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Uberisation of Private Homes? Workplace Location and the Distribution of Workplace Costs Between Employers and Employees – the German Case**

Abstract

Digitalisation and the COVID-19 pandemic have increased the use of telework. Employees often use private resources for working from home (WFH). However, we know little about how employers and employees divide telework-related workplace costs, whether employees are burdened with workplace costs in a trend of 'Uberisation of private homes', or whether there are legal or economic reasons to have employees bear the workplace cost. We first analyse Germany's legal framework. Second, we estimate the compositions and levels of workplace costs in different scenarios. We then analyse the allocation of workplace costs from the perspectives of the de facto legal situation, risk allocation and preference matching. We show that, for the most common telework types, the assumption of costs is insufficiently regulated. In practice, there is often only an implicit understanding that employees bear the workplace costs – which runs partly against the legal framework. Cost assumption by employees is efficient only in special conditions – if the employee is free to decide on workplace location and thus whether telework is voluntary. We advocate an obligation to conclude an agreement on whether the employer or the employee decides on the workplace location, whether the employer will reimburse (parts of) the workplace costs, and, if so, which parts of the costs will be borne. Such an agreement would make workplace cost negotiation mandatory, reduce uncertainty, and help improve preference matching, thereby increasing the efficiency of spatial workplace organisation.

Keywords: telework, work from home, WFH, workplace costs, workplace location, uberisation
(JEL: K12, L51, J53, M54, M55)

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Introduction

"The delivery service and Uber model, which forces dependent employees to use their privately-owned property or premises as a means of production for their work, will become more widespread [...] the home has always been a place to try out and invent new forms of exploitation." (Speck, 2020, 139f; translated by the authors)

Questions of workplace localisation, workplace costs and who bears these costs are again becoming highly topical for different reasons and under different perspectives:

In *business practice*, owing to the COVID-19 pandemic, many employees are or were working from home (WFH) for reasons of occupational health and safety (OHS). Further, companies nowadays often consider the long-term relocation of workplaces to their employees' homes (Backhaus et al., 2020) and (plan to) reduce office space (Kunze & Zimmermann, 2022), and thus plan to provide workplace on business premises for only a fraction of their employees. For instance, Siemens (2020) stated in a media release that *"presence times in the office [...] should complement mobile working"* and not vice versa. In other words, there are signs that the widespread culture of *presence* in the workplace at business premises is partially fading and that mobile work will increase. Additionally, workplace costs are rising with rising energy costs owing to the war in Ukraine.

There is also a growing interest in this topic in *politics*: Already in 2018, the coalition agreement between Germany's previous government (2017 to 2021) had the goal of creating a legal framework for mobile work. However, a corresponding legislative initiative was only launched at the end of 2020 or early 2021 in the wake of the COVID-19 pandemic, yet this draft law on mobile work was not passed (Bundesministerium für Arbeit und Soziales, 2021). In October 2020, a working group of the CDU/CSU parliamentary group proposed a law to facilitate mobile working (Arbeitskreis "Zukunft der Arbeit" der CDU/CSU Bundestagsfraktion, 2020); this draft addresses issues such as working time, OHS, accident insurance protection, and the tax treatment of workplace costs. However, the assumption of workplace costs under WFH was not covered. Further, the legislature had temporarily introduced a pandemic-related obligation to WFH (Corona-ArbSchV in the version of 21.01.2021/ Corona Occupational Health and Safety Regulation; IfSG/ Infection Protection Act), although this has since expired. A new right of works councils to codetermine the design of mobile work (§ 87 (1) No. 14 BetrVG/ Works Constitution Act) was introduced. In 2021, mobile working and WFH were defined for the first time in the – meanwhile repealed – SARS-CoV-2 OHS regulation (Health and safety committees at BMAS, 2021). Finally, if the recent coalition agreement between the SPD, BÜNDNIS 90/ DIE GRÜNEN and FDP (2021) prevails, employees in suitable jobs could soon have a right to discuss mobile working and WFH with their employer.

In *research*, there are also several debates about the effects of the spatial organisation and location of workplaces and their effects. These debates are embedded

in two larger trends: the 'spatial turn' has long been the subject of social and cultural science discussions (Döring & Thielmann, 2009; Sydow, 2004), and 'Entbetrieblichung' (dissolving the firm's borders and lowering the importance of the business as the workplace) is a long-standing topic in business administration (see e.g. Picot et al., 2020; Piore & Sabel, 1989; Sydow, 2004, 2005). There are several strands of discussion on WFH in these trends, for instance, on spatial effects in work relationships as well as the risks and benefits of WFH (Arntz & Yahmed, 2020; Bellmann & Hübler, 2020; Bloom et al., 2015; Church, 2015; Diewald & Nebe, 2020; Gabler et al., 2021; Kazekami, 2020; Kurowska, 2020; Nakrošienė et al., 2019; Palumbo, 2020; Vries et al., 2019), on territoriality in organisations (Brown et al., 2005), on identity-affirming office spaces and productivity (Greenaway et al., 2016), on privacy at work (Bhave et al., 2020), on workplace designs' health effects (De Croon et al., 2005; Oommen et al., 2008; Richardson et al., 2017), and on space's role for networks (Sydow, 2004, 2005). Telework as a type of spatial localisation of workplaces outside company premises has also been examined in terms such as telecommuting and in relation to traffic flow sustainability (Cerqueira et al., 2020; Melo & de Abreu e Silva, 2017; Nilles, 1988) and work-family balance (Bellmann & Hübler, 2021; Gajendran & Harrison, 2007; Kurowska, 2020; van der Lippe & Lippényi, 2020). Besides WFH, satellite and neighbourhood offices and coworking spaces are emerging as the sharing economy develops, and these new types of distributed work and office concepts are also attracting research attention (Bueno et al., 2018; Lashani & Zacher, 2021; Matiaske & Seifert, 2021; Orel, 2019; Weijs-Perrée et al., 2019).

To date, the positive effects of mobile work and WFH for employees and for society have strongly dominated the debate, as have the questions of how employers can be motivated to grant more WFH solutions or more spatial flexibility to their employees and to help relieve the negative effects of commuting on both cities and the environment. In this perspective, WFH is often interpreted as a benefit that the employer grants to a specific and privileged group of employees, and employees can voluntarily choose to accept or decline and often have a preference for WFH (Bathini & Kandathil, 2015). Given that specific employee groups cannot WFH because their tasks do not allow it, while others are not allowed to WFH owing to decisions by their employers, WFH as a benefit involves many aspects of employee preferences and of fairness and justice regarding who is (not) allowed to WFH. To the best of our knowledge, much more research has been done on employee preferences than on justice and fairness aspects (Bakaç et al., 2021; Kurland & Egan, 1999; Mokhtarian & Bagley, 2000; Nguyen & Armoogum, 2021; Peters et al., 2004; Praga et al., 2022; Stanek & Mokhtarian, 1998).

But, we now see a marked shift in key actors' motivations – many employers have learnt to value their employees' performance in remote work and have discovered mobile work's potential for reducing workplace costs. The high rental of business premises and energy costs could be reduced in light of the often positive experiences

with WFH during the pandemic. Thus, many companies are developing new workplace management strategies (Horch, 2022). However, these strategies may often lead to a situation where WFH is no longer completely voluntary but is partly mandated and managed by the companies via systems that no longer provide a workplace for every employee.

Further, companies' frequent past use of open-plan offices – despite their negative effects on employee health and well-being (De Croon et al., 2005; Oommen et al., 2008; Richardson et al., 2017) – suggests that cost-cutting considerations may have long dominated other aspects of spatial office organisation in companies' decisions – and may do so in future. Thus, such cost considerations may also play a decisive role in decisions on WFH and new spatial work types. By relocating workplaces to employees' homes, thereby occupying their private (spatial) resources, employers may shift workplace costs to their employees. Speck (2020, 139f.; translated by the authors) states: *"The delivery service and Uber model, which forces dependent employees to use their privately-owned property or premises as a means of production for their work, will become more widespread [...] the home has always been a place to try out and invent new forms of exploitation."* Such cost considerations are becoming empirically even more important with rising rents and rising energy costs; thus, topical aspects besides the pandemic and OHS will keep workplace costs topic relevant in future.

However, previous research has paid little attention to the effects associated with *mandated* or *involuntary* WFH solutions. For instance, little research has looked at the effects that arise if the employer no longer provides a workplace on business premises for every employee or if – as in the pandemic – it provides a workplace, but employees are not allowed to work there for OHS reasons. In such constellations, employees may be forced to use their private resources to work instead of working with their employer's equipment – in short, there is an aspect of the 'Uberisation of private homes' and 'Entbetrieblichung' of workplaces in WFH solutions. In this perspective, workplace costs and who must bear them become a key topic, as with this shift in workplaces from business premises to private homes, workplace costs are shifted to the private sphere of employees. Space- and workplace-related costs, previously part of employers' production costs, are shifted into the private sphere of employees.

We will now focus primarily on this aspect of WFH – the assumption of workplace costs. Thus, we do *not* tie in with general discussions on the risks and benefits of WFH or on justice and fairness considerations for different employee groups who may (not) be able to WFH, concentrating instead on the aspect of workplace costs and who must bear them in Germany under differing WFH constellations – and thus contribute to a perspective on WFH not as a benefit, but as part of Uberisation trends.

To date, the underlying question of what constitutes fair and economically efficient sharing of workplace costs between employers and employees has barely been

addressed. In *politics and law*, workplace costs and their assumption by employers and employees have not been a major issue in the recent debates on WFH regulations. For instance, Germany's employers' association has not yet seen any need for statutory regulation on the assumption of workplace costs by employers (BDA, 2020). German politicians have even proposed that firms should send their employees to WFH in order to save energy costs (Slavik, 2022). Occasionally, there are even general demands that employees who WFH should accept salary cuts owing to the hedonic utility of WFH (Grant et al., 2020) or that employers should pay a penalty tax (Möbert & Schattenberg, 2020). Studies (Barrero et al., 2021; Kunze et al., 2021) show that a small number of workers would take pay cuts for the opportunity to WFH. Other researchers have already tested hypotheses on such negative wage differentials concerning WFH, and often found positive wage differentials instead (Gariety & Shaffer, 2007; Rupietta & Beckmann, 2018). In contrast, Lott et al. (2021) discuss employees' right to mobile work, and posit cost assumption by employers. However, to the best of our knowledge, the authors did not scrutinise legal regulations or cost-sharing instruments in these research papers and provided no arguments for why employees or employers should bear workplace costs under what conditions.

In sum, we know little about the levels and structures of workplace costs. The same is true regarding the legal situation in Germany, which is fragmented and unclear on this topic. Further, the reasons for employers or employees bearing costs are still blurry. As the distribution of workplace costs for different (tele)working types is both topical and relevant for business practice, scientific research, and politics, it is surprising that more systematic analyses of the legal and economic status quo relating to workplace costs and their distribution have received so little attention (yet, see Beenken et al., 2020; Keilich & Brummer, 2020; Müller, 2020; Polak, 1998; Temming, 2020). We contribute by

1. *describing and discussing legal stipulations on the assumption of workplace costs in Germany,*
2. *estimating workplace costs for different scenarios to allow a first and broad orientation about the levels and structures of such costs in Germany,*
3. *analysing efficiency reasons for cost-bearing by one (or both) of the two parties to the employment contract and*
4. *discussing approaches and instruments for cost-sharing between an employer and employees.*

We proceed as follows: In Chapter 2, we define the key terms and outline the existing legal regulations on the sharing of workplace costs between employers and employees in Germany. In Chapter 3, we provide an overview of the components of workplace costs and estimate their levels in different scenarios. In Chapter 4, we discuss the allocation of workplace costs between employees and employers in the

current legal framework, as well as instruments for cost-sharing. In Chapter 5, we conclude and provide limitations and a research outlook.

The Conceptual and Legal Framework of Telework and the Assumption of Workplace Costs

Telework and the Right to Decide on Workplace Location

If we define telework as any type of digitally supported screen-based work in which employees are physically separated yet digitally connected, we may differentiate telework types along possible *work locations*:

1. Telework can (hypothetically) be done *at a company site* where employees work in digitally interconnected ways, regardless of whether they are sitting next door to one another, on extensive company premises in separate offices, at different company locations, or in hybrid (tele)work types. However, telework is usually applied only to remote work, not to on-site work. We follow this delineation.
2. Telework can take place in various more or less *public places outside the employer's central premises* – places that are either primarily designed and equipped as workplaces (such as coworking spaces, customer locations or service vehicles) or other places that do not primarily serve the purpose of work (e.g. trains, parks and cafés).
3. Telework can take place *at the employee's home*.

In Germany, employers generally have the right to determine the place of work (§ 106 GewO/ Trade Regulation). So far, there is no general legal right of employees to determine their own place of work, although such a right has often been discussed (BDA, 2020; Lott et al., 2021). As mentioned, according to the recent coalition agreement, the plan is to give employees the right to discuss mobile working and WFH – and, thus, the place of work – with their employers (SPD, BÜNDNIS 90/ DIE GRÜNEN and FDP, 2021). Individual or collective agreements may give employees more extensive rights to decide where to work. In practice, such agreements are rare (Müller, 2020; Vogl & Nies, 2013), and existing individual or collective agreements seem to confer neither a right nor an obligation on employees to telework (Behörde für Arbeit, Soziales, Familie und Integration, 2018; Vogl & Nies, 2013).

However, according to § 106 GewO, there may be an obligation to work outside the usual business premises. The employer may oblige an employee to work at the customer's premises or at another company location, but usually¹ not to WFH, since this violates the fundamental right of inviolability of the employee's home (Article 13 of Germany's Constitution). However, as an exception during the pan-

¹ According to § 241 (2) BGB, § 242 BGB (Civil Code), the right of direction can be extended in crisis situations (Krieger et al., 2020)

demic, WFH temporarily became more or less mandatory for office employees through regulation and law (§ 2 (4) Corona-ArbschV, version from 21.01.2021, § 28b (7) IfSG, version from 23.04.2021, § 28b (4) IfSG, version from 22.11.2021).

Different Telework Types: Legal Definitions and a Legal Framework

Home-Based Telework or WFH

Home-based telework covers all telework types in which people occasionally or permanently WFH. There are two primary telework types:

WFH According to § 2(7) ArbStättV

Teleworkstations are legally defined in the Workplace Ordinance (ArbStättV) of 2016; this provides a very narrow definition of telework:

- The employees' private sphere is specified as the work location,
- the employer must set up the workplace and
- there must be an employment contract or a formal agreement that regulates the conditions of telework.

WFH Without the Employer Setting up a Workplace

In practice, the conditions for telework, according to the ArbStättV, are rarely met (BDA, 2020; Wiebauer, 2017). First, the employer does not regularly set up the domestic workplace; second, there is often no formal agreement. Spielberger's (2020) findings indicate that employees and supervisors often agree only informally on WFH. We call this telework type *WFH without the employer setting up a telework workplace*. Such a workplace can also be a self-chosen workplace in the context of mobile working.

Mobile Working or Multi-site Teleworking

It was not until the recent amendment to the Works Constitution Act (BetrVG) that mobile working or multi-site telework was defined by law in a simple way: "*[...] mobile work which is performed by means of information and communication technology*" (§ 87 (1) No. 14 BetrVG). However, there are more precise definitions in both the literature (e.g. Daniels et al., 2001; Garrett & Danziger, 2007; Messenger & Gschwind, 2016; Tremblay & Thomsin, 2012), in the expired SARS-CoV-2 OHS regulation (Health and safety committees at BMAS, 2021) and in practice (e.g. in company agreements). Most definitions agree that, first, mobile working is location-flexible and is not tied to a single workplace in the employee's home. Second, most definitions of mobile work agree (more or less implicitly) on the *employee's right to decide where to work*, yet some definitions leave the decision to the employer (Bundesministerium für Arbeit und Soziales, 2021).

Applicable Regulations

The strict legal regulations of the Workplace Ordinance regarding risk assessment (§ 3 ArbStättV), instruction of employees (§ 6 ArbStättV) and the regulations on screen-based work (appendix No. 6 ArbStättV) apply to WFH according to the ArbStättV only. In contrast, the Occupational Safety and Health Act (ArbSchG) and the Working Time Act (ArbZG) are mandatory for all telework types, although OHS requirements are probably only ensured at workplaces such as coworking spaces (Matiaske & Seifert, 2021).

Service and company agreements on mobile working/WFH apply to around half the employees, but in many cases, there are still only informal agreements (Institut DGB-Index Gute Arbeit, 2021).

Who Must Bear Workplace Costs According to Legal Regulations?

Who must bear workplace costs is regulated very differently for the various telework types.

For telework as defined by the Workplace Ordinance, § 2 (7), *ArbStättV* states that the employer sets up the workplace and therefore bears the setup costs (e.g. the costs of furniture and electronic devices). However, it is possible to voluntarily use appropriate equipment provided by or available to the employee to set up a telework station (Ausschuss für Arbeitsstätten, 2017). The employer does not have to bear the workplace's running costs (e.g. the proportional rent, electricity and/or telecommunications costs).

For all other telework types, neither the assumption of setup nor of running costs by the employer is stipulated. However, for such costs, employees may derive a claim for reimbursement from § 670 BGB (German Civil Code; translation by the authors): *"If the agent makes expenses for the purpose of executing an order which he may consider necessary under the circumstances, the principal must reimburse these"*. The Federal Labour Court (BAG, 2003, 2011, 2013) interprets the condition such that the employee may consider these expenses to be necessary only if the employer's interest in telework outweighs the employee's interest in telework or if there is a special agreement that affirms that the employer bears the costs.

Thus, in many cases, the employee cannot claim reimbursement of workplace costs, for instance, if their interest in telework predominates. If the employer leaves it up to employees to decide where they work – which regularly presupposes the existence of a company workplace – *"this is an important indication that the employee's interests in setting up and maintaining a home-based office outweighs the employer's interest"* (BAG, 2011), then the employer only has to reimburse the workplace costs if there is a corresponding agreement (BAG, 2011). Further, the employer does not have to bear the costs if collective agreements exclude the reimbursement of workplace costs. In company and service agreements on mobile working available to us, the

employer's assumption of costs is mostly limited to the provision of a mobile device. In many cases, however, so-called 'Bring Your Own Device' (BYOD) clauses are agreed on or in practice (Institut DGB-Index Gute Arbeit, 2020). For housing, electricity, and Internet use, 91% of employees are not reimbursed at all (and 5% are reimbursed to a small extent) (Institut DGB-Index Gute Arbeit, 2021).

However, during the pandemic, another legal regulation is relevant: *§ 3 ArbSchG* (Occupational Safety and Health Act) regulates that the employer must ensure the employee's OHS through appropriate measures (§ 618 BGB, § 3 (1) *ArbSchG*) and must provide the necessary means to implement such measures. The employer may generally not impose the costs of appropriate OHS measures on employees (§ 3 (2, 3) *ArbSchG*).

The Federal Ministry of Labour and Social Affairs (Bundesministerium für Arbeit und Soziales, 2020) explicitly lists WFH as a technical measure to prevent infection – and thus interprets it as an OHS measure to cope with the pandemic. Further, the Infection Protection Act (§ 28b (4) IfSG) temporarily included WFH as a measure to prevent the spread of COVID-19. Further, recent studies (Alipour et al., 2021; Gabler et al., 2021) showed that WFH can be a useful way to reduce infection rates. The employees' participation in the OHS costs is subject to the strict condition (Kothe, 2016; Wiebauer, 2017) that they derive benefits from telework that go beyond OHS concerns (Wiebauer, 2017). The employer or the works councils and social partners cannot override this OHS regulation by means of collective agreements. If one follows these interpretations, the employer would have to bear all workplace costs if employees WFH owing to a pandemic and are thus mandated by the employer or by the state. However, we do not yet know how the courts will legally evaluate the aspect of benefits beyond OHS concerns for telework during the pandemic.

Finally, the works council's right of co-determination in the design of mobile work has been strengthened by the recent introduction of a corresponding right of co-determination in the BetrVG (§ 87 (1) No. 14 BetrVG). Within this framework, works councils and employers can also reach agreements on the assumption of workplace costs.

Summary

In sum, (tele)work types differ regarding the obligation to bear workplace costs:

Table 1. Taxonomy of Spatial Types of (Tele)work

Characteristics of spatial work types	WFH as defined by the ArbStättV	WFH without the employer setting up a workstation	Mobile working	Traditional office work	
Terms in the literature and in practice	Telework(ing), telecommuting, remote work(ing), home office			Usually no special term; sometimes traditional office work	
	Home-based telework, working from home, home office, fixed-site telework			Mobile work(ing), mobile telework, flexi-work, multi-site tele-work(ing), mobile office, virtual office, 'work from anywhere', multilocal/multilocation work, hybrid work, 'new ways of work(ing)'	
Work location	The employee's home/ private sphere			External or third workplaces (e.g. coworking spaces, café, parc)	
The right to decide on the employee's place of work	Work location permanently fixed by a formal agreement	Often only informal regulations, sometimes formal regulations (e.g. in company or service agreements)	The employee's right to decide where they want to work is limited to the company premises and the employees' home	The employees decide where they work	Work location permanently fixed by a formal agreement (e.g. in the employment contract (§ 611a BGB) or work location fixed by the employer's right of instruction (§ 106 GewO))
	Temporarily during the pandemic: workplace location fixed to employees' homes by law (§ 28b (7) IfSG, version of 23.04.2021; § 28b (4) IfSG, version of 22.11.2021) and regulation (§ 2 (4) Corona-ArbSchV, version of 21.1.2021)				
Regulation for one-time setup costs	Employer, according to § 2 (7) ArbStättV	According to § 670 BGB, possibly according to § 3 ArbSchG, sometimes in formal agreements (e.g. in company and service agreements)		Employer	
Regulation for running costs	According to § 670 BGB, possibly according to § 3 ArbSchG, sometimes in formal agreements (e.g. in company and service agreements)			Employer	

As we have seen, the assumption of workplace costs is only clearly regulated by law for a very specific teleworking type (ArbStättV). For all other telework types, as well as for the running costs of telework according to ArbStättV, there are no such clear regulations on the assumption of costs by the employer. Here, legal regulations

come into play that consider the decision right on the place of work and/or involve a balancing of employer-employee interests. As a basic rule, a coupling of decision rights/prevailing interests and cost-bearing emerges. Thus, the assumption of costs is primarily negotiable between employer and employees and/or their representative bodies. Notably, in the current legal situation, employers have the incentive to subsume off-site telework (including WFH) under the heading of mobile working so that the legal obligations under ArbStättV do not apply. Thus, we assume that, in practice, a significant proportion of individual and collective agreements come under the heading of mobile working even if regular WFH is practised throughout – and that the assumption of workplace costs by the employer is the exemption rather than the usual case.

Thus, the structures and the levels of workplace costs, as well as the room for negotiation between employer and employees, are relevant for the solutions in business practice. We now look at this room for negotiations and ask which cost components of what size are relevant and what potential solutions could look like.

The Structures and Levels of Workplace Costs

Components of Workplace Costs

The various components of (material)² (tele)workplace costs include the costs of office furniture, technical equipment and connections, office supplies and rooms (and mobility).

The Costs of Office Furniture

Office furniture usually comprises a desk, a desk chair, a desk lamp and storage shelves. According to Statista (2022), the average per capita cost of office furniture in 2022 was around €48 (desk and desk chairs: €40; bookshelves and cabinets: €8), and costs are rising.

The Costs of Technical Devices and Connections

Equipping and connecting a (tele)workstation includes costs for hardware, electricity, Internet and telephone connection, software and other costs. The hardware includes Internet-capable devices such as laptops, PCs or tablets, and often additional devices (e.g. monitors, keyboards, docking stations, headsets). In the private customer segment, the average purchase price of a laptop in 2022 was €804 (desktop PC: €978; monitor: €257) (Consumer & Home Electronics and GfK, 2022). Electricity costs are incurred. Verivox (2020) puts the average cost of using a laptop at home, but for professional purposes, at €0.15 per working day, and the use of a desktop PC plus monitor at €0.50 per working day. Further, the employee's

2 We do not consider personnel costs such as wages to be workplace costs. Workplace costs refer primarily to the equipment and maintenance of workplaces.

digital connection requires an Internet and a telephone connection with appropriate bandwidth (optimal from 50Mbit/s). If such bandwidth is not already available in the employee's home, additional costs arise. With the German market leader Telekom (2023), the additional monthly costs (from the fourth contract month) for a 50 Mbit/s tariff compared to a 16 Mbit/s tariff amount to €5.00. Further, costs apply for appropriate software (e.g. operating systems, office applications, VPN software, collaboration tools, etc.), services (e.g. cloud storage, patch management) and support (e.g. setup, licence management, training). The total IT costs of a (teleworking) workplace are hard to quantify and depend on various factors, such as the scope and quality of the equipment/functionalities, duration of use or the number of users. According to Run my Accounts (2018), a provider of digital accounting for medium-sized companies, the average IT costs per workstation in efficiently managed companies are €200 per month.

The Costs of Office Supplies

Further, the provision of office supplies generates costs (mechanical devices such as hole punches and consumables such as toner and printing paper). This cost component is fairly low, although only 4% of office workers work paperless (Kyocera, 2019). As paperless working is expected to increase (Kyocera, 2019) in the wake of digitalisation, the costs of office supplies will continue to fall.

Room Costs

The main cost driver of a (tele)workplace is the room costs. According to Franke (2020), basic room costs (net rents) in the office market amount on average to 73% of the total costs for office space. The Federal Statistical Office cites similar figures for the residential market (Statistisches Bundesamt, 2019): In 2018, average office rentals (net cold, per m² per month) in the Big 7³ cities ranged from €14.10 in Stuttgart to €21.11 in Berlin. Overall, residential rents (net cold) are lower than in the office market. In 2018, the average net rent for Germany was €6.90/m²/month. The average monthly per m² rents again vary considerably between locations (Upper Bavaria: €10.30, Hamburg: €9.10, Berlin: €7.40, Chemnitz: €4.90). In the case of new leases, on average, significantly higher per m² monthly rents are demanded or realised (e.g. Munich: €16.40) (Colliers International, 2022; Feld et al., 2023; Feld et al., 2020). In addition to the per m² price, the room costs per (teleworking) workplace depend on its size. The minimum size per workplace is legally set at 6 m² (8 m²/room) (Bundesanstalt für Arbeitsschutz und Arbeitsmedizin, 2013). During the pandemic, at times, 10 m² was mandatory (§ 2 (5) Corona-ArbSchV, version of 21.01.2021). However, the average office space per salaried employee is 13.4 m² (for managers, even 32.6 m²) (Verband der Creativen Inneneinrichter, 2006, quoted in Franke, 2020). The total space costs also include additional room costs for

3 Berlin, Dusseldorf, Frankfurt, Hamburg, Cologne, Munich and Stuttgart.

operating and maintaining the rooms (e.g. maintenance costs, insurance, waste disposal). These account for about 27% of the total room costs (Franke, 2020).

Mobility Costs

The level of employees' mobility costs largely depends on their choice of transport mode and the commuting distance. The average commute in Germany between home and work is 10.5 km (rural residence: 13.2 km; urban residence: 8.8 km) (Dauth & Haller, 2018). With a lump sum of €0.30/km based on § 9 EStG (Income Tax Act), the average monthly commuting costs vary between €45.54 (urban residence) and €68.31 (rural residence).

Home-based Workplace Costs

Building on the preceding findings, we will now provide example estimates of total costs for a home-based workplace for various places of residence. We will only consider the costs of office furniture, technical devices, room costs, and mobility costs since these are either directly attributable to the workplace and/or appear to be significant regarding scope. Various cost scenarios are conceivable for WFH, of which we consider four as examples (Table 2): (1) a 'no-cost' or minimum-cost scenario, (2) a medium-cost scenario, (3) a high-cost scenario and (4) a maximum-cost scenario. These scenarios differ primarily regarding workplace location (cheaper vs more expensive location; short vs longer commute), equipment (BYOD vs employer-provided devices), and size (workstation vs workroom). The rationale for this is to give an idea of the range of costs associated with WFH.

The employee-side costs of a home-based workplace vary considerably both between and within locations. Despite the cost savings from eliminating commuting expenses, monthly costs can exceed €300 in some cases. The 'no-cost' scenario is likely to occur only rarely, i.e. if the employee lives in a rural region with low room and high mobility costs. However, in many cases, employees have noticeably higher costs, for instance, primarily owing to higher m^2 prices in urban areas and higher m^2 in general (57% of teleworkers have a workroom (Institut DGB-Index Gute Arbeit, 2021)). Thus, in many cases, WFH is likely to involve significant costs for employees.

Table 2. The Cost Scenarios of a Home-based Workplace From the Employee's Perspective

Cost scenario	No-cost or minimum-cost scenario	Medium-cost scenario	High-cost scenario	Maximum-cost scenario
Workplace characteristics	<i>Saxony-Anhalt</i> Rural residence, existing tenancy, workstation, employer provides devices	<i>Hamburg</i> Urban residence, existing tenancy, workstation, BYOD	<i>Hamburg</i> Urban residence, existing tenancy, workroom, BYOD	<i>Munich</i> Urban residence, new tenancy/leased rent, workroom, BYOD (desktop PC)
Costs of office furniture				
Provision of desk and desk chair	By employee			
Per capita expenditure p.a. (€) (Statista, 2022)	40	40	40	40
Per month (€)	3.33	3.33	3.33	3.33
Costs of technical devices				
Provision of devices	By employer		BYOD (ordinary useful life of three years) (Bundesministerium der Finanzen, 2000)	
Type of device	Laptop			Desktop PC/monitor
Average purchase price (€) (Consumer & Home Electronics and GfK, 2022)	0	804	804	1235
Per month (€)	0	22.33	22.33	34.31
Electricity costs for devices				
Per month (€) (Verivox, 2020)	2.59	2.59	2.59	2.59
Increase in bandwidth				
Per month (€) (Telekom, 2023)	5	5	5	5
Basic room costs				
Type of workspace	Workstation		Workroom	
Workplace size (m ²) (Bundesanstalt für Arbeitsschutz und Arbeitsmedizin, 2020; Franke, 2020)	6	6	13.4	13.4
Price per m ² (€) (Feld et al., 2020; Statistisches Bundesamt, 2019)	5.3	9.1	9.1	16.4
Price per month (€)	31.8	54.6	121.94	219.76
Additional room costs				
27% of the total space costs (Franke, 2020)	11.76		20.19	45.10
Per month (€)	11.76		20.19	45.10
Mobility costs				
Commuter rate per km (§ 9 EstG)	0.3	0.3	0.3	0.3
Commuting distance (km) (Dauth & Haller, 2018)	13.2	8.8	8.8	8.8
Per month (€)	68.31	45.54	45.54	45.54
Total workplace costs (without considering mobility costs)				
Per month (€)	54.48	108.05	200.30	346.27
Per working day (€)	3.16	6.26	11.61	20.07
Total workplace costs (with considering mobility costs)				
Per month (€)	-13.83	62.51	154.76	300.73
Per working day (€)	-0.80	3.62	8.97	17.43

Sources: Bundesanstalt für Arbeitsschutz und Arbeitsmedizin, 2013; Bundesministerium der

Finanzen, 2000; Consumer & Home Electronics and GfK, 2022; Dauth & Haller, 2018; Franke, 2020; Statista, 2022; Statistisches Bundesamt, 2019; Telekom, 2023; Verivox, 2020

Notes: Costs based on 17.25 effective working days per month in 2019 (without vacation and sick leave) (Institut für Arbeitsmarkt- und Berufsforschung der Bundesagentur für Arbeit [IAB], 2020)

Workplace Costs of a Company Workplace

As a benchmark for estimating the total costs of a traditional company workplace, we will consider lump sums for material costs common in the public sector. Such lump sums are usually derived from the average past expenditures of representative organisational units of the various households (Finanzbehörde Hamburg, 2015; Finanzministerium Mecklenburg-Vorpommern, 2020; Finanzministerium Niedersachsen, 2020) or are based on a recommendation⁴ by the Municipal Joint Office for Administrative Management (KGSt, 2021). The cost levels of local lump-sum estimates vary considerably across regions, owing to very different room costs and partly inconsistent calculations thereof. For instance, an office workplace with IT equipment in the Mecklenburg Vorpommern state administration is estimated at €21,510 (of which €4,880 is basic room costs) for 2020/21 (Finanzministerium Mecklenburg-Vorpommern, 2020). In contrast, the Hamburg Tax Authority (Finanzbehörde Hamburg, 2015) applies a lump sum of €9,700 per year for material costs of an office workstation with a computer. This includes around €6,000 in room costs for an average workplace of 36 m², including all circulation areas. This approach considers the rents for office buildings, which are usually significantly higher than residential rents. The space available for a home-based workplace will generally be significantly smaller than 36 m², especially since a large proportion of the circulation areas are also used privately. Further, employees usually use their home-based workplace partly for private purposes. Thus, this estimate is an upper limit of the room costs. Further, these values from the public sector may not be readily transferable to the private sector. We regard this as a limitation. However, in the absence of such data for the private sector, they provide a further indication of the total (company) workplace costs.

The Workplace Costs in Coworking Spaces

Alternatively, the monthly or daily prices of the use of a workstation in a coworking space (minus corresponding risk and profit margins of the operators) can also serve as a benchmark for estimating the costs of teleworking in a 'third place'. This estimation approach considers a large part of the setup and operating costs of a workplace. The user of the coworking space or their employer usually must provide only the technical equipment (hardware/software).

⁴ This recommendation of €9,700 is based on a survey of KGSt members from 2010 KGSt (2021) and thus represents an average estimate of costs at that time.

According to CoworkingGuide (2022), the average monthly cost of a flexidesk is €214, while a permanent workplace (fixed desk) costs €324 on average. However, the costs of a coworking workstation vary greatly according to various parameters such as the provider (private initiatives vs institutional operators), the location (eastern/southern/northern Germany, rural/urban region), the workstation type (flexidesk/fixed desk/private office), the contract duration (daily/monthly/long-term pass) and the equipment. For an overview, see Table 3.

Table 3. Examples of Prices of Various Coworking Spaces in Germany

Coworking space provider	Location	Flexidesk		Fixed desk	Private office
		per day	per month	per month	per month
Raumstation Coworking (2023)	Leipzig	20	180	220	340 to 410 (10 m ²)
Zammwerk (2023)	Chemnitz	15	150	215	on request
Die Diele (2023)	Hamburg	16	200	320	/
Places Hamburg (2023)	Hamburg	25	/	/	390 to 790 (single unit)
Workrepublic (2023)	Munich	29	/	499	1,598 (1 to 2 persons)

Sources: Die Diele, 2023; Places Hamburg, 2023; Raumstation Coworking, 2023; Workrepublic, 2023; Zammwerk, 2023.

Note: Prices in € (excluding VAT)

Summary: The Range of Workplace Costs

Overall, the workplace cost levels varied substantially. However, the estimations, lump-sum benchmarks and costs of coworking spaces provide ideas about their range: The lump-sum costs in the public sector should form the upper ceiling for the reimbursement of workplace costs because, first, they assume very generous room sizes; second, they typically include all workplace costs, including those that remain with the employer when WFH or working mobile (e.g. IT infrastructure, digital training). The costs of working in a coworking space are likely lower than in a traditional office because coworking space operators, owing to their business model, likely use space much more efficiently than companies do. The sample calculations for a home-based workplace should represent the lower limit for the reimbursement of costs since not all costs were considered here (e.g. rents for traffic or circulation areas, office supplies and additional devices). The upper parts of the range show that there is a substantial potential cost-saving effect for employers – which could result in a substantial wage-cutting effect for employees if workplace costs are shifted to employees without compensation.

Uberisation of Private Homes? On the Allocation of Workplace Costs Between Employers and Employees

We will now analyse under what conditions it can be efficient to have employees bear workplace costs. If we find no good reasons for employees to bear costs, but

they nonetheless bear these, we interpret this as a situation of the 'Uberisation of private homes'.

Starting Points: Given Legal Rules and Workplace Costs as Part of Operating Costs

As we have seen, from a German legal perspective, the question of bearing workplace costs depends crucially on whose interests – the employer's or the employee's – predominate and who actually has the right to determine the place of work. In other words, legally, there is a basic rule of coupling decision rights, predominating interests and cost-bearing. This coupling can also be efficient from an economic perspective:

If the *employer decides on workplace location*, it is economically efficient within the terms of an employment contract that they also bear the workplace costs because, in this contract type, employees transfer property rights on their work capacity to the employer (within specific limits concerning time, locations and tasks) and receive a (predetermined) wage payment in exchange. The employer organises and coordinates all business activities. The employer has full decision rights and assumes all gains and losses as net residuals. This combination provides an incentive to decide efficiently. Thus, the employer bears all the operating and market risks and is compensated by net residuals (Alewell, 1993; Alewell & Schott, 2013; Williamson et al., 1975). Workplace costs generally form part of the operating costs, and changes to these costs form part of the employer's business risks.

Efficient Matching of Preferences or the Uberisation of Private Homes?

However, sharing decision rights and costs for *alternative* workplace locations between employer and employees may efficiently improve preference matching and thus may help to find Pareto-efficient solutions concerning workplace location between employer and employee. We first develop this argument concerning the situation before the pandemic with health protection aspects only in the background, and then for the situation during the pandemic with OHS aspects coming to the fore.

Before the Pandemic

As shown, the basic allocation of decision rights and costs of workplace location to the employer fits well with the employment contract as a transactions cost-minimising device (Alewell, 1993; Alewell & Schott, 2013; Williamson et al., 1975). We now assume that the employer does not need all its employees to work at its business premises to ensure information flows, accessibility to clients, and the smooth running of basic processes. Thus, the employer may be able to let a specific share of employees WFH/work mobile without incurring productivity losses. However, not all employees at the same time may WFH, so the share will regularly be less than 1.

We further assume that preferences regarding workspace locations and the corresponding utility effects vary between employees (e.g. Grunau et al., 2019; Peters et al., 2004). For instance, some employees prefer WFH owing to their family situation with small children or elderly relatives they care for, while others may have a long and costly commute or work much more productively in a quiet place with little communication and contact. Some employees may prefer to work at the company premises, for instance, because they value social contact at work, have too little space for a workplace in their homes, or assume better career prospects if they work face-to-face with their supervisors. Others prefer to work in coworking spaces so as to benefit from an inspiring work environment (Weijs-Perrée et al., 2019). Thus, workplace locations' utility effects differ for employees depending on their personality, individual and household situation, and – thus their preferences.

If all employees must uniformly work on the business premises, the differing employee preferences for a work location can, on average, not optimally match this uniform workplace location. The same is true if all employees uniformly WFH.

We assume that employees and employers have an equal information level on the productivity effects of working outside the business premise because both sides have information on the tasks, the intersections with other tasks, and the employees' productivity-relevant characteristics. As studies have shown that there are often positive wage differentials for WFH or positive productivity effects (Bloom et al., 2015; Gariety & Shaffer, 2007; Rupietta & Beckmann, 2018), we did not focus on incentive or shirking aspects but assume that employees work at least as productively from home as from other workplace locations. However, we assume that employees have much more information about their personal preferences and the strength of their desire to work outside business premises than the employer does; thus, there is an information asymmetry between employees and the employer about these preferences.

If the employer offers (productive) employees mobile work, and employees who have received such an offer are then free to decide where to work but bear the workplace costs themselves if they work outside the business premises, preference matching will be improved, and more efficient sorting of employees to workplace locations will be realised than without cost-bearing. Only employees for whom the utility of working outside the business premises is high or who have a strong preference for doing so will accept their employer's offer, increasing their own net utility (net utility effects of working from outside the firm and workplace costs). This cost-bearing rule implies that only employees whose positive utility effects of working at alternative workplaces are stronger than negative utility from cost-bearing choose such alternative workplaces. Thus, in the pre-pandemic situation, the legal rules functioned as efficient preference-matching instruments, which relates closely to WFH being a benefit the employer grants only to some employees.

During the Pandemic

However, as far as our limited empirical knowledge goes, these legal rules have not been put into practice fully during the pandemic. With COVID-19, many employees were or are instructed to work partially or completely from home, as WFH solutions became legally mandatory or part of their employers' OHS policies. It was often not possible for employees to use a company workplace owing to OHS regulations and the employer's associated decisions. Thus, there was no decision right for employees on workplace location. An order to WFH violates the constitutionally protected right of the inviolability of the private home. Also, apparently, employers often do or did not comply with the legal requirements of the ArbSchG (or the ArbStättV) to bear the full (setup) costs of their OHS measures but instead left or leave the home-based workplace costs to be paid mostly by their employees (Institut DGB-Index Gute Arbeit, 2021). This situation could be interpreted as the 'Uberisation of private homes' because there are no efficiency reasons for cost-bearing by employees.

However, during the pandemic, employees' *and* employers' preferences shifted to the side of OHS aspects. On the one hand, in this pandemic situation, employees have a self-interest in reducing the risk of infection during commuting and at work. Even employees who would normally prefer to work in the business premises may often be glad to WFH so as to avoid risking infection. In addition, many employees had or have increased child care responsibilities due to day care and school closures, and WFH is one way to combine work and child care. Thus, we conjecture that employees' preferences for WFH are stronger on average than in the non-pandemic situation, but with ongoing differences between individuals as well as within individuals between different points in time. On the other hand, we conjecture that the employer's interest in teleworking increases for economic and legal reasons: As shown, the employer is legally obliged to ensure OHS (Müller-Bonanni & Bertke, 2020), and at times even explicitly through a legal WFH obligation (Corona-ArbSchV and IfSG). In addition to the legal obligation, many employers have a self-interest in moving employees' work places to their homes because if individual employees or the entire workforce are infected, production and business processes are constricted or may even halt or close down. Further, concerns about the harmful effects of teleworking on leadership, control and productivity seem to have decreased owing to positive employer experiences during the crisis (Hofmann et al., 2020). Thus, some employers even plan to reduce office space in the medium or long-term (Institut DGB-Index Gute Arbeit, 2021), saving running costs for workplaces. Overall, therefore, the preferences of both employers and employees for telework solutions should strengthen during the pandemic.

The reduction in company office space or the pandemic-related ban on using workplaces on business premises has reduced employees' decision-making scope concerning the place of work. Thus, preference matching and sorting will no longer func-

tion efficiently and carry much less weight as an argument for cost-bearing by the employees instead of the employer. On the other hand, the employer's right to decide on the place of work is also restricted by law, at least temporarily. Although the Federal Labour Court (BAG, 2021) has decided that *plant closures* mandated by the state to fight the pandemic are not part of the employer's business risk, we nonetheless assess reduced availability of workplaces on business premises as an operational risk for employers (similar to for instance fires or software errors). Thus, employers should bear all workplace costs during the pandemic – as the legal stipulations efficiently propose as a basic concept in ArbStättV and § 3 ArbSchG, as handled in case law on § 670 BGB and as demanded by a risk allocation perspective. Thus, we conjecture that employees bearing workplace costs during WFH in pandemic conditions have often been a sign of the 'Uberisation of private homes'.

Practice differs from these basic legal and economic concepts: Often, there is no formal agreement on teleworking (Institut DGB-Index Gute Arbeit, 2021; Kunze & Zimmermann, 2022), but only an informal and more or less implicit agreement on multi-site or home-based telework, and the employer often does not set up a teleworking workplace in the employee's home or even contribute to the costs (Institut DGB-Index Gute Arbeit, 2021). Thus, in the current legal framework, the strict requirements of the ArbStättV are not met, and the employer is not obliged to pay the workplace costs. However, court decisions on § 670 BGB could change owing to the above-mentioned shift in preferences. Potentially, the courts may decide on employers reimbursing workplace costs in many more cases than before. It is also unclear to what extent the courts will consider reimbursement of workplace costs according to § 3 ArbSchG (and in what conditions the courts will assume an advantage for the employees beyond OHS concerns that would justify employee participation in telework-related workplace costs).

During the pandemic, there is thus a high legal uncertainty for employees regarding the reimbursement of (home-based) workplace costs, and there is neither efficient preference matching nor efficient cost allocation on the employer. Thus, we conclude that there are signs of the 'Uberisation of private homes' during the pandemic and the shifting of workplace costs on employees without clear-cut and sound reasons.

Remedies to Address Uberisation

Derived from the existing legal framework as well as business practice, workplace cost structure and theoretical considerations, the following means could help to better balance the interests between employees and employers regarding the 'Uberisation of private homes'.

The Obligation to Conclude an Agreement

Decision Right and Reimbursement

If companies introduce telework, there should be an obligation to conclude an agreement on whether the employer or the employee decides on workplace location, whether the employer will reimburse (parts of) the workplace costs and, if so, which parts of the costs will be borne by the employer and which by the employee. The negotiation's outcome –

i.e. the content of such an agreement – should not be prejudged. The employer should have the flexibility to mandate all employees to work on the business premises if necessary for production reasons or to adjust the share and/or types of employees that are allowed to WFH or perform mobile work since such decisions depend on the production technology, job requirements, recruiting necessities, and HR policies regarding the staff members' competencies. However, it should be binding to explicitly agree on decision rights, the material conditions of teleworking, and the assumption of workplace costs, including a solution that excludes the assumption of costs by the employer due to an overriding employee interest or benefit (§ 670 BGB, § 3 ArbSchG). However, the law should rule out that employers (and employees or collective representatives) do not conclude an explicit agreement on decision-making rights and telework-related cost-sharing or have employees bear workplace costs due to operational disruptions.

The reason for this proposal is that it is only when decision rights are clearly stated that employees know whether they may decide to work on the business premises or at home. Also, if they decide, preference matching can only be efficient if employees have ex-ante information on the workplace costs to bear.

Regulatory Level

Who should conclude such an agreement? If possible, employees should be represented collectively in such an agreement because the individual employee will often be in an inferior position to the employer, the inviolability of the home is an important right to protect, and individual contractual negotiations are costly. If a works council exists, such agreements should thus be concluded at the company level between the works council and the employer to appropriately consider company-specific features. A co-determination right of the works council on the design of mobile working has already been introduced in Germany, but without explicitly addressing decision rights and cost-sharing. In companies without work councils, individual agreements could be supplemented by stipulating guidelines in collective agreements or in the law.

Reimbursement Tools

As shown, calculating the workplace costs may be tedious. A precise determination of workplace costs incurred for an individual home-based telework station would

imply individual recording of resource consumption, determining whether and to what extent resources were used privately or professionally, and an agreement between employers and employees on the quality and levels of resource use considered appropriate for professional purposes, and the division of costs into fixed and variable costs and their correct allocation to accounting periods. Resource consumption would have to be recorded individually for a large number of workplaces in different dwellings. Although these tasks are similar to operating cost settlement in tenancies at first glance, there is a key difference. In an employment relationship, unlike a tenancy, it is not the building owner who makes such a settlement for a large number of own apartments – it is *one* employer who must settle the domestic/external workplace costs of *many* employees who live with many different landlords or as owners in their own apartments. Thus, the individual billing of all workplace costs incurred is associated with high transaction costs.

Thus, we have to think about alternatives, especially lump-sum payments for workplace costs. The previous considerations on the cost components and the cost levels provide a rough framework that can guide a company's negotiating partners or decision-makers in determining the lump-sum payment levels. The simplest model with the lowest transaction costs is a *lump-sum reimbursement of workplace costs through wage or salary payments*. Employers would then have to adjust wages accordingly. A *daily lump sum for teleworking costs*, which the employer pays ex-post for each teleworking day, is easy to implement. In this case, the employee and the employer would only have to document how many days in a given period the employee has WFH at the predominant request of the employer. This solution has several advantages: Besides simple documentation, the extent to which teleworking takes place in the employer's, employee's or mutual interests can be considered when determining the daily allowance amount. Further, there is no need to determine the temporal extent of telework in advance. A drawback of the flexible use of teleworking is that a good estimation and consideration of fixed costs in a daily lump sum will hardly be possible.

In principle, instruments that employers have used in the past to provide employees with housing near the company or to support home ownership are also available for mixed financing of living and working space, for instance, the *granting of employer loans and the renting of (company) apartments* by the employer. In both cases, the employer contributes to the housing costs and thus also to the telework-related workplace costs. Further, if employers start to reduce their original office space, various combinations of establishing coworking spaces, company apartments, space allowances for the workplace and/or reduced rents are conceivable, enabling employers and employees to share workplace costs in multiple ways. The *use of existing commercial coworking spaces* is a further alternative, with the employer financing only the employee's de facto use of coworking space (or workplace quotas). Finally, the employer *providing work equipment* (such as computers, desks, etc.) can also be a way to partially compensate.

Discussion

Summary

We examined telework-related workplace costs and what we know about how they are and how they should be distributed between employees and employers. To this end, we first showed how the distribution of workplace costs is currently regulated by Germany's existing legal framework. Mobile working, as the most widespread telework type (Institut DGB-Index Gute Arbeit, 2020), and especially the related issue of cost-bearing, have not yet been clearly regulated in legal terms. Second, we estimated what the compositions and levels of workplace costs are for different scenarios, showing that telework-related workplace costs are substantial and vary greatly between different locations. Third, we examined whether there are efficiency reasons for cost-bearing by employees, which we found under specific conditions only, arguing that if there are no efficiency reasons for cost-bearing by employees, *de facto* cost-bearing may indeed be classified as the 'Uberisation of private homes'. Because the current legal ambiguity may encourage such Uberisation, especially against the backdrop of high workplace costs, we then derived remedies to better balance the interests of employees and employers. We propose to legally anchor that employees and employers or their representatives must conclude binding agreements on the decision rights regarding the place of work and on the assumption of telework-related workplace costs. Such an agreement would make negotiations of workplace costs mandatory, reduce uncertainty, and help to improve preference matching, thus increasing the efficiency of spatial workplace organisation.

Conclusion

In particular, two key aspects of the legal situation concerning mobile work and workplace costs should be further discussed:

First, it should be discussed whether we need a more specific legal definition of mobile working than provided by the BetrVG and whether the ArbStättV should also include mobile working and the employer's obligation to assume these costs. While a legal definition of mobile work and a clear demarcation from telework according to the ArbStättV (e.g. a definition based on the now-repealed OHS regulation SARS-CoV-2 (occupational health and safety committees at the BMAS, 2021) and supplemented by a demarcation) could bring more clarity, legal regulation on the assumption of costs for mobile/domestic workplaces – especially within the framework of the ArbStättV – would be presuppositional. The legislator would need to be able to formulate a good solution that considers a large number of cases and current or post-pandemic developments (e.g. the use of different work locations, the planned reduction of office space, hotelling systems for workplace assignment, technical developments). In view of these dynamics, it seems appropriate to first observe developments before formulating and implementing further legal amendments that go beyond our proposal (the obligation to conclude an agreement

on the decision right on the place of work and on cost-bearing). Instead, our proposal opens up a wide scope for negotiation between employers and employees, paving the way for innovative negotiation results.

Second, it remains to be seen how the courts will weigh the interests in relation to the claim for reimbursement of costs under § 670 BGB and in relation to § 3 Arb-SchG. The following aspects will be relevant: first, whether a workplace exists at the company's premises that can actually be used, for instance, during the pandemic, or whether a workstation with reduced workstation quotas/desk-sharing can, in fact, be booked in a hotelling system at the desired time-slot; second, whether the employer has ordered the use of (home-based) telework in its responsibility for OHS.

Overall, from an economic perspective, the current 'balancing of interests' solution in § 670 BGB (Germany's Civil Code) keeps teleworking solutions attractive for both sides within conceivably different constellations of interests. If, for instance, the employer were instead obliged to reimburse the costs of teleworking independently of the interests involved, this may strongly reduce employers' potential interest in teleworking. This would also render teleworking more difficult, thereby limiting employees' work location autonomy. However, a legal obligation to make a clear statement on the (non-)assumption of workplace costs in agreements on mobile work would, on the one hand, improve preference matching and thus allocative efficiency; on the other hand, it would prevent the arbitrary 'Uberisation of private homes'.

Limitations and Future Research

Our findings have limitations, which open fruitful avenues for future research. First, we analysed the situation and the law in Germany. The legal and factual situation in Germany and other countries could be compared, and solutions could be found so that one can eventually learn from best practice solutions from other countries. Second, we did not empirically analyse workplace costs; instead, we roughly estimated these using lump sums and accessible information on average costs of the various cost types of various workplaces. Building on our considerations of workplace costs and room costs as the primary cost drivers, both a representative employee survey of the amount of domestic space used for business purposes and an employer survey about the de facto savings from reducing office space and moving workplaces into employees' homes would be useful to quantify the de facto 'Uberisation of private homes'.

Third, we have taken a general approach without explicitly considering the perspectives of different employee groups (e.g., part-time employees, women, low-skilled employees, and employees not represented by work councils). However, this could be interesting since different employee groups are likely to be affected differently by telework and the associated cost shifts. For instance, lower-income employees are likely to be disproportionately affected by telework costs. This may further impede

access to telework for certain employee groups (e.g. women) (see Initiative D21, 2021 on the Digital Gender Gap). Thus, it would be worthwhile for researchers to focus on the differential resource endowments, and thus bargaining power, of different employee groups in order to incorporate the question of equity into the debate about workplace costs.

Fourth, we did not look at aspects of justice and fairness regarding other employee groups who are unable or not allowed to use WFH – a topic that is crucial for business practice if workplace cost reimbursement is implemented for persons for whom WFH is used.

Fifth, it would be valuable to learn more about employer perspectives (e.g. through an employer survey) on formal and informal decision-making rights regarding the place of work, the regulatory level of these rights, the intended utilisation rates of various office concepts (desk-sharing, open space) and on the question of cost assumption (which cost components are assumed and which are not). Employer surveys with an explorative and mixed-method design are suitable for this purpose, and the decision rights regarding telework, as well as the different cost-bearing regulations, could also be investigated through a content analysis of various company agreements.

Finally, relocating workplaces to mobile or private homes while reducing the number of corporate workplaces opens up debates in a new research field: workplace booking and hotelling systems. In office concepts with workplace booking or hotelling systems, where the number of workstations is lower than the number of employees, the spatial assignment of single employees may change daily or weekly so that workstation neighbours and team structures are interchangeable. While this gives both employees and employers great flexibility, it may also profoundly change social relationships. To name only a few possible consequences, spatial proximity influences the channels and the intensity of communication. Seating arrangements may alter the integration of individuals into teams and the stability of relationships may map teams' sociometric structures onto the spatial dimension and may therefore become very visible to everyone. The lack of a personalised workplace may signal to employees that they are replaceable. Thus, the effects of hotelling systems should be carefully investigated in future studies, considering aspects such as the number of workplaces needed, varying capacity utilisation during the days of the week and during seasonal periods, the personalisation of workplaces, team identity, company identity, commitment, job satisfaction and performance.

Abbreviations and Initialisations

ArbSchG	Occupational Safety and Health Act (<i>Arbeitsschutzgesetz</i>)
ArbStättV	Workplaces Ordinance (<i>Arbeitsstättenverordnung</i>)
ArbZG	Working Time Act (<i>Arbeitszeitgesetz</i>)
BAG	Federal Labour Court (<i>Bundesarbeitsgericht</i>)
BetrVG	Works Constitution Act (<i>Betriebsverfassungsgesetz</i>)

BGB	German Civil Code (<i>Bürgerliches Gesetzbuch</i>)
BYOD	Bring Your Own Device
Corona-ArbSchV	Corona Occupational Health and Safety Regulation (<i>Corona Arbeitsschutzverordnung</i>)
COVID-19	Coronavirus disease 2019 (<i>Coronavirus-Krankheit-2019</i>)
EStG	Income Tax Act
GewO	Trade Regulation (<i>Gewerbeordnung</i>)
IfSG	Infection Protection Act (<i>Infektionsschutzgesetz</i>)
KGSt	Municipal joint office for administrative management (<i>Kommunale Gemeinschaftsstelle für Verwaltungsmanagement</i>)
OHS	Occupational Health and Safety
SARS-CoV-2	Severe Acute Respiratory Syndrome Coronavirus 2
WFH	work(ing) from home

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