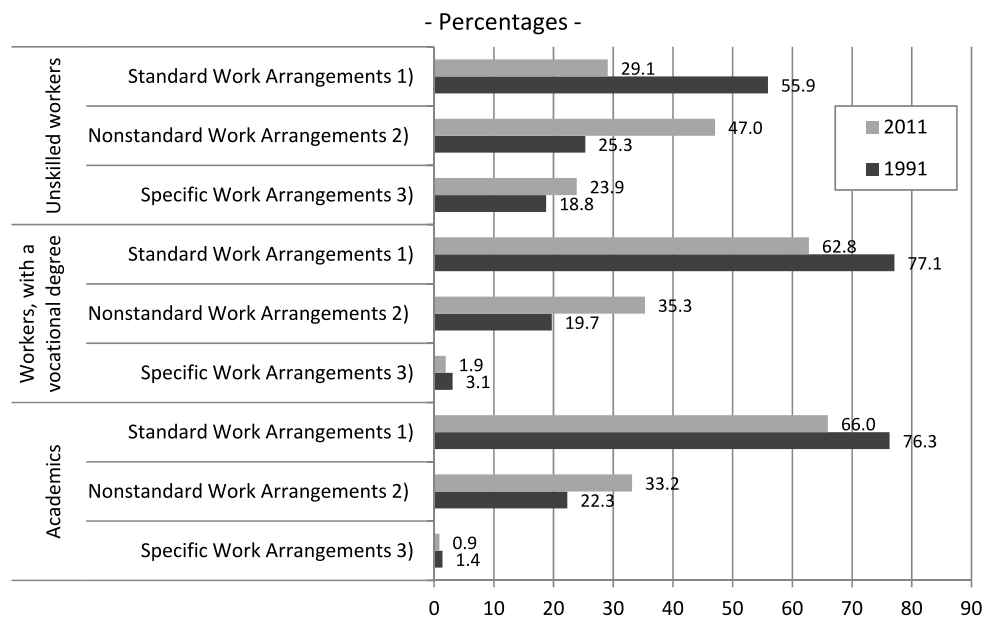
2) Nonstandard work arrangements include employed with less than 32 hours a week, non-permanent workers (>31h), „marginal“ part-time workers, agency workers and one-person-businesses.

3) Specific work arrangements include apprenticeships, soldiers, alternatives to military services and related family workers.

Source: Destatis 2012 (Labor Force Survey); own calculations

Fig. 4 Categories of work arrangements by age in 1991 and 2011

Fig. 5 Categories of work arrangements by skill level in 1991 and 2011



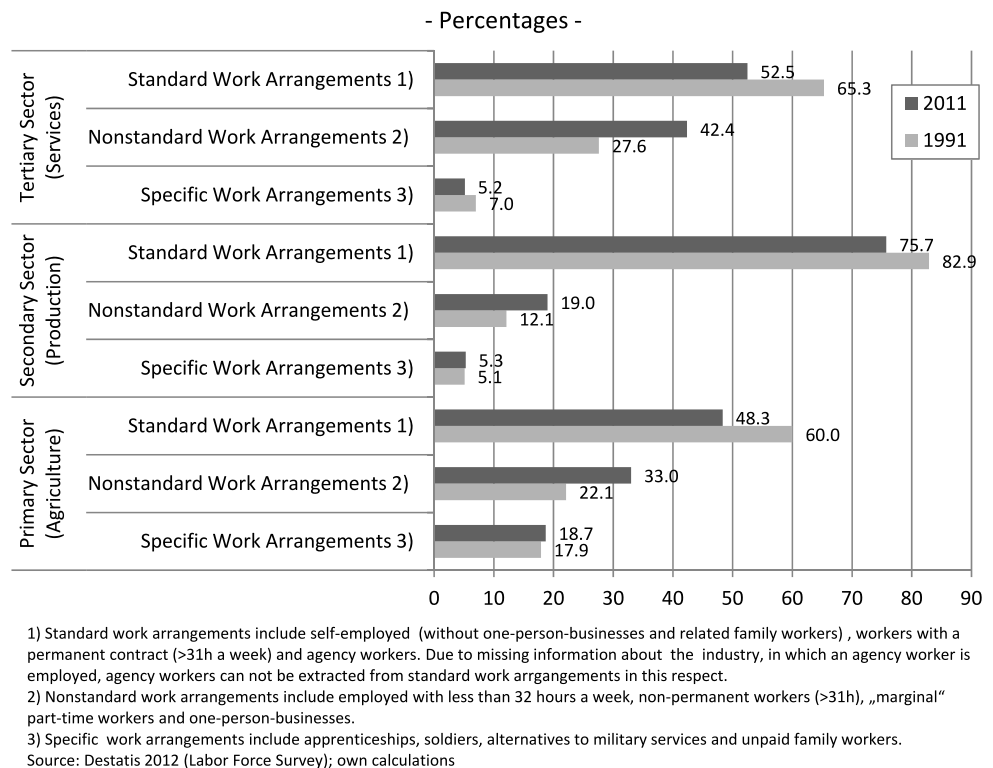
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Source: Destatis 2012 (Labor Force Survey); own calculations

Fig. 6 Categories of work arrangements by economic sectors in 1991 and 2011



of nonstandard work arrangements (Fig. 6 and Table 7). This finding is accompanied by the fact that from 1991 to 2011 the share of services (as % of total employment) grew strongly from 54.7 % to 70.2 % and in absolute terms from 20.3 million to 28.0 million. During the last two decades employment within the other two main industries decrease: manufacturing by 3.3 million and agriculture by 1.6 million.

Concerning the distribution of certain types of non-standard work arrangements by industries we observe that marginal part-time employment, regular part-employment (less than 32 hours a week) and fixed-term contracts (>31 hours a week) are strongly represented in services. In agriculture (primary sector) self-employed and family workers play an important role. Whereas the German Labour Force Survey does not give any information about the industry distribution of agency work, the IAB establishment panel suggests a strong incidence of this type of employment in production, particularly in manufacturing (Crimmann et al. 2009).

4.2 Demographic and industry shifts as a possible driver for changes in the composition of work arrangements

The question is now, how far the described changes in the composition of employment may have influenced the growth of nonstandard work arrangements. To deal with this, shift-share analyses are carried out providing the opportunity to decompose trends in employment (Perloff et al. 1960; Hoffmann and Walwei 2003). They can be used in order to

explore how far changes in the composition of employment or behavioural aspects have driven the development of work arrangements. Such an approach is promising because also multivariate analyses dealing with a decomposition of trends in work arrangements confirm previous findings of descriptive shift-share analyses (Klinger and Wolf 2011).

In a first step, shift-share analyses are presented which address changes in the composition of employment by industries. They give an indication how far the development of categories of work arrangements or certain work arrangements is due more to industry changes in employment between agriculture, production and services (shift effect) or to the penetration of the work arrangement into all industries (share or diffusion effect). Mathematically, the shift effect is calculated by assuming that the rate of a certain work arrangement remain unchanged over time. In contrast, to compute the share (or diffusion) effect, the industry shares of the reference year are kept constant and multiplied by the current rates of the particular work arrangement. A small quantity remains which results from combining both effects (interaction term). The results of the analyses which are presented in Table 1 show that the major driving force of changes in work arrangements is the share effect. This means, that changes within industries, and therefore behavioural issues, are more important than between industries. The results also show that there are differences with respect to certain types of work arrangements. The share effect is of most importance (40.5 % of the total increase in percentage points) in the case of regular part-time employment

(with weekly working hours of less than 32) which means that the growing share of employment in services has obviously played a certain role for the growth of this type of employment. With respect to other nonstandard work arrangements shift effects have not played a significant role as a driver for changes in the composition of work arrangements.

Shift-share analyses were also carried out to assess the effect of changes in the gender composition of employment on the increase in certain types of nonstandard work arrangements. The question here is whether growth in nonstandard work arrangements goes along with changes in the female proportion of total employment (shift effect) or more from the changing rates of nonstandard work arrangements amongst both sexes (share effect). However, the results of these analyses indicate that it is again the share effect that can mainly be associated with the growth of nonstandard work arrangements (Table 1). This means that, if the female proportion of employment had remained unchanged over time, nonstandard work arrangements would have developed as it did to almost at the same extent. Thus, a changing propensity to be employed in a nonstandard work arrangement is associated with most of the increase in certain types of work. Nevertheless, shift effects at least play a role in one respect. Concerning the increase in regular part-time employment (less than 32 hours during a week) the analyses show a considerable, but minor impact of the increase female labour market participation: At least a fourth of the total increase of this work arrangement can be associated with a changing composition of employment towards females.

The shift-share-analyses dealing with the age and skill distribution of employment do not tell a completely different story. Shift effects are again in most cases rather small or even negative. This means that aging and rising skill levels in employment are obviously not main drivers of the changing composition of work arrangements. Nevertheless, three interesting findings should be mentioned (see Table 1). Firstly, aging obviously pushes at least to some extent the share of self-employed, particularly one-person-businesses. Secondly, aging is negatively associated with fixed-term contracts. This means that a working population which is getting older may potentially reduce the incidence of fixed-term contracts. Such temporary employment relationships may be needed less because fewer young people are entering the labour market for the first time. Thirdly, the rise in skill levels is positively associated with fixed-term contracts indicating that this type of employment is important for entering the labour market. However, there are findings that particularly for skilled workers (academics and apprentices) the probability of remaining in a fixed-term contract is diminishing significantly over time (Achatz et al. 2012).

The results of shift-share-analyses carried out suggest that nonstandard work arrangements have developed largely independently of shifts in the demographic and industry

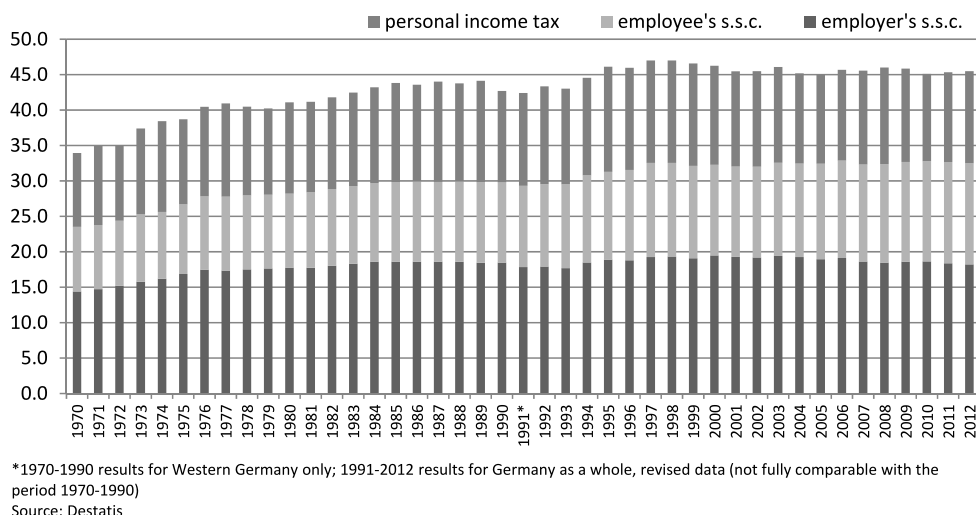
composition of employment. Thus, even without the increases in services, in women's labour market participation, in aging and in skill levels, the trend of nonstandard work arrangements would have evolved roughly as it did. It is mainly increased rates of nonstandard work arrangements within certain industries and within demographic groups of the workforce that have driven the increased rates of nonstandard work arrangements. There are only few exemptions which indicate that shift effects have played an important role (industry change with respect to part-time employment) or at least a certain role (female labour market participation with respect to part-time employment; aging with respect to one-person businesses and with respect to fixed-term contracts; rise in skill levels with respect to fixed-term contracts).

5 The role of German institutions with respect to changes in the composition of work arrangements

In section three we identified significant changes in the composition of work arrangements which were to a considerable extent part of a long-term trend. The previous section shows that the role of shifts in the industry or demographic composition of employment as a driver for such changes should not be overestimated. Moreover, the results of the analyses suggest that changes in employers' and/or employees' behaviour were obviously of significant importance for the growth of nonstandard work arrangements.

In general, the opportunities of firms and workers depend to a large extent on the institutional setting and its development over time (Rubery 2005). In the following a brief overview about relevant institutions in Germany and their changes over time will be given. It will be discussed whether the German institutional regime may have created incentives towards the use of nonstandard work arrangements.

First of all, social security contributions can be seen as a potential push factor for certain nonstandard work arrangements. In the German case such contributions are shared by almost a half between employers and employees. In general, social security contributions are a burden for the use of labour because they increase labour costs for employers and induce lower net wages from the perspective of workers. Independently of who actually pays for social security at the end of the day, contributions raise the costs of work arrangements covered by social security and cause incentives for nonstandard work arrangements being not or only partly subject to social security contributions—such as marginal part-time employment or self-employment, particularly one-person-businesses (Buch 1997). However, one can argue that Germany has always been a country with high social security contributions compared to other countries in the Western world. But two important issues in this context

Fig. 7 Tax wedge in Germany, 1970–2012

need to be mentioned. First, the share of social security contributions as a percentage of total labour costs particularly increased in the 1990s due to the social burden of reunification, to the introduction of a nursing care insurance and to severe and ongoing labour market problems until the mid of the last decade which cause less revenues and higher expenditure for all parts of the social security system (Fig. 7). Second, as part of the labour market reforms at the beginning of the last decade “marginal” part-time employment was made even more attractive to employers. In 2003, the monthly wage threshold was lifted from 325€ to 400€ and the regulation providing for an upper limit of 15 hours per week of this type of employment was removed. “Marginal” part-time employment, which can also be hold as a second job, is not subject to taxes and implies lower social security contributions (which are generally be paid by the employer only).

Another institutional issue being of potential relevance for the change in work arrangements is the level of employment protection. On the one hand, a far reaching dismissal protection referring to standard workers may cause incentives to circumvent this type of employment by temporary employment such as fixed-term contracts or agency work (Barone 2001). On the other hand, relaxed regulations regarding temporary employment may cause an incentive to use this type of employment more frequently (Büchtemann and Höland 1989; Kahn 2010). In general, German regulations in the area of employment protection are rather strict. The OECD-index of Employment Protection Legislation (EPL) ranks Germany in 2008 on position 28 of 40 countries (OECD and selected non-OECD countries).⁴ Among the 12 industrialized countries with an even more

strict employment protection are Southern European countries, Asian countries and Middle American Countries. The development of the EPL over time in Germany shows an overall relaxation of employment protection which has been focused on nonstandard work, particularly fixed-term contracts and agency work (see Fig. 8).

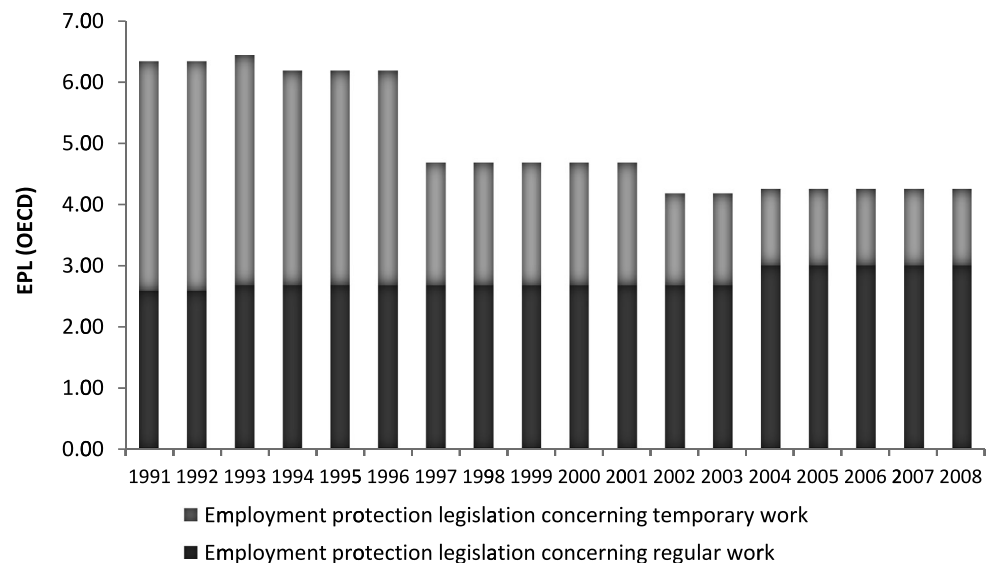
In addition, labour market policy in a more narrow sense is of interest in this context, particularly regarding the frequency and composition of labour market programs as well as the design of benefit regulations in case of unemployment. Labour market programs may be relevant for the spread of non-standard work arrangements because they potentially ease the access to the labour market. Examples are programs fostering public employment which imply fixed-term contracts for those involved or programs particularly supporting unemployed to start up a business. Germany always made frequent use of these types of programs and spent comparatively large financial resources in those areas (OECD 2012). Of particular importance here is that during the first decade after the millennium programs to foster self-employment like Me Inc. played an enormous role in quantitative terms (Caliendo et al. 2012b). They pushed one-person-businesses to a considerable extent. In addition, labour market reforms (the so-called “Hartz reforms”) significantly changed the benefit system. This has lead to lower benefits for long-term unemployed as well as a stronger focus on activation which both push workers even more to take up any kind of employment, including nonstandard work.

Germany is still a country where the male bread winner model is predominant. Two issues are of particular relevance for the development of work arrangements. First of all, several studies point out that compared to other countries there is a considerable lack of publically provided child

malized to a certain range, with higher scores representing stricter regulation.

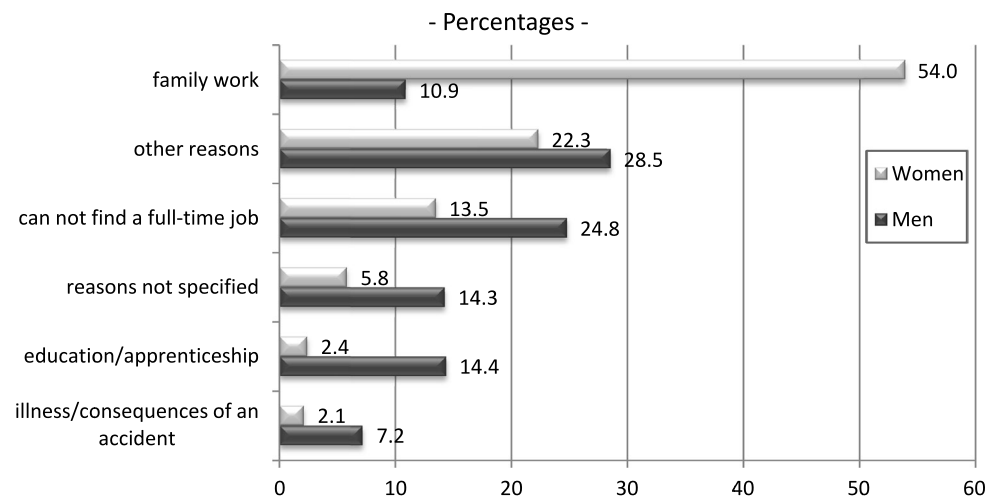
⁴The Employment Protection Legislation Index (EPL) covers three areas: (1) Employment protection of regular workers against dismissal; (2) Specific requirements for collective dismissals; (3) Regulation of temporary forms of employment. In sum, 18 basic items are then generated from these areas and converted into cardinal scores that are nor-

Fig. 8 OECD-index of Employment Protection Legislation (EPL) in Germany, 1991 to 2008



Source: OECD; *Data for the years 2009 and following are not yet available.

Fig. 9 Reasons for individuals to work part-time in 2011



Note: Part-time Workers are defined as employees with weekly working hours of less than 32h (not including marginal part-time workers).

Source: Destatis 2011(Labor Force Survey); own calculations

and elder care facilities in Germany (e.g. Kurowska et al. 2012). Additional evidence for the relationship of nonstandard work arrangements on the one hand and family work on the other hand can be found if we look at reasons for employees to work part-time on a regular basis. The German Labour Force Survey shows that in 2011 for more than 50 % of women family work is the most important reason to work part-time (Fig. 9). In comparison men indicated more often than women that they work part-time because they could not find a full-time job or that they were either in education or training. Secondly, the tax and benefit system provides additional incentives for households to reduce working hours. They stem from the joint taxation of married couples and

derived claims for women in the system of social security such as the widow's pension (see Bach et al. 2011). Particularly the large share of marginal part-time work amongst women might be driven by these specific characteristics of the German tax and benefit system.

Parts of the change in the composition of work arrangements can also be associated with the consequences of reunification. In the early 1990s non-standard work arrangements were not so largely distributed in Eastern Germany compared to Western Germany (Hoffmann and Walwei 2003). Due to the economic transformation the Eastern part of Germany also caught up in this respect. All types of non-standard work arrangements grew faster in Eastern Germany

than in Western Germany. However, the level of regular part-time employment (excl. marginal employment) is still lower in the East compared to the West (Wanger 2011). This indicates that particularly women's attitudes regarding working hours still differ between the two parts of Germany (Vogel 2009; Rainer and Bauernschuster 2010).

The changes in the composition of work arrangements suggest a rather stable long-term trend towards non-standard work arrangement (see Sect. 3). In general, there is no clear evidence that growth in nonstandard work has fastened recently. A possible reason for a greater speed of changes could, e.g., have been induced by comprehensive rearrangements of the institutional setting. At the beginning of the first decade after the Millennium Germany implemented such a far reaching labour market reform ("Hartz-reforms"). However, there is no obvious hint that the comprehensive reform had generally pushed the overall change in the composition of nonstandard work arrangements further. Nevertheless, there are obviously two exemptions. Evidence indicates that particularly agency work and marginal part-time employment increased sharply during the first years after reform. This increase may at least partly be related to legal changes (Antoni and Jahn 2006; Fertig and Kluve 2006; Burda and Kvasnicka 2006; Jacobi and Schaffner 2008; Garz 2012, 2013). However, after these immediate effects of the reform on certain work arrangements the speed of its growth decreased or even found an end. One explanation for this might be that additional (institutional) incentives were partly or even fully compensated by an improvement of the overall labour market situation implying a rebalancing of market power and limits of growth.

Although German institutions create certain incentives to use nonstandard work arrangements, possible behavioural changes of the parties involved also need to be taken into account. It may be argued that possible advantages of non-standard work arrangements may have got a stronger weight over time (Neubäumer and Tretter 2008). This means, that companies' needs with respect to a more flexible use of staff and cost reductions for labour referring to all industries might be of more relevance in the recent past than they had been two decades ago. In addition, we also observe significant changes in the composition of labour supply. New groups of workers are participating in the labour market such as students and pensioners who—through nonstandard work arrangements—did find an easier access to the labour market.

6 Conclusions

Since the beginning of the 1990s, the composition of work arrangements has significantly changed. On the one hand, standard work arrangements lost in importance in relative and absolute terms. On the other hand, nonstandard work

arrangements grew over time. The latter are particularly represented amongst less qualified and young workers, women and within the service sector. Analyses based on the German Labour Force Survey show an almost continuous upward trend of nonstandard work arrangements.

The main finding of this paper is that the impacts of changes in the composition of employment should not be overestimated as possible drivers for the growth in nonstandard work arrangements. Shift-share analyses suggest that most of the development would also have taken place without any structural shifts in employment. This means, that changes within certain industries or demographic groups of the workforce were of greater importance than between them. In this context it is important that Germany can be seen as a country with regulations that create incentives for the use of non-standard work arrangements. Of relevance here are the comparatively high level of social security contributions, the rather strict employment protection legislation, the recently quite strong activation of unemployed, and the still dominant male bread winner model. The findings imply that a mix of factors such as the institutional framework, the relative market power of the parties involved, as well as changes in behaviour of employers and workers obviously played a decisive role for the long-term trend. One task for future research will therefore be to disentangle the mix of institutions on the one hand and the role of market forces on the other hand.

The comprehensive labour market reforms ("Hartz-reforms") at the beginning of the first decade after the Millennium obviously had not generally pushed the change in the composition of nonstandard work arrangements further. For this reason institutional changes should also not be overestimated as a potential driving force. Nevertheless, there are obviously two exemptions where we did observe temporary effects. Immediately after implementing the new legislation in 2003, agency work and marginal part-time employment increased sharply which can be mainly related to the institutional changes. However, after these immediate effects of the reform the speed of growth decreased or came to an end. One explanation might be that the additional (institutional) incentives were partly or even fully compensated by an improvement of the overall labour market situation implying a rebalancing of market power and limits of growth.

Finally, two rather difficult questions remain. The first one deals with the overall assessment of the changes. In this respect the heterogeneity of nonstandard work arrangements forbids an unambiguous statement. The problem here is that we do have to find an answer to the question what would have happened if such changes in work arrangements did not take place. In this respect research offers only preliminary and mixed results. On the one hand, there is evidence for Germany that nonstandard work arrangements such as agency work or "marginal" part-time employment have created an easier access to the labour market (Lehmer 2012).

On the other hand, research also shows that transitions from nonstandard work to standard work are visible, but they are rather small (Steiner 2008; Jahn and Pozzoli 2011; Caliendo et al. 2012a; Gebel 2013). This may have to do with two facts. Firstly, workers may not intend to switch to a standard job (e.g. in the case of combining employment with family work or education). Secondly, they may not be able to find a better job due to their lacking skills and are, therefore, a continuous part of revolving doors between unemployment and nonstandard work (Sala et al. 2012).

The second question deals with the possible future development of work arrangements. Developments are not at all determined which is due to the various factors which may possibly drive the change. Such determinants do not only include further institutional reforms, e.g. regarding the role of the male bread winner model, but also ongoing changes in the relative market power of the parties involved. Due to the improved labour market performance in Germany in recent years firms are increasingly confronted with a higher competition regarding highly educated youngsters and, in general, highly skilled workers. This may strengthen the role of standard work arrangements in the long run for these groups of workers (if they indeed prefer this type of employment). However, for less competitive workers nonstandard work arrangements may also in future often function as a kind of gateway to the labour market. Of importance here is how far those workers are more or less locked in or can make use of upward mobility through transition from a less to a more secure job and thereby achieve a rise in their wages. In this respect efforts to strengthen the employability of flexible workers such as incentives towards more training-on-the-job accompanied by an intensified job search are crucial issues to improve the labour market situation of less competitive workers.

Executive summary

After reunification Germany went through difficult times concerning its economic and employment situation. Comparatively long periods of economic slack and severe labour market problems were for a long time the order of the day. Since 2005 the picture has changed significantly. The German economy went back on track. Employment increased continuously and unemployment came down tremendously. However, the labour market development in Germany during the last two decades was accompanied by a greater spread of work arrangements. Certain types of nonstandard work such as part-time employment, fixed-term contracts, and agency work grew over time. By contrast standard work—usually defined as a permanent full-time employment, excluding temporary work agencies—lost in importance.

A comparison to countries in the Western world shows that Germany is an interesting case in this respect for two reasons. First, according to internationally available data nonstandard work arrangements are strongly represented in Germany. Secondly, Germany is also of interest because the share of nonstandard work grew faster than in most other countries of the Western World.

In view of recent developments the general question arises why nonstandard work grew so fast over time in Germany. The contribution of the paper lies in the examination of the main drivers of the ongoing developments. In this respect it focuses on the impact of changes in employment by industries, gender, age groups and skill levels. In addition, the paper discusses how far relevant labor market institutions in Germany may have created incentives for using non-standard work. In this context we will have a closer look at the period following the comprehensive labor market reforms and investigate how far this may have induced a greater speed with respect to changes in the composition of work arrangements.

The main finding of this paper is that the impacts of changes in the composition of employment should not be overestimated as possible drivers for the growth in non-standard work arrangements. Shift-share analyses do suggest that most of the development would also have taken place without any structural shifts in employment. This means, that changes within certain industries or demographic groups of the workforce were of greater importance than between them. Moreover, factors related to the behaviour of the parties involved have obviously played a decisive role. In this context it is important that Germany can be seen as a country with regulations that create incentives for the use of non-standard work arrangements. Of relevance here are the comparatively high level of social security contributions, the rather strict employment protection legislation, the recently quite strong activation of unemployed, and the still dominant male bread winner model.

The comprehensive labour market reforms (“Hartz-reforms”) at the beginning of the first decade after the Millennium obviously had not generally pushed the changes in the composition of nonstandard work arrangements further. Data from the German Labour Force Survey does—at least for the recent past—not show a clear indication for a much greater speed with respect to changes in the composition of work arrangements. For this reason institutional changes should also not be overestimated as a potential driving force. Nevertheless, there are obviously two exemptions where we did observe temporary effects. Immediately after implementing the new legislation in 2003, agency work and marginal part-time employment increased sharply which can be mainly related to institutional changes. However, after these immediate effects of the reform the speed of growth decreased or came to an end. One explanation might be that the additional (institutional) incentives were partly or even

fully compensated by an improvement of the overall labour market situation implying a rebalancing of market power and limits of growth.

Future developments of work arrangements are not at all determined which is due to the various factors which may possibly drive the change. Such determinants do not only include further institutional reforms, e.g. regarding the role of the male bread winner model, but also ongoing changes in the relative market power of the parties involved. Due to the improved labour market performance in Germany in recent years firms are increasingly confronted with a higher competition regarding highly educated youngsters and, in general, highly skilled workers. This may strengthen the role of standard work arrangements in the long run for these groups of workers.

Kurzfassung

Nach der Wiedervereinigung durchlief Deutschland eine schwierige Phase mit Blick auf die Entwicklung von Wirtschaft und Arbeitsmarkt. Schwaches Wirtschaftswachstum und eine ungünstige Beschäftigungsentwicklung prägten lange Zeit das politische Tagesgeschäft. Seit 2005 änderte sich das Bild substantiell. Die Wirtschaft kam wieder in Fahrt, die Erwerbstätigkeit stieg kontinuierlich und die Arbeitslosigkeit sank Zug um Zug. In den letzten beiden Dekaden zeigte sich jedoch daneben auch ein Wandel der Erwerbsformen. Atypische Erwerbsformen wie Teilzeitbeschäftigung, befristete Beschäftigung oder auch Leiharbeit gewannen an Bedeutung. Im Gegensatz dazu verlor das sog. „Normalarbeitsverhältnis“ – definiert als unbefristetes Dauerbeschäftigungsverhältnis außerhalb der Zeitarbeitsbranche – an Boden.

Der Vergleich zu anderen Ländern in der westlichen Welt zeigt, dass Deutschland diesbezüglich in zweifacher Hinsicht ein interessanter Fall ist. Erstens weisen international verfügbare Daten aus, dass in Deutschland atypische Erwerbsformen vergleichsweise stark vertreten sind. Zweitens ist Deutschland auch deshalb von Interesse, weil atypische Erwerbsformen dort kräftiger gewachsen sind als in den meisten anderen Ländern der westlichen Welt.

Angesichts der jüngeren Entwicklungen stellt sich jedoch generell die Frage, was hinter dem kräftigen Wachstum atypischer Erwerbsformen in Deutschland stehen könnte. Der Beitrag dieser Studie liegt in der Analyse der wesentlichen Treiber der beobachteten Entwicklungen. Insbesondere wird dabei den Effekten von strukturellen Veränderungen in der Zusammensetzung der Erwerbstätigkeit nach Sektoren, Geschlecht, Alter und formaler Qualifikation auf den Wandel der Erwerbsformen nachgegangen. Zusätzlich wird diskutiert, inwieweit deutsche Arbeitsmarktinstitutionen spezifische Anreize zur Nutzung atypischer Erwerbsformen gesetzt haben könnten. In diesem Kontext

wird auch die Phase nach dem umfassenden Arbeitsmarktreformen ins Blickfeld genommen und danach gefragt, ob sich seitdem das Tempo des Wandels der Erwerbsformen entscheidend beschleunigt hat.

Das wesentliche Ergebnis der Studie besteht darin, dass die Effekte einer veränderten Zusammensetzung der Erwerbstätigkeit mit Blick auf den Wandel atypischer Erwerbsformen nicht überschätzt werden dürfen. Shift-Share-Analysen legen nahe, dass sich der Großteil der Veränderungen auch dann eingestellt hätte, wenn die strukturelle Zusammensetzung der Erwerbstätigkeit nach Sektoren und demographischen Gruppen konstant geblieben wäre. Das heißt, dass Veränderungen in bestimmten Sektoren oder innerhalb bestimmter demographischer Gruppen wichtiger waren als zwischen diesen. Faktoren, die sich auf das Verhalten der Wirtschaftssubjekte beziehen, spielten deshalb offenbar eine entscheidende Rolle. In diesem Zusammenhang ist es von Bedeutung, dass Deutschland ein Land ist, das durch seine Arbeitsmarktregulierungen Anreize zur Nutzung atypischer Erwerbsformen setzt. Von Bedeutung sind hier die hohen Sozialversicherungsbeiträge, ein relativ strikter Kündigungsschutz, die zuletzt stärkere Aktivierung von Arbeitslosen und die noch immer starke Dominanz des „Ernährermodells“.

Die umfassenden Arbeitsmarktreformen („Hartz-Reformen“) zu Beginn der letzten Dekade haben aber offenkundig nicht zu einer massiven und allgemeinen Beschleunigung des Wachstums atypischer Erwerbsformen geführt, wie aus Daten des Mikrozensus hervorgeht. Aus diesem Grund darf die Rolle institutioneller Regelungen als Treiber des Wandels der Erwerbsformen auch nicht überschätzt werden. Gleichwohl finden sich zwei Ausnahmen. Denn sowohl die geringfügige Beschäftigung als auch die Zeitarbeit legten unmittelbar nach entsprechenden Gesetzesänderungen im Zuge der Arbeitsmarktreformen in den Jahren ab 2003 zunächst kräftig zu. Nach diesen Einführungseffekten stellte sich aber eine Verlangsamung des Wachstums und in Teilen sogar Stagnation hinsichtlich beider Beschäftigungsformen ein. Eine Erklärung hierfür könnte sein, dass die institutionellen Effekte ganz oder teilweise durch Marktkräfte kompensiert wurden. Denn die verbesserte Beschäftigungssituation hat auch in einem gewissen Umfang zur Neujustierung der Marktmacht zwischen den Wirtschaftssubjekten geführt.

Zukünftige Entwicklungen der Erwerbsformen sind deshalb keinesfalls determiniert, vor allem weil unterschiedlichste Faktoren wirksam werden können. Dabei ist nicht nur an institutionelle Änderungen wie der abnehmenden Bedeutung des Alleinernährermodells zu denken, sondern auch an weitere Veränderungen der Marktmacht. Aufgrund der verbesserten Beschäftigungssituation in den letzten Jahren wurden Betriebe in den letzten Jahren immer häufiger mit

einem wachsenden Wettbewerb um junge und qualifizierte Fachkräfte konfrontiert. Verstärkt durch den demographischen Wandel, speziell kleiner werdender junger Kohorten, könnten Knappheitssituationen dazu führen, dass das “Normalarbeitsverhältnis” zumindest für diese Gruppen wieder an Bedeutung gewinnt.

Acknowledgements The author thanks anonymous referees for valuable comments and Pia Klotz, Dominika Swoboda und particularly Carina Himself for technical assistance.

Appendix

Table 2 Categorization of work arrangements

Standard Work Arrangements:

- Self-employed
- Permanent workers with working hours of more than 31h a week (excl. agency workers)

Nonstandard Work Arrangements:

- Part-time workers with working hours of less than 32 h a week (not including “marginal” part-time workers, but including part-time agency workers and part-time workers employed on a fixed-term basis)
- “Marginal” part-time workers (without multiple job holders, because they are already counted in their main type of employment)
- Fixed-term contracts with working hours of more than 31h a week
- Agency workers with working hours of more than 31h a week and working on a permanent basis
- One-person-businesses

Specific Work Arrangements:

- Apprentices
- Related family workers
- Soldiers, persons working in alternatives to military services, others

Table 3 Composition of employment by different work arrangements in 1991, 2001 and 2011

	In thousands			% of total employed		
	1991	2001	2011	1991	2001	2011
<i>Standard-Work Arrangements</i>	26505	23372	22987	71.5	63.5	57.7
Self-employed workers	1641	1811	1880	4.4	4.9	4.7
Permanent workers (>31 h/W) ^a	24864	21561	21107	67.1	58.6	52.9
<i>Non-Standard-Work Arrangements</i>	7949	10917	14710	21.5	29.7	36.9
Part-time workers (<32 h/W) ^b	4070	4807	5969	11.0	13.1	15.0
“Marginal” part-time workers	973	2324	3864	2.6	6.3	9.7
Fixed-term contracts (>31 h/W) ^c	1486	1701	2004	4.0	4.6	5.0
Agency workers (>31 h/W) ^d	102	264	497	0.3	0.7	1.2
One-person-businesses	1318	1821	2376	3.6	4.9	6.0
<i>Specific Work Arrangements</i>	2602	2529	2172	7.0	6.9	5.4
Apprentices	1554	1568	1611	4.2	4.3	4.0
Soldiers, alternatives to military services, others ^e	595	520	338	1.6	1.4	0.8
Related family workers	453	441	223	1.2	1.2	0.6
<i>Total, in percentages</i>				100.0	100.0	100.0
<i>Total, in thousands</i>	37056	36818	39869			

^aExcluding agency workers

^bIncluding fixed-term contracts and agency workers

^cIncluding agency workers

^dExcluding fixed-term contracts and part-time workers. Because of missing data the share of agency workers employed on a part-time basis needed to be estimated for the period 1991 to 1996. We assume a share of 2 %. The share of agency workers employed on a temporary basis is also estimated. According to indications by the agency industry different shares are assumed: 25 % for the period 1991 to 2003 and 33,3 % for the period 2004 to 2010

^eIncluding workers who do indicate whether their contract is on a permanent or temporary basis

Source: Destatis 2012 (Labour Force Survey); Federal Employment Agency; own calculations

Table 4 Composition of employment by different work arrangements and gender in 1991 and 2011, in % of total employed

	Women		Men	
	1991	2011	1991	2011
<i>Standard Work Arrangements</i>	56.8	42.2	82.0	70.9
Self-employed workers	2.2	2.5	6.0	6.6
Permanent workers (>31 h/W) ^a	54.6	39.7	76.0	64.3
<i>Nonstandard Work Arrangements</i>	36.1	52.8	11.0	23.3
Part-time workers (<32 h/W) ^b	24.5	28.2	1.3	3.7
“Marginal” part-time workers	4.7	14.8	1.1	5.4
Fixed-term contracts (>31 h/W) ^c	4.2	4.6	3.9	5.4
Agency workers (>31 h/W) ^d	0.2	0.7	0.4	1.7
One-person-businesses	2.5	4.6	4.3	7.1
<i>Specific Work Arrangements</i>	7.0	5.0	7.0	5.8
Apprentices	4.6	3.9	3.9	4.2
Soldiers, alternatives to military services, others ^e	0.0	0.3	2.7	1.3
Related family workers	2.5	0.8	0.3	0.3
<i>Total, in percentages</i>	100.0	100.0	100.0	100.0
<i>Total, in thousands</i>	15.415	18.370	21.641	21.499

^aExcluding agency workers^bIncluding fixed-term contracts and agency workers^cIncluding agency workers

^dExcluding fixed-term contracts and part-time workers. Because of missing data the share of agency workers employed on a part-time basis needed to be estimated for the period 1991 to 1996. We assume a share of 2 %. The share of agency workers employed on a temporary basis is also estimated. According to indications by the agency industry different shares are assumed: 25 % for the period 1991 to 2003 and 33,3 % for the period 2004 to 2010

^eIncluding workers who do indicate whether their contract is on a permanent or temporary basis

Source: Destatis 2012 (Labour Force Survey); Federal Employment Agency; own calculations

Table 5 Composition of employment by different work arrangements and age groups in 1991 and 2011, in % of total employed

	15–24		25–44		45–54		55+	
	1991	2011	1991	2011	1991	2011	1991	2011
<i>Standard Work Arrangements</i>	56.0	27.4	75.1	61.0	75.0	63.9	70.2	58.5
Self-employed workers	0.6	0.3	3.9	3.8	6.0	6.0	9.2	7.6
Permanent workers (>31 h/W) ^a	55.4	27.1	71.2	57.1	69.0	57.9	61.0	50.9
<i>Nonstandard Work Arrangements</i>	12.2	36.7	22.7	37.0	23.1	35.1	25.6	39.6
Part-time workers (<32 h/W) ^b	3.0	5.9	12.2	15.7	13.9	17.4	10.6	14.9
“Marginal” part-time workers	2.0	15.8	2.5	7.8	2.3	7.7	5.1	13.7
Fixed-term contracts (>31 h/W) ^c	6.0	11.8	4.2	6.3	2.9	2.4	2.5	1.7
Agency workers (>31 h/W) ^d	0.5	2.1	0.3	1.5	0.1	0.9	0.1	0.6
One-person-businesses	0.7	1.1	3.5	5.7	3.9	6.6	7.4	8.7
<i>Specific Work Arrangements</i>	31.8	35.9	2.1	2.1	1.8	1.0	4.2	1.9
Apprentices	24.8	32.9	0.4	0.9	0.1	0.1	0.0	0.0

Table 5 (Continued)

	15–24		25–44		45–54		55+	
	1991	2011	1991	2011	1991	2011	1991	2011
Soldiers, alternatives to military services, others ^c	6.5	2.7	0.9	0.9	0.4	0.4	0.1	0.2
Related family workers	0.4	0.3	0.8	0.2	1.4	0.5	4.1	1.6
<i>Total, in percentages</i>	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
<i>Total, in thousands</i>	5.920	4.381	18.574	17.484	8.682	11.029	3.881	6.975

^aExcluding agency workers^bIncluding fixed-term contracts and agency workers^cIncluding agency workers

^dExcluding fixed-term contracts and part-time workers. Because of missing data the share of agency workers employed on a part-time basis needed to be estimated for the period 1991 to 1996. We assume a share of 2 %. The share of agency workers employed on a temporary basis is also estimated. According to indications by the agency industry different shares are assumed: 25 % for the period 1991 to 2003 and 33,3 % for the period 2004 to 2010

^eIncluding workers who do indicate whether their contract is on a permanent or temporary basis

Source: Destatis 2012 (Labour Force Survey); Federal Employment Agency; own calculations

Table 6 Composition of employment by different work arrangements and skill level in 1991 and 2011, in % of total employed

	Unskilled workers		Workers with a vocational degree		Academics	
	1991	2011	1991	2011	1991	2011
<i>Standard Work Arrangements</i>	55.9	29.1	77.1	62.8	76.3	66.0
Self-employed workers	3.1	2.3	4.4	4.5	7.8	7.8
Permanent workers (>31 h/W) ^a	52.9	26.8	72.7	58.3	68.5	58.2
<i>Nonstandard Work Arrangements</i>	25.3	47.0	19.7	35.3	22.3	33.2
Part-time workers (<32 h/W) ^b	12.6	13.1	10.6	16.1	9.2	12.7
“Marginal” part-time workers	4.5	21.8	2.0	8.3	1.6	3.4
Fixed-term contracts (>31 h/W) ^c	4.2	5.9	3.5	4.3	6.8	6.7
Agency workers (>31 h/W) ^d	0.3	2.3	0.3	1.2	0.1	0.3
One-person-businesses	3.7	3.9	3.3	5.4	4.8	10.0
<i>Specific Work Arrangements</i>	18.8	23.9	3.1	1.9	1.4	0.9
Apprentices	14.4	21.7	0.6	0.6	0.3	0.2
Soldiers, alternatives to military services, others ^e	1.7	1.3	1.7	0.8	0.9	0.5
Related family workers	2.7	0.9	0.8	0.6	0.2	0.2
<i>Total, in percentages</i>	100.0	100.0	100.0	100.0	100.0	100.0
<i>Total, in thousands</i>	9.658	6.717	23.516	26.173	3.882	6.980

^aExcluding agency workers^bIncluding fixed-term contracts and agency workers^cIncluding agency workers

^dExcluding fixed-term contracts and part-time workers. Because of missing data the share of agency workers employed on a part-time basis needed to be estimated for the period 1991 to 1996. We assume a share of 2 %. The share of agency workers employed on a temporary basis is also estimated. According to indications by the agency industry different shares are assumed: 25 % for the period 1991 to 2003 and 33,3 % for the period 2004 to 2010

^eIncluding workers who do indicate whether their contract is on a permanent or temporary basis

Source: Destatis 2012 (Labour Force Survey); Federal Employment Agency; own calculations

Table 7 Composition of employment by different work arrangements and economic sectors in 1991 and 2011, in % of total employed

	Primary sector		Secondary sector		Tertiary sector	
	1991	2011	1991	2011	1991	2011
<i>Standard Work Arrangements</i>	60.0	48.3	82.9	75.7	65.3	52.5
Self-employed workers	4.8	12.1	3.5	3.9	5.0	4.8
Permanent workers (>31 h/W) ^a	55.2	36.2	79.3	71.8	60.2	47.6
<i>Nonstandard Work Arrangements</i>	22.1	33.0	12.1	19.0	27.6	42.4
Part-time workers (<32 h/W) ^b	3.6	4.9	5.7	6.4	15.6	18.6
“Marginal” part-time workers	1.9	6.4	1.4	4.4	3.6	11.9
Fixed-term contracts (>31 h/W) ^c	3.7	2.7	3.6	4.8	4.4	5.2
One-person-businesses	12.9	19.0	1.4	3.3	4.0	6.7
<i>Specific Work Arrangements</i>	17.9	18.7	5.1	5.3	7.2	5.2
Apprentices	3.1	3.2	4.9	4.8	3.8	3.8
Soldiers, alternatives to military services, others ^d	0.0	0.3	0.0	0.3	2.9	1.1
Related family workers	14.8	15.2	0.2	0.2	0.4	0.3
<i>Total, in percentages</i>	100.0	100.0	100.0	100.0	100.0	100.0
<i>Total, in thousands</i>	2.316	749	14.458	11.145	20.283	27.976

^aIncluding agency workers^bIncluding fixed-term contracts and agency workers^cIncluding agency workers^dIncluding workers who do indicate whether their contract is on a permanent or temporary basis

Source: Destatis 2012 (Labour Force Survey); Federal Employment Agency; own calculations

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