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Quo vadis Working-Time Regulation? Or: The Blurring Connection between Work Organisation and Working-Time Regulation

1 Introduction

„We are investing into the development of our working-time system because a requirement- and employee-oriented organisation of working time holds the potential for a „win-win" situation - for the benefit of both company and employees." This is the statement voiced by a manager in charge of the development of the working-time system practised in a large retail enterprise. The advantages of working-time flexibilisation for employers mainly lie in the possibility of reacting more swiftly to changes in market and customer requirements (e.g. Gesamtmetall Employers' Association 2000), whereas supporters of an employee-oriented flexibilisation of working time emphasise the possibility of complying with heterogeneous working-time preferences (Büssing, Seifert 1995, Bosch 1996). In the political context, working-time flexibilisation is expected to exert a positive influence on the employment situation (Ministry of Work, Health and Social Affairs, 2000). The corporate and political actors thus consider working-time flexibilisation an important element helping them to shape change in the world of work. Yet only the question as to which model can best serve all flexibilisation interests of the stakeholders involved, is in the focus of discussion, not the question of flexibilisation itself.

This article sets out to take a look behind the scenes and to ask which (at the outset unintended) side effects on the organisation of work spring from different working-time regulations and which impact this might have on the development of labour productivity. The question in the limelight, however, is how working-time flexibilisation influences the involvement of the productive factor labour in corporate work processes. The argumentation follows an approach by Kleinknecht (1998), who topicalises the connection between innovation and flexibilisation in the labour market. His argument goes that, from a neoclassical perspective, unemployment can be reduced in the short term by deregulating employment relationships, in conjunction with lowered wage levels. According to Schumpeter, who bases his hypotheses on the existence of a market with incomplete competition and who emphasises the significance of innovative entrepreneurs in the process of "creative destruction", the deregulation and flexibilisation of the labour market will in the long term impede both process and product innovations and will diminish the offering strength of the product markets. He concludes that labour productivity will

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diminish in the long term because obsolete capital stock will be replaced less swiftly. Deregulation and flexibilisation of the labour market thus stand in the way of innovations and will in the long term impair the competitive situation of companies, which in turn will entail rising unemployment. The article in hand applies this approach to the relationship between *working-time* flexibility and innovation. The message then reads as follows: Working-time flexibilisation impedes innovation because the productive factor labour cushions the effect of market requirements and thus reduces the pressure exerted on the companies to find innovative ways of coping with such requirements. The adaptation of working time to market fluctuations may yield some profit in the short term. However, in the long term the disadvantages of this policy will prevail because productivity leapfrogging will only be realised to an insufficient degree, with the competitive situation being impaired as a consequence. In contrast, forms of working-time regulation which restrict the utilisation possibilities of the productive factor labour have the effect of a "productivity whip", seen from a dynamic standpoint, because they transmit the impulse for more productive utilisation of the labour factor right into corporate organisation.

In Chapter 2, two different types of working-time regulation as well as their impact on both work organisation and on productivity development will be described. In Chapter 3, the core statement of this article will be evolved: Currently existing working-time regulations in knowledge-intensive service functions which allow a largely flexibilised duration, scheduling/location and distribution of working time only exert a weak influence on the innovation dynamics of the respective companies. This connection will be elucidated by referring to the IT industry as a case in point, because it is one of the expanding fields of knowledge-intensive service. Chapter 4 will strike a balance and formulate topic-related open questions.

2 The Regulation of Working Time and its Effect on Working Structures in the Course of History

Rinderspacher (2000) has traced how the "institutionalisation" of working time came to pass in the course of historic development. The "economisation" of time", the "calculation in terms of work time units (WTU) at the dawn of industrialisation liberated employees from the employers' autocratic definition of working hours. This step, which marks the transition from the pre-industrial to the industrial use of time, was triggered by the workers themselves who demanded an "objectified time measurement as a basis for just remuneration" and as a "counter-measure defying the inhumane duration of working time" (Rinderspacher 2000:53). Right from the outset of working-time measurement, the reduction of working time has been a central issue of the trade unions. Step by step, they managed to push through the 5-day-week, the 8-hour-day,

the reduction of weekly working hours down to only 35 hours in some cases, as well as the standardisation of working-time rhythms.

2.1 Working-time Regulation Type I: Regulation of Labour Utilisation through a Differentiation of Normal and Surcharge-Liable Hours

Employees in particular have been able to profit from the standardisation and normalisation of working time structures because for them it involves the right to reliable working-time structures and a contractually guaranteed connection between work and remuneration[1]. This type of working-time regulation also allows deviations from the standardised working time. However, the demand for labour beyond the standardised working times is being deliberately kept at a low level via the price mechanism, i.e. by means of surcharges. Up to the present day, a distinction is being made between surcharges for extra time, payable when the contractual *duration* of working time is exceeded on the one hand, and surcharges for work done in special *locations* of working time, termed "unsocial hours" in the Anglo-Saxon realm on the other hand, e.g. night work, work on Sundays and on public holidays. The variation of working-time *distribution* over a longer period is not regulated in this type of working time arrangement. Lehndorff (2000) summarises the essence of this type of working-time regime as follows: "Its main concern is cushioning the effect of market fluctuations on working time (and on the employment relationship as a whole). ... Working-time regulation may be perceived as a restriction of the link between working time and the market."

This type of regulation is based on two assumptions: First, the differentiation between normal working time and surcharge-liable hours rests on the basic notion that a measurable and temporally delimitable work task is "normally" to be fulfilled within a predefined working time and that this work performance is to be regarded by all parties involved as the basis of the contractual relationship between employers and employees. Since it is generally understood that the extra-contractual utilisation of labour induces increased "pain of work", this time is compensated for by a surcharge. Interests have been brought to a balance: Employers can utilise labour beyond the stipulations laid down in employment contracts, and employees are additionally rewarded for the extraordinary enlistment of their services. Moreover, this type of working-time regulation is embedded in a specific form of company organisation. Employers (or their extended arms, the superiors) act as mediators between market requirements and employees, because it is them who translate market requirements into working-time requirements and who

[1] Wagner (2000a:478) has aptly pointed to the fact that the existence of a „normal employment relationship" is based on a gender-specific division of labour, with the drawback of the male breadwinner being non-employment or at least restricted gainful employment of women.

order "extra-ordinary" working times in the true sense of the word. The Type I working-time regulation is thus mainly based on the workability of hierarchically structured work processes.

Second, the differentiation between normal working time on the one hand and working time defined in terms of a deviation on the other hand is based on the notion that employees have an interest in and are entitled to a standardised duration, distribution and location/scheduling of working time. The rendering of services to employers beyond normal working hours in order to help them cope with company-related flexibility requirements is thus interpreted as a concession of workers to their employers and is therefore remunerated at a higher level. However, this type of working-time regulation completely fails to consider off-standard working-time preferences of employees. It is exactly at this point where the gate of entry for the rise of the Type II working-time regulation is in the offing: If workers show a preference for working times originally defined as deviating from the standard and as an extraordinary burden, there will be no necessity to remunerate them in excess of standard rates.

How then is the link between working-time regulation on the one hand and dynamic innovation processes aiming at increases in productivity on the other hand shaped? Lehndorff (2000) writes: "The regulation of the time during which a worker is available to his or her employer increases the latter's economic necessity to utilise the services of his employees according to a plan and with as much regularity as possible." And still more: Due to the differentiation between normal working time and extraordinary working time, and the levy of penal duties going along with it, working-time regulation, especially working-time reduction, induces scarcity in the productive factor labour and has thus an immediate effect on the internal allocation of factors, i.e. on the distribution of productive factors among production activities. The employers' pursuit of the economic principle (profit maximisation and cost minimisation, resp.) in a setting characterised by a scarcity in productive factors (expressed in terms of factor price) forces the employer to exploit production factors in the most productive manner and thus to strive for efficient factor allocation. The restricted utilisation time of the labour factor and the higher level of prices payable for labour utilised beyond standard working hours changes relative factor prices and thus triggers a reallocation of the factor employment ratio. In other words: Working-time regulation sends an impulse into corporate organisations prompting them to adapt work organisation to those periods of time in which labour can be obtained at the basic rate. In the wake of this dynamics, forced by the gradual scarcity of the labour factor, technical (often work-saving) progress has been realised which brought about an increase in productivity. Simultaneously, scarcity in the work factor had repercussions on the product market: Those companies which could best compensate the reduced utilisation time of the labour factor by means of a more productive utilisation of labour and thus by innovative coping strategies, were rewarded with enhanced market competitiveness.

The Type I working-time regulation leads to a scarcity in the labour factor and, in the framework of the adaptation process to the new factor/price relation, it assumes the function of a productivity whip - for in the market only those companies will secure profits who are in a position to best cope with adaptation process by way of innovations. This permits us to establish a connection between the gradual limitation of working time and the position of Germany in the international field of labour division : Since, by way of regulation, working capacity has become a scarcity factor in production, the German (export) industry has specialised in what constitutes its comparative competitive edge: The maintenance of its strong position in foreign trade is due to the production of capital-intensive and human-capital-intensive commodities (Siebert 1994:73).

2.2 Working-time Regulation Type II: Larger Scope within the Normal Utilisation of Working Capacity by means of Account Arrangements

With the first flexitime arrangements, which had already been introduced at the beginning of the sixties, the brilliant rise of working-time systems began. What commenced with the gradual dissolution of the rigid start and end of working hours meanwhile also affects all other aspects and dimensions of working time: It is not only the location during the day, but also the distribution and consequently the duration of contractual working time which may fluctuate within defined limits - without this flexible utilisation of labour leading to an increase in the relative price of labour. The historical milestone of this development is the so-called Leber compromise of 1984, in which the award pronounced by J. Leber at the end of slow-moving and tedious collective bargaining processes in the metal and electrical industries (which were moreover accompanied by strikes) provided for an exchange of shorter for more flexible working times. The guiding thought here was that a more cost-effective utilisation of flexible working time is advantageous for the companies and that employees are compensated in exchange by means of a reduction in working-time duration.

The new possibilities of labour utilisation favour the introduction of new production concepts in companies: Since the effect of fluctuations in the order picture can be better cushioned when there is more cost-neutral scope for utilising labour, the application of a production method geared to declining stock (or the pursuit of a policy of low capital lock-up, resp.) allows the cost of surcharge-liable extra work (formerly linked to the fluctuation of working time) or the cost of under-utilisation of the labour factor to be reduced (Bosch 1996). This is an important aspect – particularly for industrial production. For the tertiary sector, a similar link can be drawn between new production concepts and changed factor price formation. The cost-neutral utilisation of flexible working times creates an incentive to pursue a policy of extended service times and of adaptation of working hours to client- or customer-related fluctuations. On a balance, it becomes obvious that the more cost-effective utilisation of flexible working times has favoured the

introduction of production concepts which again link up staff working times to the market (cf. Lehndorff 2000:5). The introduction of working-time accounts constitutes a substantial change, compared to the working-time regulations of Type I. However, there is one difference because the new compromise not only involves that fluctuations are mirrored in the variation of working-time duration and distribution, but that the duration of working time is reduced further at the same time. In the production process, this mirrors in an increasing rate of absenteeism of individual workers and in employees' increasingly heterogeneous working-time patterns (Bosch 1996). Working-time organisation under these premises has become a complex management task going along with increased search and information expenses with respect to the choice of the optimum location, distribution and duration of working time;[2] because firstly, the varying requirements of the product market in terms of time must be analysed in greater detail, and secondly, they must be translated into corporate organisation.

The employee cohort also experiences a change in the temporal framework of working time: The advantages resulting from shorter and more flexible working times can be seen in the realisation of heterogeneous working-time preferences, which are attributable to the increasing rate of women in gainful employment, to an increasing plurality of ways of life as well as to the increasing blending of work and education (Bosch 1996:7). Groß, Munz, Seifert (2000:226) have set forth that the regulation of flexible working times by means of account arrangements may result in an actual shortening of working time: Results of the representative employee interview on the topic of working-time accounts reveal that employees provided with a working-time account do almost one extra hour less on an average than employees not using a working-time account. In the group of high-qualified employees, this difference is most striking; because this group of employees performs an average of 2.9 hours of unpaid extra work per week less than the reference group without a time account. Time accounts in a work environment where extra hours are more or less normal thus serve as a gathering place for formerly informally performed or financially remunerated extra work. An actual shortening of working time can consequently be achieved by means of account arrangements if extra hours done are recorded in these accounts and can be compensated by time off at a later date.

Empirical studies give evidence for the spreading use of working-time accounts. According to a representative employee interview conducted by the ISO Institute in 1999, 37% of all employees in Germany are keeping a working-time account (Groß, Munz, Seifert 2000). An investigation conducted by the DIHT comes to the conclusion that as much as 60% of all Federal German

[2] These search and information expenses can be considered additional cost incurred in the wake of working-time flexibilisation. Empirical investigation show that companies develop strategies to reduce this cost by decentralising responsibility down to the level of employees and by availing themselves of novel HR tools, cf. Lindecke 2000; Kirsch, Klein, Lehndorff, Voss-Dahm 1999.

companies have introduced forms of flexible working-time systems, including account arrangements (DIHT 2000).

The basic form of account arrangements defines fluctuation margins within which the actual working time may vary, and a time period in the course of which the contractual duration of working time must be reached again on an average. The main point of this arrangement is to dissolve the time limits defined by the Type I working-time regulation (in which the labour factor can be utilised at the base rate) and to allow greater freedom in the determination of working-time duration, location and distribution. The accounts always refer to individuals, i.e. it is already at this point that an essential difference to the Type I working-time regulation which, following the principle of equality, used to regulate standardised working times for collective groups of employees. The fluctuation margins are limited by the provisions of the German Working Hours' Act passed in 1994, which determines the maximum permissible working hours per day (max. 10 hours), a minimum period for regeneration between two working days (11 hours) and a maximum weekly working time (60 hours).

In practice, there are manifold variations on the above-mentioned basic form. As it will be explained below, these variations are of particular interest for the issue approached in this present article, namely in connection with their fluctuation margins. Some working-time accounts only provide for a low fluctuation margin, e.g. the contractual weekly working time must be reached again at a monthly average. Other account models, such as for example the traffic-light model, have a more procedural design because they regulate a (green) time zone within which working time may fluctuate ad libitum, a further (amber) time zone within which superiors must be informed about the current balance of account and, finally, a (red) time zone entering of which induces mandatory dialogues prompting employees to reduce working-time balances to the contractual level (cf. Lehndorff 1999). A further variant is the existence of two different accounts: One account is fed with working-time fluctuations resulting from employees' flexible working-time interests. Besides this trust-based flexitime account, there is a time account in which working-time fluctuations resulting from business requirements are recorded. Within these fluctuation margins, a compensation by means of time off is effected. If work is done beyond of the upper limit of the account, it will be financially compensated (cf. Höfer, Sczerny 2000).

A qualitative, though not unexpected leap in the development of working-time accounts is being performed by account models allowing employees to catch up with the contractual working time over very long compensation periods. Working-life-time-accounts (e.g. at VW Wolfsburg, Ford Works) or the 5-year-accounts (e.g. debis Systemhaus AG) may serve as examples. These time accounts allow an accumulation of positive working-time balances for later use, e.g. for the purpose of further training, for longer leisure-time blocks or for an early retirement

from working life. Working-time accounts have thus undergone a development – from simple current accounts with a low credit line to accounts in which fixed-income securities are administered. Qualitatively new and, as we shall see below – problematical with respect to the productivity-increasing effect of working-time regulations is the fact that working-time accounts are gradually being used for allowing an intertemporal shift of the consumption and the remuneration of labour, *without this being linked to the obligation to actually lay down a provision as to the reduction of working-time balances.*

The line of reasoning in Section 2.1. was that the scarcity in the labour factor triggered by working-time regulations brings about an innovation dynamics which leads to an increase in labour productivity. The introduction of account arrangements favours the introduction of production concepts based on a variation of working-time location, distribution and (within a limited fluctuation margin) also duration. In the wake of this development, the labour factor can (again) be utilised to a larger extent because the removal of the narrow limits, within which working time can be utilised at the normal rate frees operational organisation from the necessity of forcing operational processes into a restrictive time corset. However, the other side of the coin is that the compromise barter negotiated by the collective bargainers "shorter for more flexible working hours" has the effect that the utilisation of the labour factor is becoming scarce due to the shortening of working-time duration. By and large, only the condition for utilisation of the labour factor have been changed, the net effect on the availability of the labour factor remains the same in an environment where cost savings brought about by the cost-neutral flexibilisation of working time on side of the balance sheet, so-to-speak, just make up for costs created through the reduction in working hours (at full wage compensation). If this is the case, nothing fundamental has changed about the connection between working-time regulation and innovation or increases in productivity to be realised.

However, the links between working-time regulation, innovation and labour productivity are bound to break up if regulation does not ensure an actual shortening of real working hours within exactly that time perspective in which companies plan production processes and factor employment ratios to be observed. If, by contrast, the actual shortening of working hours does not enter the short-term optimisation calculation and costing procedures of production planning, account arrangements will no longer trigger off an impulse for dynamic innovation processes and will thus no longer act as a "productivity whip" – because the cost-effective flexibilisation of working time and the cost-effective extension of working hours do not cause such necessity.

Which rules and arrangements are provided for by account models in order to actually achieve a reduction in real working time? It is the so-called time-balance reduction dialogues by means of which employers and employees agree, in the case of the upper limit of working-time credits

having been reached, which steps to take in order to bring working time back again to its contractual duration level. Another variant can do without such reduction dialogues: In the framework of this model, planning of working-time credits and the definition of the reduction period are effected simultaneously. Within the logic of time accounts, the role of restricting labour utilisation, which, in the framework of the Type I working-time regulation, had been fulfilled by overtime surcharges, is performed by negotiations. However, this role is not monetarised and factor employment is not regulated via the price mechanism, for which reason it must be assumed that it will, on principle, exert a weaker influence. Both surcharges and time-balance reduction negotiations, or the early determination of time compensation parameters, resp., have the effect of a forcefully induced analysis of the question of why when which labour is required. As soon as this obligation is firmly rooted, the issues of personnel allocation on the one hand and the relationship between performance and working time on the other hand will automatically stand in the limelight, and force the employer into his responsibility for creating a basis on which the accomplishment of work tasks and the contractual duration of working time can coincide. In other words: As soon as the obligation to establish plans in consideration of restricted labour availability is removed, the pressure to utilise this labour within the contractual and now shortened working time fades away, too.

As we know from practical experience, account arrangements suffer from regulatory gaps exactly at the point where there should be clear and unambiguous rules of procedure as to how and in which manner time balances are to be settled[3] (Lehndorff 1999). Additional time scope created by working-time accounts thus requires a *high* degree of regulatory density and *strict* sanction mechanisms in case the number contractual working hours not achieved – provided that contiguous adherence to the contractual working time is considered a goal. Meanwhile, however, working-time accounts tend to gradually fulfil the function of a time-point-related extension of working hours. Working time reduction in this context refers to a constantly broader period of time and can thus no longer have the effect of bringing factor scarcity. It must be this scarcity which, by way of dynamic innovation processes, triggers off the impulse for a more productive utilisation of the labour factor.

[3] To describe a case in point, we are referring to the situation of a female employee in the retail trade, whose time credit had hit the ceiling. Hoever, the Christmas season required her services. An extension of working time was the consequence. (Recorded in the framework of a case study on the retail trade, conducted by Institut Arbeit und Technik in the context of a project)

3 Working-Time Regulation Type II in Knowledge-Based Service Activities – The Example of the IT Industry

This Chapter sets out to explore the question of which influence working-time regulations exert on knowledge-based service activities. The production of knowledge-based services clearly constitutes one of the growth sectors of the German economy: According to predictions issued by the Institute for Labour Market and Vocational Research (IAB), 32% of the entire gainfully occupied German population will be performing so-called secondary, i.e. knowledge-based, service activities in the year 2010[4]. The performance of knowledge-intensive service activities requires a high level of qualification (IAB 1999). An evaluation of the Socio-economic Panel analysing agreed and actual average working hours of employees performing high qualified activities and executive duties reveals that the contractual working hours of this group of employees have decreased in the course of time, whereas actual working hours have slightly increased. This is to be interpreted as a strong indication of that collectively agreed working-time reductions in the cohort of high-qualified employees have not substantially influenced actual working hours (Wagner 2000b). But does the execution of high-qualified activities necessarily go along with long working hours?

The connection between knowledge-based service activities, working-time regulation and productivity is of interest with respect to at least three aspects: Firstly, we are talking about the productivity development of a type of activity with constantly growing importance and thus about the competitiveness of industries with great significance for future economic development. Secondly, an extension of the actual working hours of employees in knowledge-intensive activities has, in view of its increasing importance, a constantly stronger influence on the entire time structure of society. Thirdly: If the performance of knowledge-intensive service activities usually goes along with hours in excess of the collectively agreed working time, the question arises if it is at all possible to manage and master the content of a job within the contractually agreed duration of working time. Does working-time regulation thus ensure the establishment of an unambiguous connection between work content, working time and remuneration, or does the fact that such connection does not exist possibly constitute the reason for the extension of working hours in knowledge-intensive service activities?

Various authors have pointed out that knowledge-intensive service activities constitute a special type of work. If working-time regulation in this area is to have strong (or stronger) impact on actual working hours, it must needs take account of task specificity. Several authors have defined the particularities of "knowledge-based work": Helmstädter (2000:11) defines knowledge-

[4] Secondary service activities are defined as activities focusing on research, development, organisation management, supervision, consultation, publication. (IAB 1999)

based work as "meta-work which prepares other work by means of planning and consultation". Frenkel et al. (1999:38) define knowledge-intensive work at client- or customer interfaces in terms of a production of client- or customer-specific products. In the context of intensive client relations, problem analyses and innovative problem solutions are generated. In order to accomplish this task, broad theoretical knowledge as well as comprehensive analytical and social competence is required. The relationship with colleagues, clients and the management is characterised by reciprocity. Other authors emphasise the locally and temporally flexible use of working equipment in knowledge-based work. The increasing popularity of "desk-sharing" and of the "e-place" concept bear eloquent witness to this development. Knowledge workers no longer need a defined physical workplace, but can do their job anywhere, provided with a laptop computer and a mobile phone (according to the German magazine Computerwoche 40/2000). A further particuliarity of knowledge-based work refers to the question of what within knowledge-based work is to be regarded as working time. Where "meta-work" is done, the most essential thoughts often spring to mind beyond the horizon or measurable or measured working time, and thus especially when the necessary distance or detachment from the real object of work is safeguarded. It is insofar on principle difficult to measure working time because in knowledge-based work attendance time at the place of work does not necessarily coincide with working time. A further aspect: Eliasson (2000:5) underlines that knowledge-based work as performed by individual workers must be linked so as to come to full fruition: "Without fully operating markets in need of the competence stock embodied by humans, the individual and societal profitability of expenditure on education would only be slight." A manager of a large IT public service company puts it this way: "Nowadays there is simply not enough time to puzzle over an issue until you find the solution on your own, not even if you have a considerable stock of specialised knowledge. You have to ask someone for help or assistance these days, and reveal what you do not know." Both explanations emphasise that the production of knowledge-based services is on the hand based on knowledge division as a (new) form of division of labour, but that the pooling of knowledge is of no lesser importance. The way in which knowledge is generated, distributed and then again pooled, is of paramount importance for labour productivity in knowledge-based work areas.

In the following, we shall elucidate the organising principles of knowledge-based work, based on empirical results (Section 3.1), we shall see which driving forces geared to the working-time situation can be detected (Section 3.2), which mastering strategies there are to defy an extension of working hours (Section 2.2) and which kind of working-time regulation is found in surveyed companies (Section 3.4). The connection between working-time regulation, innovation and productivity in knowledge-based work areas will be illustrated later on by referring to the example of the IT industry, more precisely, the IT service sector of the IT industry. All of the above-portrayed particularities of knowledge-based work apply to work in those market seg-

ments of the IT industry in which high-qualified employees have to accomplish complex tasks, producing knowledge-intensive services: IT workers are thus "knowledge workers". It therefore seems justified to formulate general statements about the connection between working-time regulation, innovation and productivity in the realm of knowledge-based work.

The following expositions are based on results from seven case studies conducted in IT companies in the year 2000. The case studies were focused on the issues of working-time situation, work organisation and personnel strategy pursued by these companies. Semi-standardised interviews were carried out with management representatives, with persons in charge of personnel matters, with work councils and with employees.

3.1 The Work Form Typical of Knowledge-based Work: Project Work

In all of the surveyed companies, IT solutions are established by means of project work. Project work is done by project teams consisting of employees who are specialised in different fields and who have to accomplish a task, usually the a specific problem or product innovation, within a limited period of time (Shire, Voss-Dahm 2000). Tasks within projects can be split up into projects with and projects without customer interfaces. In the case of the first variant, customer-specific IT solutions are devised, in the case of the second variant, IT products are developed which will be offered in the market as standard products. The common feature of the two variants of project lies in the fact that at the outset of a project there is only minimum clarity on the activities required and on the amount of time and the number of workers required in order to master. the task. The methodical line of action within project work, which includes the organisation of labour and knowledge division, i.e. the chronological and horizontal integration of tasks, must be constantly re-adapted to new requirements during work processes.

For this reason, the possibility of increasing planning certainty within project planning by means of standardised work processes, only exists, if at all, to a very limited extent for IT-projects. The uncertainty about the time scope and the actual content of activities in IT projects springs from the sum of many specific individual aspects, the most important one certainly being the predominantly innovative characteristic of tasks in this field. Work planning is thus effected result-oriented, the "how" aspect of the implementation remains open and must be left up to the workers to decide. This task specificity has repercussions on company hierarchy: Employers will no longer regulate employees' work directly by issuing orders as to the tasks to be accomplished; they will do so rather indirectly by fixing the basic conditions on which employees or even teams have to act profitably. One characteristic feature about work in IT projects is thus the simultaneity of autonomy with respect to the organisation of tasks on the one hand and the existence of restrictive basic conditions of work on the other hand. It may be assumed that this

characterisation also applies to knowledge-based work in general, but the assumption wants verification in greater detail.

3.2 Driving Forces behind Flexible and Long Working Hours in Project Work

Empirical experience evidences that there is a connection between IT project tasks and the working-time situation. And this connection is obvious: Both working-time position and distribution is subject to strong fluctuations, with the contractual working time usually not being adhered to, but exceeded.

Three driving forces can be identified which lead to fluctuating and long working hours:

Firstly, project work is performed in compliance with definite time and cost targets. The basic conditions result from numeric performance targets (e.g. turnover and revenue targets, from predetermined quantities with respect to the utilisation rate of the workforce), which employers require project implementation to meet. Haipeter (2001) remarks aptly: "Budgets geared to revenue targets of companies are hierarchical regulations which are conveyed by economic means". Time and cost targets other stakeholders add to the business with customer-specific projects when the time frame and the price of an IT solution are negotiated with customers at the beginning of a project (fixed-price projects). The temporal and financial basic conditions of IT projects will be the more restrictive, the stronger in-house competition or competition with external providers of IT solutions for a project is brought to bear. Therefore, strategically important projects are frequently calculated closely by intention.

The connection between the restrictive financial and temporal basic conditions of project and work and the working time of employees is as follows: Within the logic of the management establishing costing and overall calculating the project, the profit which a project yields will be the larger, the fewer personnel and equipment resources are consumed. Furthermore, the utilisation rate within a project will increase, the fewer work sessions are fixed, the fewer personnel is employed in supporting functions, e.g. in secretary's offices, the fewer time is spent on qualification measures, the fewer employees are absent from work because of sickness, and the fewer time is scheduled for the breaking-in of workers new to a project. For the management, there is thus the incentive to deliberately establish close calculations with respect to the provision of a project with personnel and equipment resources. The basic truth is that the basic financial conditions and thus the possibilities of providing projects with personnel and equipment resources will be the weaker, the higher the performance expectations placed by company headquarters in individual business lines. The lower the personnel allocation for individual projects, the more likely will pressure be exerted on the employees to master tasks by means of extending individual working hours.

The *second* driving force behind long working hours can be explained by the specificity of labour supply, i.e. the interests and the motivation structure of the employees themselves. The case studies have allowed to gain an insight into the demands made on employees in the surveyed companies: The IT-specific knowledge (codified knowledge) is merely an indispensable prerequisite for task fulfilment. Knowledge about the structure of one's own company and an insight into customer structures (contextual knowledge), creativity and social competence, however, must also come on the scene as a commensurate condition of successful work so that requirements resulting from complex tasks can be mastered. As early as upon recruitment will companies see to it that only such persons are take on who are able to meet these exacting demands and who show a willingness for commitment beyond measure, who, at least at the time they join the company, can be burdened in terms of time and who identify to a large extent with the content of their work. With respect to working time, this means that many employees consider contractual working hours merely a rough reference criterion. If tasks so require, they will be prepared to a high degree to adjust their working time accordingly. They do not do so because they feel under an obligation to serve entrepreneurial goals but because it is in their own interest to accomplish work tasks. In order to consolidate and to foster the high congruence of individual and entrepreneurial goals, elements of human resources economy are employed which aim at rewarding intrinsic motivation by extrinsic means. An activation of individual performance potentials serves to utilise the employees' "intellectual gifts" in as unlimited a manner as possible, which is reflected in an overrun of working-time duration.

The *third* reason for the extension of working time within project work lies in the way in which co-operation of teams and employees with different specialisations is organised. Team work takes very different forms in the surveyed companies. We come across extreme forms of very close co-operation, characterised by much overlapping in the various fields of work and spatial proximity on the one hand and individual work within teams where tasks are clearly defined and where project co-operation is merely based on virtual communication at selected interfaces via electronic means of communication on the other hand. However, despite all differences in the organisation of team work establishment of work results within a team is on principle more time-consuming than is the accomplishment of unrelated tasks packages by means of individual work. The pooling of knowledge requires more time than does work in Taylorist structures, but it is necessary in order to master the complex tasks of IT projects. The connection between knowledge pooling and the working-time situation is the following: If the time resources necessary for the fulfilment of team-related tasks are not at all taken account of or not sufficiently taken account of in time planning, the process of knowledge division and pooling will tend to carry an extension of working time in its wake.

3.3 Approaches towards a Mastering Strategy

Despite the uncertainties and imponderabilities in project planning, despite the restrictive temporal and financial basic conditions of project work, despite the strong personal interest of the employees in the accomplishment of their tasks, and also despite the time resources required for knowledge division and pooling, we have been able to detect first signs of attempts geared towards a reduction of the employees' workload. The time structure and the work organisation of IT projects thus do not simply and invisibly come about in a "black box", but the circumstances leading to long working hours can be contained by means of systematic project planning. There are basically four possibilities of containing the workload of individual job activities. If the potentials described in the following are utilised, it may become possible to adjust the task to the contractual working time and thus to prevent continual time loads and strain at an early stage.

Firstly, by planning possibilities of representation within work teams. If specialist qualifications within a work team are covered by only one person and if this person is absent or needs more time than expected for the accomplishment of a task, time delays will be the result, which in turn will entail time pressure, if the deadline fixed for the delivery of the work result is not adjusted correspondingly. From here we can draw a link to the topic of building up qualification. The narrower the basis on which the building up of specialist knowledge is pursued, the more likely will this exert work pressure within a work form depending on the co-operation of different specialists.

The *second* possibility of reacting to unexpected flexibility requirements by means of work organisation, is to ask other project teams for assistance in the accomplishment of a given task. However, the precondition here is that, first, there are projects and project workers with idle capacities and that, second, there are not only just "absorbable" or idle capacities in a general sense for absorption, but capacities offering the required qualifications.

The *third* possibility of easing up time-critical situations is to increase the workforce. This raises the question of which powers and possibilities are available to the management in the provision with financial resources. This possibility encounters limits where, due to additional personnel expenses, the numeric performance targets of companies cannot be met or when the cost frame agreed with the customer is transgressed.

Fourth, in projects with close customer contact, there is the possibility of nipping in the bud additional working-time loads attributable to expected changes in the course of the project by means of clear and unambiguous definitions. As we learnt from the representatives of the companies surveyed by us, customers failed to make decisions on the scope of work tasks at the agreed date, that they request additional information and consultation before a decision is

made – without deadlines being put off – or that they make additional demands in the course of the project. Project workers have thus less time to meet customer requirements. It is true for the entire work process that time burdens and time strains are particularly bound to come about in an environment where internal work planning and scheduling are interrupted in the course of the project by the customer or where project goals are modified in the midst of an ongoing work process.

What can be retained in a nutshell at this point is that there are in fact possibilities of organising work tasks by continuous adjustment management - in a way which allows such tasks to be accomplished within the contractual working time. However, the optimum allocation of time and qualification resources in a complex environment involves considerable co-ordination efforts and reaches its limits where the fulfilment of restrictive basic conditions is called into question by additional time and / or cost resources. The question of whether working-time regulation exerts pressure on methodical project planning so that the work tasks can be completed within the contractual working time, will be scrutinised in the following Chapter.

3.4 Working-time Regulation in IT Companies

Working-time regulations in the seven IT companies surveyed by us allow large scope in the determination of individual working-time duration, location and distribution. For example, they do not provide for rigid blocks and barriers to be imposed in cases where contractual working time has been overrun. Attention must be drawn to the fact that five of the seven surveyed companies have not been in existence for more than 10 years. Therefore working-time regulations have, if there are at all formal arrangements with respect to working time, not gradually stripped off the restricting corset of a strongly regularising and regimenting working-time regulation as it used to be the case with many other industries. It was rather that prior to the introduction of a working-time regulation of whatever kind, a complete informalisation of working times used to determine the working-time policy of these companies. But even the two companies with a long tradition in working-time regulation do not substantially differ, as far as the practical impact of working-time regulation is concerned, from the working-time situation of companies who have been staging efforts for working-time regulation for only a short time so far.

Regulations in all of the seven companies emphasise the principle of "give and take" as the basis for the determination of working times. At this point, the concept of "working-time sovereignty" enters the scene. Here are two definitions taken from working-time agreements:

„In principle, all employees are allowed to distribute their working time according to the principle of time sovereignty. Time sovereignty is defined as the distribution of working time effected

by the employee autonomously - in consideration of both company requirements and his/her personal interests." Or: "Each worker employed in a project is obliged to adapt his working time to the requirements of the projects. In doing so, working time must be chosen in a way ensuring an average of 8 hours per day. The worker is allowed to organise his daily working time according to his personal preferences, on condition that project requirements do not stand against such wish."

What the two definitions have in common is that employees are expected to welcome their own flexible employment if required by project-specific working methods. As a countermove, they receive a compensation in terms of time at a later date, with the time of this compensatory time off being determined at their own discretion. However, the open question springing from this arrangement is whether within a time organisation in which work tasks tend not to be oriented along the lines of the contractual working time, the possibilities of taking advantage of this compensatory time off are not restricted. "Genuine" time sovereignty in daily practice therefore is often an illusion for employees, because there is not sufficient time scope to achieve contiguity between the accumulation of time credits and their reduction.

In two companies, at IBM and in a company of debis Systemhaus AG, both of whom look back upon a long tradition working-time regulation, time accounts have been agreed. IBM has introduced an annual working time, yet with the rider: "If in the case of critical projects the compensation period of 12 months does not suffice, a prolongation of up to further 12 months can be agreed with the competent participation committees." No rules have been agreed as to the measures to be taken if the compensation period is overstepped still further. The rate association of service enterprises, within the VMI in which the companies of debis Systemhaus AG are organised, regulated both 5-year-accounts and a long-term account in its supplement to the collective bargaining agreement concluded with IG Metall in 1999.[5] If the time credit cannot be reduced within a time span of 5 years, there is the possibility of transferring the credit to the long-term account. The two accounts are fed with working-time budgets resulting from the difference between collectively agreed working time and an overrun of working time agreed between employer and employee. Ordered extra work is organised separately, and there is no possibility of transferring such extra work into one of the two accounts.[6]

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[5] For the 5-year-account maximum credits of 550 hours have been agreed; the account may be credited with a maximum of 135 hours per year.

[6] However, these provisons have not been entered into the works agreement on working time of a surveyed subsidiary of debis Systemhaus AG GEI, which is legally autonomous; because in this subsidiary the different accounts are fed inversely: A flexitime account in which voluntary extra work or debits, resp., may be accumulated is subject to regulation. The fluctuation margin amount to +/-40 hours. Extra work, which is surcharge-liabe by 25%, flows into the 5-year-account or into a long-term account. The two last-mentioned types of account are, apart from the type of hours being credited or debited to them, are according to those of the supplementary collective agreement.

Irrespective of how differently these individual arrangements may be shaped, they have in common that the working-time regulations are in no way related to the work process in IT-specific project work. They do not at all claim to exert pressure in a way that the work task of individual project workers is oriented along the lines of collectively agreed working time, because the regulation of working time by means of accounts allows the extensive utilisation of working time at a time when time credits are being accumulated. Working-time accounts thus fulfil the important function of establishing transparency with respect to the working-time situation and thus constitute a workable procedure not to give overtime up for lost or to have them compensated by means of time. However, they will not induce consequences in terms of labour organisation. As companies see it, it is even rational in the short term to extend the duration of working time and to "park" the time exceeding the contractual time in working-time accounts. This working-time regulation does not spark off an incentive to increase labour productivity by means of realising productivity potentials, because why should companies, in view of the possibilities offered to them by working-time regulation, make an effort to adjust actual working time to the contractual working-time duration? As already explained in Chapter 2.2, this type of working-time regulation does not have the effect of labour factor scarcity and it does not trigger off any dynamic innovation process leading to a more productive utilisation of the labour factor. This working-time regulation rather stands in the way of an innovation dynamic geared to increasing labour productivity.

However, a keen eye must be directed to the labour processes themselves in order to identify where exactly the potential to be realised in order to increase the productivity of project work is lying. The realisation of productivity potential by means of technological progress is certainly no option for the production of knowledge-based services. Organisational progress, however, seems to be a promising alternative. Our interlocutors of the IT companies have reported to us about work in projects, realising that work processes often lack structure and that working methods used are still immature. Working-time regulation here would have the task of propelling organisational progress – with the aim of establishing a connection between work task, performance requirements and working time. Permanent exceeding of the contractual working-time duration may be interpreted as an indication pointing to the fact that the current performance requirements can only be met by means of an extension of working time. However, the goal should be meeting performance requirements by means of a more intensive utilisation of working time. Working-time regulation has the task of ensuring that the flexible organisations as which we may undoubtedly see them, turn into learning organisations.

One thing becomes clear: In view of the currently turbulent dynamic of the IT industry, in view of the comparatively open work form of project work, in view of the low standardisability of work processes, in view of the unregulated or regulated passing of the working-time burden on

to individuals – even if with the possibility of intertemporal distribution -, and in view of the extremely great significance of the "human capital" of employees for the production of knowledge-based services, stronger regulations are needed than those which currently exist, in order to create the basic setting for working time oriented along the lines of contractually agreed working time.

4 Conclusion

The preceding explanations provide evidence that working-time regulation has not only the function of regulating the working-time interests of employees, but that it has at least a double effect by exerting a decisive influence on the interaction of the productive factors. Starting from a concept established by Kleinknecht we set forth that working-time regulation gradually restricts the possibilities of utilising the labour factor further and further and that this triggered off a dynamic resulting in an increase in labour productivity.

By referring to the example of the IT industry, it was revealed that working-time regulation in knowledge-based services allows the extensive utilisation of the most important productive factor, namely human capital. The human-capital resource can be utilised amply, it is merely biologic limits which restrict the constant utilisation of available labour. Working-time regulation thus no longer plays its traditional role of triggering off changes in work processes, due to the scarcity of the labour factor, which bring about the change from an extensive to an intensive utilisation of labour. This theory can even then be maintained if working time done in excess of the contractual working time can be "parked" in working-time accounts and be reimbursed at a later date by means of time. Because for the actual organisation of the work process this working-time regulation remains without consequences. Those companies who, despite the current possibilities which working-time regulation offers them, strive for an adherence to the contractual working time *without* time accounts, are punished because competitors utilising the labour extensively at the same time, attain a comparative time advantage. The existence of time accounts therefore seems like a tax to those adhering to the contractually stipulation working time and subsidises those companies who exceed the contractual working time.

Working-time accounts with a long compensation period, as they are being regulated in many IT companies at present, are therefore no workable solution for future working-time regulation, and this is true in multiple respects: The probably most important objection is that this working-time policy does not kick off the utilisation of the organisational innovation potential of the work processes in knowledge-based work, but that it rather obstructs it. If the working methods of knowledge-based work remain so immature and unstructured as they are at present,[7] adher-

[7] ... and as it should be in a young, ambitious industry!

ence to the contractual working time will remain wishful thinking in the long run, and so the international competitive situation of companies producing knowledge-based services will aggravate. Secondly, the goal of redistributing work *now* in the view of the continuously high rate of unemployment is torpedoed by working-time accounts with long compensation periods. Instead, the currently pursued working-time policy leads to the striking situation that the paying out of accounts is due at the same time when, because of demographic trends, a scarcity of specialists will be the prevailing problem in the labour market. Thirdly, equal participation in the labour market of women and men will become more difficult because of the extension of working time well into the and will - as can be seen already at present from the birth rate of high-qualified women – have a negative effect on the demographic development. Fourthly, a working-time regulation which rules time accounts with long compensation periods, supports a short-term-orientated policy of human-potential utilisation. However, it would be in the interest of society, of the employees themselves, and, in the long term, also in the interest of the companies, to pursue a long-term-oriented strategy of utilising high-qualified labour – a strategy bearing in mind that high long-term productivity in knowledge-intensive activities requires continuous regeneration and continuous time for qualification which the work process itself provides for.

The question arises which alternative might be viable, because it is obviously difficult to restrict the utilisation of the labour factor by means of working-time regulation in an environment in which there is a new coalition between employer and employee interests because work for employees is no longer restricted to the meaning "pain of work". The old consent that the minimisation of such pain of work by means of restricted working time is one of the undisputed goals of trade unions, is thus torn to pieces. And there is another characteristic feature of knowledge-based work which makes it difficult to find collective arrangements resulting in an adherence to the collectively agreed working time. Knowledge workers fulfilling their task in close contact with the pulse of the market plan and accomplish work tasks to a large extent autonomously. The working time of knowledge workers cannot (and shall not!) be regulated and controlled via company hierarchies. It is therefore up to the knowledge workers themselves to make demands on employers, to create work conditions and devise task shapes allowing mastering of tasks within the contractual working time. At this point it is the task of working-time regulation to provide the necessary "handrails" of which employees can avail themselves in their effort to adhere to contractually agreed working times. One example of such a "handrail" might be a provision applicable to the frequently regulated annual staff dialogues ordering time-balance reduction dialogues about working-time credits as a mandatory measure. Linking these time-balance reduction dialogues to personnel allocation is also conceivable: If there is no prospect of reducing the time credit within a narrow time span, recruitment negotiations will be embarked upon in the work area where the overload was produced. This type of regulation

allows employees to inject the necessary pressure, which leads to an orientation of the work task to the contractual working time and which *at the same time* kicks off change processes in company organisation with the aim of achieving productivity increases, into company organisation.

As regards the activities performed in knowledge-based work areas themselves, there is no compelling reason for extreme time burdens of individual workers. As illustrated using the example of project work in the IT industry, knowledge division and knowledge pooling is the principal aim of work organisation. Knowledge-based work can only have the desired effect if it is linked to other knowledge-based work. The corresponding organisation of this process is also the place in which an increase in productivity can be expected. Yet if knowledge division provides the basic frame for the production of knowledge commodities anyway, why should it not be possible to overcome the present state of high workloads on high-qualified scientists and to distribute the work among more brains by means of a management geared to this goal?

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