



The effects of working time on productivity and firm performance: a research synthesis paper

Lonnie Golden

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The Effects of Working Time of and Firm Performance: a research synthesis paper	on Productivity
Prepared by Lonnie Golden ¹	
Research synthesis paper initially prepared for Tripartite Meeting of Experts on Working Tim	

INTERNATIONAL LABOUR OFFICE – GENEVA

¹ Professor of Economics and Labor Studies, Penn State University, Abington College, lmg5@psu.edu.

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Preface

Working time has been an important issue for the ILO ever since the founding of the organisation. The establishment of limits on daily and weekly working hours was the subject of the very first ILO Convention: the Hours of Work (Industry) Convention, 1919 (No. 1). The recent economic crisis and the Global Jobs Pact of 2009 have put working-time issues back on the agenda. At the same time, recent trends such as technological advancements enabling teleworking have contributed to the creation of a "24-hour society" where line between work and non-work time is becoming increasingly blurred. This has been coupled with a significant shift away from the "normal" or "standard" working week towards "non-standard" work schedules, for example shift and part-time work, compressed workweeks, weekend work, on-call work etc. Together these trends point to a new context for working-time policy in the twenty-first century.

In order to respond to these new challenges for working time policy and to map out the way forward for the ILO decent work agenda in the area of working time, the Tripartite Meeting of Experts on Working Time Arrangements was held in Geneva from 17 to 21 October 2011. Meeting participants included experts representing trade unions, employers' associations and governments. Prior to the Meeting, the International Labour Office had issued a report: Working time in the twenty-first century: Report for discussion at the Tripartite Meeting of Experts on Working-time Arrangements (17-21 October 2011), to serve as the basis for the discussion. The report outlined contemporary trends, developments and effects with regard to different aspects of working time, such as hours of work and work schedules. This paper - alongside two other papers, one on working time, health and safety, and another on working time and work-life "integration" or "balance" - was used as an input into the discussion report for the meeting.

This paper provides a comprehensive synthesis of previous research examining the link between different aspects of working time and outcomes in terms of productivity and firm performance. These aspects include both how the length of working hours affects unit productivity and also how various types of "flexible" or innovative working time arrangements (i.e., flexi-time, compressed workweeks, hours averaging, working time accounts/time banking, etc.) affect enterprise performance. First, in terms of the volume (quantity) of working hours, the paper finds that manufacturing productivity does not necessarily increase when hours are lengthened, and that in many industries, it appears that shorter hours are associated with higher output rates per hour. Second, in terms of work schedules, the paper identifies two separate categories of "flexible" working time arrangements that can have positive effects on enterprise performance: "Those [arrangements] that enhance individual or organizational productivity, and thus directly restrain unit labour costs of production; and those that improve employee health and well-being and satisfaction with the job or life, without raising current labour costs, and thus [result in] a long-run suppression of labour costs, to the extent that it saves the relatively more hidden costs associated with job dissatisfaction and human capital investment." For example, both flexi-time arrangements and compressed workweeks have positive effects on productivity, employee job satisfaction and satisfaction with work schedules; in addition, flexi-time has a strong positive impact on absenteeism as well. In fact, better work-life balance practices, such as providing workers with flexibility regarding their work schedules, are generally associated with significantly higher productivity. There is also substantial evidence that employers who offer work schedule flexibility to their employees are likely to improve the recruitment of new staff and the retention of existing staff, resulting in cost savings to the enterprise.

Overall, the growing diversification in the organisation of working time raises questions about its impact on productivity and firm performance, as well as the need for an awareness of this dimension when considering employers' and workers' preferences regarding working time. At the same time, this trend is also promising in the sense that it might offer "win-win" solutions that could potentially benefit both workers and employers. It is hoped that this study will provide useful guidance regarding how to respond to new trends and developments in the area of working time and develop innovative, mutually beneficial working-time arrangements.

Philippe Marcadent,
Chief
Conditions of Work and Employment Branch
Labour Protection Department

Introduction

This research synthesis paper attempts to summarize the various effects of working time, in its multiple dimensions, described in the research literature in the past years. It covers the available empirical evidence regarding the effects of both hours of work and flexible types of working time arrangements. It discusses in particular the effects of long working hours and flexibility in the timing of work schedules and their impact on both labour productivity and firm performance via the underlying long-run labour costs. It considers the various dimensions of working time and its features of interest, such as duration, flexibility, variability (unpredictability) and divergence from preferences (mismatches — overemployment and underemployment). It reviews the credible, state-of-the-art research studies, particularly those conducted since 2000, from many countries, so as to help inform discussions between the three social players and their experts. Those studies are both macroeconomic and microeconomic in scope, although the latter predominate. This paper covers the broadest possible range of relevant literature, by both discipline and country, including developed and developing countries. The literature is vast and nuanced, and inevitably some stones are likely to have been left unturned in this synopsis.

The paper examines the effects of working time first on worker productivity and then on the longer run factors that affect costs. Individual performance and costs associated with the length and flexibility of working time can often influence firm performance. The paper considers the number of normal hours, short hours (less than 35 hours per week), and long hours (over 48 hours per week), but focuses on the observed effects of various types of flexible working time arrangements (i.e. flexitime, compressed workweeks, hours averaging, working time accounts/time banking, etc.) and different shift schedules. It refers to programmes, policies and practices initiated by employers that allow workers at least some discretion in adjusting the length and/or scheduling of their working time to meet their preferences. In contrast, when working time is adjusted exclusively to meet business needs for flexibility, this is referred to as "variability", and the number of hours worked or schedules may have little to do with worker preferences (see Golden, 1998; Costa et al., 2006; Lambert and Henly, 2010; McNamara et al., 2011). The paper considers what is frequently referred to as the "business case" for promoting greater workplace flexibility and more flexible work options for workers, i.e. potential long-term improvements in company or unit productivity, labour cost savings, market competitiveness or revenue-earning opportunities that result in gains in output per worker-hour, reduced tardiness, absenteeism and turnover, and improved employee morale and mental and physical health (e.g. Ortega, 2009; Lee and DeVoe, 2012). It also, in spots, considers the gains for firms when a better adjustment of actual working hours to market/customer demands does not diminish worker well-being and, conversely, practices that improve worker well-being without diminishing firm performance. It therefore starts and finishes by elucidating the theory underpinning analysis of the effects of hours of work and working time arrangements on productivity and firm performance, including the role of any mediating variables that moderate or accentuate the link between working time arrangements and productivity.

As international competition heats up amid globalization, it is tempting for firms to focus only on short-term labour cost reduction. One goal is therefore to present the case for upward harmonization as opposed to a "race to the bottom" regarding working time practices, policies, standards and regulation. The paper thus concludes that there should be a creative approach to working time arrangements, which includes identifying the main issues that would need to be addressed to develop any future ILO guidance for advancing *decent working time* as a key component of Decent Work. It aims to identify those specific government policies and company practices regarding working hours and working time arrangements which are most likely to promote increased unit (hourly) productivity, improved firm performance, and also more sustainable companies over the medium to long term, based on the available scientific literature. It closes by contrasting the collectivist and individualist approaches to policy. Do these approaches reinforce each other, i.e. are they synergistic, or do they substitute for one another? What is the relationship between formal provision of flexible work options and informal provision at the firm or individual level? Formal policies or practices might encourage informal ones, or they might substitute for them.

I. Theoretical frameworks — the effects of flexible work options on worker productivity

A common problem identified in all the existing research literature is that there is no coherent theory of exactly how, through which pathways, various working time arrangements influence employee productivity, directly or indirectly (Kelly et al., 2008). Prior meta-analyses were driven by a set of hypotheses derived from a wide range of theoretical models. For example, they are typically rooted in some area within the occupational and organizational health psychology fields, applying models such as "job demands" (work stress), "work adjustment", "job characteristics" and "person-job fit". The industrial-organizational psychology approach, together with the human resource approach, form the "business case" line of research. The labour-industrial relations literature frames the institutional and workplace structural forces that give rise to either cooperation or conflict in the determination of working time and flexibility practices (e.g. Brewster et al., 1996). The labour-industrial relations and human resources approaches combine to observe whether, or establish that, it is in the long-term interest of companies to adopt employee-centered flexibility of their own volition, abstracting from national policies or standards various human resource practices that improve the health not just of workers, but also of the firm or organization. Thus, most of the relevant research, particularly regarding the consequences of flexible working time arrangements, has been conducted at the level of the company.

In contrast, in the economics-based literature, most conventional labour supply research starts by considering hours of work to reflect voluntary responses on the part of workers. Economics-based models, unlike others, focus on worker earnings. This mirrors the emphasis on assumed trade-offs between wages and working conditions, the "compensating wage differential" or "hedonic wage equation" models. In the conventional economist's model, a smoothly operating labour market guarantees that employers will eventually move to accommodate workers' preferred working hours, so long as workers are willing to accept a lower wage in return or save on other costs. Thus, in theory, workers who do not get their preferred hours or timing of work are receiving a positive wage premium - a compensating wage differential – whereas those with the hours and schedules they prefer have a negative pay premium - they may forego a raise, bonus or alternative benefit (Baughman et al., 2003; Wax, 2004; McCrate, 2005; Holzer, 2005; Heywood, et al., 2005). Employers may realize savings in compensation costs as some employees may be willing to trade wages or other non-wage benefits for more leisure time (Kossek and Michel, 2010). If labour markets truly operate in this fashion, then the case is weaker for intervening to steer working hours in a specific direction, since the individuals working undesirable hours are, in a monetary sense, compensated for working those hours. However, the theoretical justification for the existence or persistence of inflexible, inconvenient or mandatory overtime has received little or weak support when tested empirically (Ehrenberg and Schumann, 1984; Altonji and Paxson, 1988). It appears that many workers settle for hours that are not their preferred hours, because other options such as absenteeism or tardiness carry a credible risk of discharge (Altman and Golden, 2004). Thus, some workers may face binding constraints imposed by their employer, such as fixed shift lengths and minimum hours requirements, obliging them to supply more hours than they would otherwise prefer (Sousa-Poza and Henneberger, 2002). Flexible working, on workers' terms, is actually more often found to carry a positive wage premium (Gariety and Shaffer, 2001; Weeden, 2005; Winder, 2009). Hence, part of the wage premium associated with flexible work schedules might be attributed to a positive productivity effect, with the higher wage being interpreted as the result of flexible work facilitating a gain in productivity. Indeed, companies using flexitime seem to operate more productively, as well as more efficiently, and employers appear to be sharing the marginal returns of flexible working time arrangements with at least some of their employees (Shepard et al, 1996; Wolf and Beblo, 2004).

a. The multiple dimensions of both working time and performance outcomes

What is the evidence on the relationship between working time arrangements and some of the key outcomes for employers, either directly or indirectly, intended or unintended? Is there a sound basis for taking the "optimistic view" that one goal need not be sacrificed to obtain the other? Much evidence has been generated in the decade since the highly useful meta-analyses of Baltes et al. (1999) and Martens et al. (1999), and the comprehensive literature review of Kossek and Ozekia (1999). The former included several dozen studies of flexitime and compressed workweeks, narrowed to those studies with pre- and post-intervention test measures or normative experimental comparisons, and found that results varied according to the policy and outcomes assessed as well. Definitive generalizations are difficult to make, given that most studies were of specific cases, covering particular companies, occupations, industries or worker demographics.

Moreover, business outcomes may take the form of different indicators. This includes outcomes such as productivity measures and financial performance, for example, return on investment of a given flexibility option or a firm's general stock market performance. These outcomes may be correlated but are clearly not identical. Unfortunately, there are virtually no studies for which a true return on investment can be computed because the costs to firms of implementing a flexible schedule are difficult to observe or measure completely (Kelly et al., 2008). Generally, the findings in prior research tend to be highly context-sensitive. Clearly, this makes it difficult to predict the outcomes at a more aggregated, industry-wide or national level. The observed results often depend on which working time arrangement and which outcome are being highlighted and how they are measured.

Some forms of flexible work schedules, such as part-time work, compressed workweeks, annualized hours and flexitime, have a long history of implementation. For example, the meta-analysis by Baltes et al. (1999) concluded that both flexitime and compressed workweeks had, on balance, positive effects on productivity, worker self-rated performance, and worker satisfaction with work schedules, but absenteeism was reduced only by flexitime. Flexible work options traditionally have been introduced largely to meet employer needs for flexibility or to keep costs down, although they may also have met employee needs and demands (Krausz et al., 2000). Most importantly, there is virtually no research finding that employees working on flexitime have lower productivity than those on traditional fixed work schedules (Yang and Zheng, 2011). Similarly, prior comprehensive reviews of the literature on occupational health and safety, which affect worker and organizational productivity in a more indirect way, include the role of both duration of hours and worker discretion or choice regarding how much and when to work (Danna and Griffin, 1999; Sparks et al., 1997; Spurgeon et al., 1997).

b. The extent of working time flexibility and potential effects on productivity and costs

Working time flexibility is an important subset of "workplace flexibility". The latter is typically considered to be "the ability of workers to make choices influencing when, where, and for how long they engage in work-related tasks" (Hill et al., 2008). There are various potential definitions of working time flexibility, emphasizing either the company side (e.g. Askenazy, 2004; Chung, 2009) or employee-centered flexibility (FlexPaths, 2004; Golden, 2009; Possenriede and Plantegna, 2011). The latter refers to the ability of workers to adjust their daily or weekly working hours in a way that best fits their preferences and constraints. Such flexibility may range from varying workday start and end times (e.g. flexitime) to complete autonomy as to when work is performed (see Golden et al., 2011). It implies having both access to and use without jeopardy of flexible scheduling practices (see Eaton, 2003; Budd and Mumford, 2006). In the United States, in 2005-06, data from the most recent International Social Survey Program (ISSP), Work Orientations III module, show that about 45 per cent of US workers perceive no ability to influence their own work schedule; only about 15 per cent feel they can freely determine their work schedule (that figure drops to less than 8 per cent among hourly paid workers). The remaining 40 per cent lie somewhere in between, feeling they can influence

their schedule within limits. A survey of Australian workers asked the identical question produced strikingly similar findings — 45 per cent cannot change the times they start and finish work, i.e. those times are fixed, while 43 per cent can decide within certain limits. Only 11 per cent felt entirely free to decide.

In addition, about 28 per cent of full-time (and 16 per cent of part-time) workers regard their overtime work as mandatory (among those employed full time, 21 per cent face mandatory overtime at their job and actually did work some overtime in the preceding month). Almost half of US workers feel that they have the ability often, if not always, to adjust their work start and end times, the other half rarely or never. The distribution of such daily schedule flexibility is skewed heavily by whether the worker is paid hourly or receives a salary. For example, 27 per cent of salaried but as many as 41 per cent of hourly paid workers are "never" allowed to vary their work start and end times. However, almost three quarters of US workers perceive it as being not very difficult to take time off during the workday for personal or family matters.

Thus, a key question to try to grasp theoretically is why so many employers do *not* adopt, implement or consider flexible work arrangements? Does this reflect a rational cost calculus or, alternatively, imperfect information and irrational discounting of the long-term effects of managerial practices, habits and naiveté, and stubborn cultural norms? Employers may introduce flexible work, including schedule flexibility, as a reward for recent past individual productivity improvements (Kelly and Kalev, 2006) or as a human resource tool to achieve better individual work performance (Hamermesh, 1999; Families and Work Institute, 2005; Golden, 2009). Employer provision of a given flexible work option may be intended as a discretionary employee benefit (a form of non-wage compensation) or perk, to accommodate those they perceive to have more work/life time conflicts, and/or as a human resource strategy to retain firm-specific human capital or to recruit new employees without having to escalate the firm's internal pay scale. Employers may also offer flexible schedules as a reward for past performance.

In theory, there are six conditions in which companies may offer more employees more options for flexible working time, such as more flexible scheduling to better fit work to employees' preferences (see Altman and Golden, 2008).

Table 1: Six reasons employers may offer more employee-centred flexible work schedules

Reason	Motivation to match employee's preference for work schedule
1.	Employee's preferred work schedule deviates from the employer's preferred operating or shift schedule, which may increase absenteeism, tardiness, unauthorized use of sick leave or on-the-job shirking.
2.	Replacement cost of turnover and filling job vacancies increases, e.g. an emerging shortage of labour or of a specific type of human capital.
3.	The supervisory and administrative costs of delivering flexible work options decreases, e.g. technological innovations, the spread of work scheduling software and improvements, telecommunication devices and self-managed team working practices.
4.	Employees' discretion over their own work schedules enhances daily work performance and/or organizational performance, e.g. a "high-performance" tool.
5.	To improve their employees' work/life quality, in lieu of wage increases or other employee benefits
6.	The firm's time horizon for considering labour costs becomes longer, resulting in lower discounting of the potential future cost savings associated with more flexible scheduling.

Thus, we may conceive of two, often separate classes of flexible work arrangements in terms of their potential impact on firm performance: those that enhance individual or organizational productivity, and thus directly restrain unit labour costs of production; and those that improve employee well-being

and satisfaction with job or life, without raising current labour costs, and thus lead to a longer run suppression of labour costs in that they save the relatively more hidden costs associated with turnover and human capital investment.

However, most existing studies do not identify the underlying theoretical mechanisms driving productivity gains (Yasbeck, 2004). For example, a composite measure of 19 flexible work options, including flexitime, voluntary reduced hours, part-time and part-year arrangements, found such options to be positively associated with individual productivity gains, as measured by sales per employee. The strongest productivity gains were found in companies that had a relatively high percentage of women and professional employees (Konrad and Mangel, 2000). Some of the 7-per cent variation in productivity between companies was attributable to these options. Framing those figures within the efficiency wage or exchange theory suggests that practices that give employees more working time flexibility affect productivity because employees make a greater effort in exchange for working in a more supportive environment. Indeed, flexible daily start and end times are also more likely to be associated with working very long hours, perhaps because the extra effort is an act of reciprocation or exchange (Golden, 2009; Kelliher and Anderson, 2010; Cañibano, 2011). For instance, in a sample of professional workers, those reporting work schedule flexibility average far more hours per week (54) than those who do not (37 hours) (Hill et al., 2011).

Such findings, however, might indicate that supportive work practices are more of a subcomponent in a broader high-performance strategy designed to boost productivity and firm performance outcomes (Berg et al., 2004). Thus, there are two potential channels through which working hour practices may affect the firm's financial performance: by increasing individual marginal productivity (Konrad and Mangel, 2000; Drago and Golden, 2006) or organizational productivity (output and thus revenue per worker), or, alternatively, by lowering costs, typically by reducing turnover or work misbehaviour such as absenteeism or tardiness. Each involves a somewhat unique theoretical link to company outcomes and different impacts on estimated return on investment (Kossek and Van Dyne, 2008). Organizations with more flexible work initiatives had higher organization-level performance, as derived from the reports of personnel directors, compared to those with fewer initiatives. However, having bundles with several such initiatives had a more synergistic effect than adopting just a single policy (Perry-Smith and Blum, 2000). In the most comprehensive review to date, researchers concluded that the main constraint they faced when collecting evidence on the effects of flexible work initiatives on business outcomes such as productivity, financial performance and associated costs was that there were too "few rigorous, published studies on this topic". Moreover, the mechanisms by which firm initiatives designed to reduce the incidence of time conflicts for employees might affect business outcomes provide a rich vein for additional research (Kelly et al., 2008).

II. Direct effects of the duration of working hours on productivity and firm performance

Lengthening the duration of hours per employee is likely to add to the level of production per worker, but does it actually improve the productivity rate of labour? In the US, longer hours may be associated with greater output, in a given industry, but they are also associated with diminished output per hour, at least for the period 2000-2005 (Holman, Joyeux, and Kask, 2008: p.67, Chart 2). The productivity outcome of hours is rarely observable directly. However, Shepard and Clifton (2000) established that manufacturing productivity does not necessarily improve when hours are lengthened. Their empirical study of aggregate panel data for 18 manufacturing industries within the US economy suggests that the use of overtime hours actually lowers average productivity, measured as output per worker hour, for almost all of the industries in the sample, even when the data are controlled or corrected. More precisely, a 10-per cent increase in overtime resulted, on average, in a 2.4-per cent decrease in productivity measured by hourly output.

Indeed, it appears that in many, if not most, industries in the United States, shorter hours are actually associated with higher rates of output per hour (Holman et al., 2008, see Figure 1). In the second half of the 1990s, output growth in industries involved in the production, distribution and use of IT products produced well-documented rapid growth in productivity, because there was more moderate growth in labour hours. In the years 2000-05, recovery from the 2001 downturn in production was relatively quick, and over 60 per cent of industries recorded increases in output. In contrast, the downturn in hours of labour was more prolonged and steeper, affecting 80 per cent of the industries studied. In some cases, this was traceable to reduced hours per worker. Productivity growth was slower from 2000 to 2005 than from 1995 to 2000, but it did not stop altogether. This was because employment and hours were both slow to recover. In the 1990s, productivity grew rapidly as output grew much faster than labour hours. In the 2000-05 period, however, a drop in hours was the main factor in increased productivity, particularly in the information sector. Thus, relatively smaller increases in working hours after 2000 appear to have been associated with otherwise similar gains in productivity (see Figure 1.) Strong output growth was the main contributor to productivity growth during the 1990s. In contrast, during the 2000–05 period, reductions in labour input played a key role in contributing to the productivity rate increases observed in several sectors. It can therefore be concluded that relatively shorter hours may have contributed to a rise in productivity per hour.

A recent analysis of 18, mostly European, Member countries of the Organisation for Economic Cooperation and Development explores the degree to which longer annual hours have been associated with per-hour productivity at the national level, since 1950. It finds that the responsiveness of perhour productivity for a given increase in working time is always negative. Not only are there decreasing returns on added working time, the returns in the form of added production diminish more rapidly for longer working times. When annual working time climbs above a threshold of 1,925 hours, a 1-per cent increase in working time would lead to a decrease in productivity of roughly 0.9 per cent at the threshold and a fully proportional decrease of 1 per cent past the threshold of 2,025 hours (Cette et al., 2011).

a. Reduction in hours and worker productivity evidence

The potential theoretical and practical impact of a reduction in hours on productivity was assessed by the International Labour Organization (ILO) over twenty years ago (White, 1987). Improvements in the efficiency of labour utilization were evident from a century's worth of research that found some productivity improvement following a reduction in hours, depending, of course, on the accompanying conditions and responses, in the medium if not the short term. Four types of reductions were distinguished, all of which remain relevant to today's conditions. Each creates its own potential for productivity improvements that would offset much, if not all, of the initial costs associated with shorter working hours. The four types are: reductions in excessive hours, gradual reductions in standard hours, accelerated reductions in standard hours, and individualized options for reducing working hours. When implementing the flexible scheduling implied by the last type, White reported, many plants in the United Kingdom and on the European continent included shorter weekly hours or part-time options. He found that the circumstances most likely to produce gains in labour productivity were those involving a cyclical or variable workload. When the workload tapered off, such flexibility allowed workers to match their attendance more closely to their preferred allocation of time.

While the improved productivity brought about by reduced hours might limit the rise in labour costs, it might also undermine future job creation. Conversely, it might spark productivity-led growth in overall demand for the types of labour that have become more productive per hour. Standard labour demand theory suggests that a gain in labour's marginal revenue product per hour makes it a relatively more valuable and attractive input vis-à-vis capital equipment. Such an improvement in productivity of labour may occur for any one of the following reasons: the physiological benefits(less physical or mental fatigue) of shorter hours, or "shocking" managerial or organizational improvements in time utilization, including more flexible work schedules that squeeze out downtime (slack time) or wait time (see White, 1987). Simply put, since extended working hours for full-time

workers often yield less than proportional gains in output, policies and practices that restrain hours from becoming excessive are bound to produce less than proportional reductions in output, leaving some scope for improving output per hour if the reductions carefully target those workers and jobs that are experiencing diminishing marginal productivity. Such a risk is certainly increased when hours are long, but not exclusively so. Alertness and resourcefulness may be compromised for certain workers even before hours become "overtime" or "excessively" long, particularly workers with responsibilities outside the workplace, such as schooling or caregiving. Energy for production tasks is finite (White, 1987, p. 43), because energy for recuperation and posture have some kind of irreducible minimum. However, there may be some expendable "spare" energy that workers could devote to the job (Konrad and Mangel, 2000). In addition, reduced productivity and the onset of mental and physical fatigue can be managed to some extent through the number, length and reorganization of break times. A company can thus reduce excessively long hours at minimum cost in two ways: physiological adaptation to reduced hours that heightens the pace of work, and reduction of unauthorized break periods or engagement in personal activities while on the job.

b. Longer hours and productivity

Since White (1987), much has been written in the fields of occupational health and safety, labour-industrial relations, work organization and work/life research, documenting the extent to which longer hours of work per day or per week tend to undermine a worker's job performance, including productivity per hour. While additional working hours may reflect a worker's work ethic or commitment to the job, workplace, employer or labour force and the hope of attaining higher current or future earnings, at some point, longer working hours inevitably begin to create risks and time conflicts that interfere not only with the quality of non-work life, but also on-the-job performance. In addition, when considered within a longer time horizon and from a broader perspective, productivity and the firm's labour costs may be affected in many indirect ways. The theory and empirical research on the worker and firm performance effects of flexible work options are often embedded within a broader range of outcomes, and their findings are mixed. Flexible workplace practices significantly reduce the life-to-job spillovers that impair productivity at the job or workplace. This holds even among hourly employees, including those at the entry level (Bond and Galinsky, 2006).

Most of the literature examining reduced hour (or workload) arrangements, which involve a reduction in workload or hours with a commensurate pay reduction, focus on employer interest in retaining human capital, in particular top talent (Kossek and Lee, 2008). A more recent case in point is research showing that, while organizations adopt reduced hour arrangements for their (largely professional) employees, mainly in order to retain talent, they also found that reduced hours improved workers' self-reported performance on the job (Kossek and Lee, 2008). This buttresses findings that employer provision of better work/life balance practices such as job flexibility is associated with significantly higher productivity and self-assessed performance (Bloom et al., 2009). Much research has focused on flexibility practices (such as flexitime and shortened workweeks) as a human resource benefit to attract and retain talent (Barnett and Hall, 2001). Too few studies consider the motivation and coordination consequences on individual and group performance (Kossek and Van Dyne, 2008), especially in terms of life/work consequences. Nevertheless, even if, or when, there is no effect on employees' work/life conflict, work/life balance practices such as flexitime are often associated with improved organizational performance (Beauregard and Henry, 2009).

Greater workplace flexibility is more strongly related to lower negative spillover from life off the job to work among low-wage and –income than among mid- and high-wage and –income employees. Employees who experience less negative spillover from home to work are more likely to be productive on the job (Bond and Galinsky, 2006). Empirical modeling of the entire manufacturing sector in the United States suggests that work-family support programmes succeeded in improving productivity, and hence firm performance. Nevertheless, further research is needed to identify the mechanisms whereby flexible work options result in improved productivity (Clifton and Shepard, 2004).

In a relevant study examining the association between job flexibility and worker self-assessed performance, employer provision of more or better flexible work practices for employees is associated with significantly higher productivity (Bloom et al., 2009). It supports the "optimistic" view that globalizing competition can spur higher productivity with such practices, laying the groundwork for a "win-win" situation. It rejects the more "pessimistic" notion that companies face a trade-off where competing more effectively must come at the price of reducing work/life balance. However, the positive correlation between higher productivity and superior work/life policies all but disappears when controlling for management practices. That is, work/life practices reflect better management practices and better conditions generally for employees in companies, making them more productive. Nevertheless, the absence of a negative association between flexible work options and productivity may justify the costs of introducing greater flexibility on worker welfare grounds. Among medium-sized manufacturing firms in the United States, France and Germany, differences are found between countries. For example, the United States has been found to have managerial practices that are relatively most effective at attaining potential peak productivity but possesses the relatively poorest indicators of work/life balance among countries (Bloom et al., 2009).

III. Indirect effects of working time on productivity and firm performance via "overwork"

When longer working hours have an adverse effect on worker health, owing to fatigue and work stress (Sparks et al., 2001; van der Hulst 2003; Caruso et al, 2004; Golden et al., 2011), they tend to keep labour productivity below its potential. "Overwork" can refer to the increasing risk that a worker will experience symptoms of fatigue and work stress, which would undermine either the short-term or long-term productivity rate of workers or firms. Those who experience higher levels of self-reported "overwork" report a higher scale of stress and symptoms of depression, and poor health and self-care. Current estimates of the "overworked" find that almost 3 in 10 American workers report recently feeling "overworked", and that about half of workers feel they have been "overworked" at some point in the past three months (Galinsky et al., 2005a).

Direct measurement of the relationship between labour productivity and hours is rare. One instructive study in the construction sector, of 88 projects in the labour-intensive electrical and mechanical trades (Hanna et al., 2005), shows a distinct decrease in productivity as the number of hours worked per week and/or project duration increases. There is a wealth of cases in which long or irregular working hours are associated with a range of physical and mental health and injury risks that limit long-run capacity to remain productive at work (Sparks et al., 2001; Dembe et al., 2005; Grosch et al., 2006; Beckers, 2008; Burke, 2009). For example, workers with long hours face elevated risks of health complaints (Fenwick and Tausig, 2001). In addition, workplace practices that lead to longer work time doing repetitive tasks can raise the risk of cumulative trauma disorders (Brenner et al., 2004). Working beyond the usual or normal hours in particular heightens the risk of on-the-job injuries and accidents, typically via fatigue toward the end of a long workday or -week (van der Hulst, 2003). The risk of occupational injury is doubled when employees work more than 12 hours per day and goes up by over 40 per cent over 10 hours in a given day (Salminen, 2010). In addition, workers returning to work after fatigue-related injuries typically work shorter hours than previously (Dong, 2005). This illustrates how long hours ultimately prove to be a potential, indirect inhibitor of productivity.

Moreover, there is an increased likelihood of illness and injury among employees working long schedules, particularly unconventional shift work times (for example, evening and night and perhaps afternoon shifts when fatigue-related errors are made by employees working demanding schedules (Dembe et al., 2008 Salminen, 2010)). To take the example of one occupation, truck drivers have a high prevalence of back disorders, which have been linked to what are often long hours spent driving and little job control (Jensen and Dahl, 2009). Increases in men's working hours, particularly to over 50 hours per week, have been found to contribute indirectly to hypertension, reduced time for sleep

and physical activity, and job dissatisfaction (Artazcoz et al., 2009; Courtemanche, 2009). A study of 2,746 workers paid by the hour by a truck and engine manufacturer revealed that the company routinely asked the workers to work more than 40 hours per week. It found that hours of 60 or more per week were associated with indicators of productivity outcomes (and injury rates), while moderate overtime hours were not. The two productivity outcomes used were non-physical and physical presenteeism (at work but less productive, such as an inability to bend and twist), both of which were found to underlie measures of overall work effectiveness, output demands and time (mental) demands (Allen et al., 2007).

A search for economic or financial data on the costs of long working hours concluded that "few studies have directly investigated the financial consequences of long working hours" (Dawson et al., 2004). What limited information there was revealed, for example, that worker performance in a sample of white-collar jobs decreased by as much as 20 per cent when 60 or more hours were worked per week (Nevison, 1992). High overtime levels can cause poor employee morale, which can affect productivity and absenteeism. Circadian, a research and consulting company, showed that 31 per cent of extended-hours operations that had extremely high overtime (25 per cent or greater) also had poor morale, compared to only 13 per cent of firms with little or normal overtime (Kerin, 2003). The precise point at which work becomes overwork varies, of course, depending on the pace and on the physical and mental demands of the job, workplace and occupation. It also varies from individual to individual, depending on the demands faced during non-market work time and, of course, the capacity to work longer without experiencing fatigue or stress. Why does overwork matter for firms? The subgroup that was more overworked was likely to make more mistakes at work — 20 per cent as opposed to 0 per cent among those who reported no overwork. In addition, employees who report feeling overworked are almost three times more likely to report that they "have to work on too many tasks simultaneously" and "get interrupted at work". These factors certainly undermine worker productivity. Workers stating they have experienced fatigue in the previous two weeks are almost three times more likely to experience health-related lost production time than those not reporting fatigue (Brogmus, 2007). About 9 per cent of US workers experiencing fatigue reported losing production time specifically because of fatigue in the previous two weeks. Such workers lost an average of 4.1 productive working hours per week, most of which was reflected in reduced performance at work rather than absence from work, i.e. presenteeism rather than absenteeism. Fatigue affected work performance by impairing focus and increasing the time needed to complete tasks. Since workers with fatigue cost US employers US\$ 136.4 billion per year in health-related lost production time, \$101 billion more than workers without fatigue (Ricci et al., 2007), shortening working hours specifically in situations where long hours generate greater fatigue or risk of error or accident could deliver a higher level of productivity and lower production costs.

IV. Mismatches with worker hours preferences and labour productivity

Hours mismatches can exist anytime employers require longer (or shorter) hours than employees might prefer. In one US survey, more than half of all employees indicated a preference to work fewer hours, down to 35 hours per week from the average of 43 hours (Bond and Galinsky, 2006). The proportion dropped considerably, however, to about 7 per cent, when fewer hours were explicitly understood to be accompanied by lower incomes (Golden and Gebreselassie, 2007). In Australia, 21 per cent of men and 16 per cent of women expressed a preference for fewer hours (Reynolds and Aletraris, 2006). In the countries of the European Union, in 2001, the gap between household actual versus desired working hours averaged 11.8 hours per week, varying between 15 hours at the higher end (the United Kingdom and Ireland) and 7 hours per week at the lower end (Spain and Luxembourg) (Väisänen and Nätti, 2002). It is more often the size of the gap between desired and actual work schedules as opposed to the number of hours per se that affects a worker's job performance (Krausz et al., 2000; Hill et al., 2006). For example, among Australian workers, the number of hours worked mattered less than the mismatch between hours and working time preferences (Drago and Warren, 2009). Perhaps surprisingly, overemployment (working more than

the preferred number of hours) proved to be more detrimental to job satisfaction than underemployment. Time-based conflicts are generally thought to decrease overall work productivity (Netemeyer et al., 2005). Thus, the adverse symptoms generated by longer working hours tend to be exacerbated by a worker's lack of control over the volume and scheduling of working hours (Maume and Bellas, 2001; Spurgeon, 2003; Berg et al., 2004; Golden and Wiens-Tuers, 2006). Some of the adverse effects, such as fatigue and stress, may thus be traceable more to the degree of control over working hours than the long number of hours worked (Buelens and Poelmans, 2004). Conversely, the extent to which workers experience matching may be enhanced if they have some discretion, autonomy or control regarding the number and timing of their working hours. For example, 25 per cent of employed adults who worked as many hours or days as they prefer reported feeling "overworked" sometime in the previous three months (Galinsky et al., 2005). That figure rose to 44 per cent among those who worked more days or weekly hours than they preferred.

External pressure to work, without employee discretion, often diminishes worker satisfaction (Green, 2004). The most hazardous situation potentially is a combination of overtime and relatively greater external pressure to work overtime instead of overtime being purely the worker's choice (Maume and Bellas, 2001; Henly et al., 2006). This situation has also been associated with elevated risks of health complaints (van der Hulst and Geurts 2001). Involuntary overtime not controlled by the employee was associated with relatively high rates of fatigue (Beckers et al., 2008). Among those working more than 50 hours a week and facing some supervisory pressure to work overtime, a dramatically higher proportion report experiencing an injury, illness or somatic stress levels (Cornell University Institute for Workplace Studies, 1999). People who work more hours or days than they prefer because of employer expectations also feel more overworked (Galinsky et al., 2005a). Among those who are not permitted to adapt their working hours to their preferred schedule, 45 per cent experience symptoms of overwork (Galinsky et al., 2001). Workers with a more external locus of control report higher stress and consequently poorer well-being and health outcomes (Meier et al., 2008). Nurses who work mandatory overtime and uncertain (for example, on-call) hours run a significantly higher risk of contracting musculoskeletal disorders, both acute and cumulative, particularly shoulder pain, but also, to a lesser extent, back and neck pain (Trinkoff et al., 2006; Johnson and Lipscomb, 2006; Aiken et al., 2002). Overtime work has a less deleterious effect if is purely voluntary, although it is still associated with greater fatigue (Golden and Wiens-Tuers, 2008).

V. Direct and indirect effects of flexible scheduling on labour productivity

Does flexible scheduling produce labour productivity gains? When do flexible work schedules improve productivity and reduce job stress, and when do they simply increase job stress (Kossek and Michel, 2010)? Because this is such a context-sensitive matter, it is difficult to generalize (Baughman et al., 2003; Kelly and Moen, 2007; Shockley and Allen, 2007; Eldridge and Nisar, 2011). One strand of research on flexible working time arrangements focuses on outcomes such as measures of productivity or efficiency (Lewis, 2003).

There may be a direct relationship between flexible workplace practices and organizational performance, but the means through which this relationship occurs, the mediating mechanisms by which it affects company-level outcomes, are less well known (Ngo et al., 2009). The organizational climate itself may act as a mediator. The use of such practices is said to generate a positive organizational climate, which in turn can enhance firm performance. Indeed, providing more autonomy tends to be one of the "high performance" organization tools that may promote additional work effort or intensity per hour (Altman and Golden, 2004; Askenazy, 2004; Combs et al., 2006).

Rigid daily work schedules may be a contributing factor that is independent of the length of working hours, in that they have indirect effects on worker productivity via health, injury, and fatigue (Ng and Feldman, 2008). By their nature, flexible working hours may minimize the interference of family

obligations with work productivity (Cousins and Tang, 2004). Among those who are not permitted to adapt their working hours to their preferred schedules, 45 per cent feel overworked (Galinsky et al., 2001). Lack of control over the scheduling of working hours may reinforce, compound or exacerbate the effects of long hours on workers (Fenwick and Tausig, 2001; Berg et al., 2004). Greater variation in workers' hours tends to reduce their well-being when the variation does not reflect their choice (Heisz and LaRochelle-Côté, 2006). The unpredictability of working hours (Askenazy, 2004), in particular for those with lower incomes (Lambert, 2000), can have a corrosive effect on worker job satisfaction levels. In France, "flexibility" that is considered to be wholly employer-centered is associated with increased mental strain on workers, largely because it gives them the feeling they are under time pressure and unable to do their job properly (Askenazy and Caroli, 2010). Interestingly, variable scheduling over days of work provokes more strain than variable scheduling of hours over the course of the day.

Some of the most direct evidence comes from case studies conducted in large US firms, particularly service providers, where individual worker productivity is a challenge to measure or monitor (Corporate Voices for Working Families, 2011). For example, in the pharmaceutical sales force, productivity was defined in terms of many monitored metrics such as the number of calls made, the number of presentations and "yield" on activities. After AstraZeneca implemented job sharing and part-time sales forces, the metrics of the employees concerned were consistently found to be in line with the productivity of full-time sales representatives. In a division of GlaxoSmithKline, flexible working time arrangements, such as job sharing, were introduced among customer service representatives. After evaluating the job-share arrangements, the company realized that not only had it met its goal of keeping job-share arrangements "revenue neutral", job-share positions resulted in greater productivity and extra coverage.

At JP Morgan Chase, 84 per cent of employees rated their area's productivity as good or very good if they had a manager who was sensitive to their concerns, as compared with only 55 per cent of employees whose manager was not. A more empirical statistical study examined the extent to which employee use of alternative work schedules, including job sharing, flexitime, compressed workweeks and part-time work, affected a firm's profit rate, which is calculated as real operating income as a fraction of sales in a given time period (Meyer et al., 2001). Giving workers the option to take time off when a family member was sick or to work from home were both associated positively with firms' profits (although job-sharing arrangements actually had a slight negative impact on profits). Profits may be enhanced indirectly if workers value the provision of sick leave so much that they are willing to accept a compensating differential for it, but few employees actually use it. Profits also might be boosted indirectly to the extent that productivity is sustained by the subsequently reduced job dissatisfaction and stress. Workplace flexibility is defined as "the ability of workers to make choices influencing when, where, and for how long they engage in work-related tasks" (Hill et al., 2008). Its potential benefits for workers improve individual productivity indirectly, via health (Butler et al., 2009; Grzywacz et al., 2008; Grzywacz et al., 2007; Halpern, 2005; Jang, 2009) and the promotion of better work/family reconciliation and balance (Boushey, 2008; Jang, 2009).

a. Interactions between duration and employee-centered flexibility of work schedules

Importantly, the effect of working time flexibility often interacts with the duration of working hours. Greater discretion or control over the timing of their work helps workers to alleviate some of the negative effects of long hours on the incidence of work-related injuries, illnesses and time stress (Boden, 2005; Costa et al., 2006; Dembe et al., 2007; Hughes and Parkes, 2007). The benefits to workers hinge on the extent to which flexible working time arrangements reflect worker choice or preference (as Martens et al. (1999) had originally found for Belgian workers). Reduced variability of hours has almost as much influence as higher flexibility on work/life satisfaction (Costa et al., 2006). Generally, worker and also managerial capacities to withstand intensive and uncertain working conditions are buttressed by greater flexibility in the nature of the work (MacEachen et al., 2007).

Availability of flexible schedules, in a workplace climate of perceived usability, is a crucial factor. When workers report having greater flexibility in the workplace, particularly regarding the timing of their work, this generally tends to be associated with less self-reported stress and strain, and better physical health (Grzywacz et al., 2007; Butler et al., 2009).

The pain and strain associated with long working hours, as evidenced, for example, by a higher incidence of musculoskeletal disorders and mental health complaints (Raediker et al., 2006), tend to be attenuated by a greater internal locus of control among the workers involved. Having schedule autonomy lessens the frequency of physical health symptoms (but not fatigue) for a given number of hours worked per week (Tucker and Rutherford, 2005). Associations between working hours and self-reported health are tempered by the reasons given for working overtime or schedule autonomy. For example, in several businesses across a variety of industries, worker stress and burnout were found to be lower among workers engaged in all types of formal flexible arrangements. From 30 to 50 per cent of observed differences in health indicators between workers engaged in flexitime (either alone or combined with compressed workweeks) and those not engaged in a formal arrangement were explained by perceived workplace flexibility. Flexitime in particular was found to be the most powerful contributor (Grzywacz et al., 2008) to this indirect factor of worker productivity over the longer term.

In perhaps the most precise estimate to date, an empirical analysis of Fortune 500 companies showed that productivity firm-wide was boosted by anywhere from 1 to 3 per cent by an increase in the family-friendliness index (Clifton and Shepard, 2004). This reinforces evidence for European Union organizations of statistically significant correlations between certain work/family practices and organizational performance measures (Stavrou, 2005). A survey comprising interviews with company managers in 21 European countries found that firms that adopted a relatively greater set of flexible working practices for workers experienced a marginally greater likelihood of having a very good economic performance than low performing firms, although the perceived performance differed only very slightly compared to other high performing firms without such practices (Chung et al., 2007). Nevertheless, even slightly higher performance suggests flexible work practices are at least not detrimental to productivity.

This supports other research demonstrating that flexible work schedules help employees better coordinate their daily work and life responsibilities and boost their on-the-job performance (White et al., 2003; Berg et al., 2004; MacDermid and Tang, 2009), thus increasing average labour productivity along the "intensive margin". Similarly, flexible schedules may lead to greater efforts being made along the "extensive margin", leading workers to work longer hours, reduce unscheduled absences or breaks, curb tardiness and limit the use of sick time (Drago and Hyatt, 2003; Altman and Golden, 2004; Berg et al., 2004; Holzer, 2005; Drago et al., 2009; Kelliher and Andersen, 2010). Organizations may realize per-hour labour cost savings if having flexibility induces employees to work longer hours. Workers may choose to work when their personal productivity is at its peak (Shepard et al., 1996), or work extra hours during the organization's peak times in exchange for flexibility at other times (Beauregard and Henry, 2009; McDonald et al., 2005). Indeed, for employees in a German government agency, the consequences of idiosyncratic deals ("i-deals") regarding individual work arrangements, such as part-time work and telecommuting, were positively related to working unpaid overtime but had no measurable effect on performance expectations and organizational commitment (Hornung et al., 2008). However, performance gains are observed to be relatively greater for professional jobs and for women (Johnson and Provan, 1995). Specifically, among professional women the relationship between flexitime and earnings was positive, while among non-professional women it was actually negative. This suggested that the productivityenhancing effects of flexitime were dominant among professional women (while non-professional women are subject to a compensating wage differential if they wanted to have flexitime). Because professionals often work more autonomously, flexible schedules may cost employers little while boosting capacity. In contrast, however, providing a high degree of flexibility to non-professionals whose jobs lack autonomy and whose tasks are highly dependent on the work of others may require such workers to sacrifice some earnings in order to avoid adverse effects on employer costs.

In many contexts, worker satisfaction with shifts is higher when the schedules are flexible (Hill et al., 2006; Bacon et al., 2005). A broad survey of Dutch public sector employees showed that access to flexible working time arrangements, especially flexitime, is associated with sizeable increases in satisfaction with working-time "fit" (Possenriede and Plantenga, 2011). Because of the positive association between having schedule control and the ability to engage in multitasking, flexible schedules suppress the otherwise negative association between schedule control and work/life balance (Schieman and Young, 2010b). Interestingly, the highest level of productivity gain is associated with workers who enjoy de facto flexible work schedules that are not formally adopted by the employer (Yang and Zheng, 2011). Thus, if there is "organizational decoupling", in which organizations adopt a flexible work programme only ceremonially, without making it available to all workers, the programme will turn out to be detrimental to the actualization of productivity for workers who do not enjoy flexibility. Flexible work scheduling does, however, help workers achieve their productivity potential in situations where they participate in flexitime even if their employer does not actually offer it formally. Adopting hours and schedules that create more time sovereignty for employees may be motivated more by the consequent improvement in the efficiency with which a firm uses its available resources than by improved labour productivity (Wolf and Beblo, 2004). Indeed, in German firms work time flexibility that is employer-centered, provided the degree of flexibility is moderate and not excessive, increases the efficiency of the production process, but it does not improve the rate of labour productivity growth.

In a sample of workers from 17 German organizations, the employee's perception of "time-autonomy" is positively related to job performance. In addition, "time restriction" is negatively related (Kattenbach et al., 2010). The time restriction factor adds to employee exhaustion and deepens work/non-work conflict, while time autonomy diminishes these outcomes. (However, neither form of "flexibility" was related, either way, to job performance). In the Republic of Korea, flexible work schedules actually had a significant negative impact on labour productivity. However, this might have been associated with the long working hour arrangements that most Korean firms rely on to adjust operating schedules, with flexible hours more often applied at the discretion of employers, not employees. As such, employer-centred flexible hours, instead of adding to worker job satisfaction and organizational commitment, increased work stress and organizational detachment, thereby lowering labour productivity. Interestingly, dependent care programmes in the Republic of Korea, which are more clearly implemented for the employees' benefit, did increase work effort, thus enhancing labour productivity (Lee and Kim, 2010). Typically, job satisfaction is found to have a relatively weak direct link with job performance, although the latter may be facilitated by the former through improvements in organizational citizenship behaviour (e.g. Lambert, 2000; Valcour et al., 2011).

b. Flexitime and company costs

Do flexitime or other flexible work practices generally add more to company costs than they save? The answer is not always self-evident. There may be some productivity advantages to workers, not just employers, of a fixed daily work schedule. A subset of workers may prefer a clear boundary of work and life that is impermeable (Schieman and Young, 2010a). That is, to minimize the potential spillover of work into family or personal spheres of life, and vice versa, some workers may be made better off working at times that are segmented, and made worse off working at times that are more fragmented, over the course of a day or week. Similarly, they may be more productive while at work if spillovers from non-work life are minimized by segmenting work and non-work activities at clearly differentiated points of the workday. Employees may choose to work during their peak hours in terms of personal productivity (Shepard et al., 1996), or work extra hours during the organization's peak times in exchange for flexibility at other times. Negative spillover from non-work life to work, in ways that impair productivity at work, is less than in the opposite direction, but not trivial (Bond and Galinsky, 2006). Workers may also work harder to avoid losing a job that offers them the flexibility they desire (Shepard et al., 1996). One national representative survey in the United States found that 36 per cent of organizations reported their flexible work arrangements to be cost-neutral. However, as many as 46 per cent believed they gained a positive return on investment by implementing such practices. With regard to care-giving leave, the most costly of flexible workplace practices, 42 per cent of firms viewed them as cost-neutral, with another 42 per cent reporting a positive return on investment in such programmes (see Beauregard and Henry, 2009; Bond and Galinsky, 2006).

Certain organizations are more likely than others to adopt programmes designed to provide employees with flexible work options. Previous studies (e.g. Matz-Costa and Pitt-Catsouphes 2010; Pitt-Catsouphes et al., 2009) pointed to a number of factors underlying the decision of organizations to provide these options to their employees, including manager and decision-maker characteristics such as age, worker characteristics such as the percentage of employees in professional occupations, and organizational characteristics such as the number of employees. It would be misleading to assume, however, that instituting favourable organizational policies (e.g. a phased retirement programme) necessarily means that workers will use them (e.g. by phasing into retirement).

In previous studies of flexibility, the correlations between the options that organizations officially provided and the options that their employees utilized were only weak to moderate (Thompson et al., 1999). The literature suggests two junctures at which the relationship between the policies provided by the organization and the options used by individual workers may break down (Blair-Loy and Wharton, 2002). First, not all flexible work policies that organizations implement become available to the majority of their employees, for reasons including lack of supervisor support (Thompson et al., 1999). Second, employees do not utilize all accessible flexible work options, for reasons including the fear that utilization may harm their careers (Eaton, 2003). Because of these possible fissures in the pathway from adopting a flexible work practice to workers utilizing it and realizing productivity gain, there is a case not only for more research on this process, but also for underlying national standards and protections that would both ensure more widespread implementation and reduce the perceived jeopardy that many employees feel by choosing such options. In a survey of over 1,500 employees and managers in six US corporations, enabling employees to vary their working hours on a daily basis was much more likely than traditional work schedules to be associated with self-reported positive impacts on productivity, quality of work, plans to stay with the company and job satisfaction (Pruchno et al., 2000). To the extent that such satisfaction boosts employee morale and loyalty, this in turn increases organizational attachment and longer term work force productivity (Scandura and Lankau, 1997). It may generate future cost savings associated with turnover and human capital investment (Glass and Finley, 2002; Baughman et al., 2003; Holzer, 2005).

c. Compressed workweeks: similar effects?

Baltes et al. (1999) had found that compressed weekly work schedules were positively related to satisfaction with both the job and the work schedule, but unrelated to absenteeism and productivity. However, a more recent study finds that employees working a 4/40 schedule were relatively more productive than those not working 4/40 schedules, but did not have greater job satisfaction (Facer and Wadsworth, 2008). In a sample of city government employees, productivity gains were sustained and employers reaped other savings, such as lower energy costs (Facer and Wadsworth, 2010). In a study of professional and technical workers with flexible work schedules, Eaton (2003) noted that the perception of flexibility is what really makes the difference. Control over time, flexibility, and pace of work were positively related to job commitment and job productivity.

d. Effects on retention, turnover intention: Indirect effects on performance

The literature suggests that organizations can derive two types of benefits from flexible work schedules. The first is the aforementioned extra effort, motivation, commitment, engagement, job satisfaction and subsequent productivity increase. The second main employer benefit is the savings obtained from an enhanced ability to attract and retain such a motivated work force. Long-run cost savings occur when a company attracts a higher quality workforce from a larger applicant pool of talent and retains it by lowering turnover, encouraging plans to stay with the company and reducing

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rates of dysfunctional employee behaviour, such as absenteeism or accidents (Pruchno et al., 2000; Halpern, 2005; Kelly et al., 2008; Kossek & Hammer, 2008). Evidence suggests organizations benefit from flexible work options, too, through increased employee engagement, commitment and attachment (Galinsky et al., 2005b; Halpern 2005; Galinsky et al., 2008; Pitt-Catsouphes and Matz-Costa, 2008).

Schedule flexibility is a key motivator for pursuing a different job or employer (Casper and Buffardi, 2004). Thus, retention and turnover are going to be strongly associated with the degree of scheduling flexibility perceived by employees. Up to 84 per cent of workers indicate that flexible work options are "important" to them (Work-Family Development, 2006). Flexibility in work ranks fifth out of 21 job features in importance (SHRM, 2005). Almost 80 per cent of employees who lack them would "like to have more flexible work options" if "using them had no negative consequences at work" and if they were viable in their jobs (Galinsky et al., 2005b). The importance attached by workers to flexible work options is not too surprising, given that time-based conflict has been known to result in many negative job-related outcomes, such as lateness and absenteeism (Hammer et al., 2003). A comprehensive review of over 150 peer-reviewed studies from a number of disciplines supports this (Kelly et al., 2008). For example, among employees paid by the hour, including those at entry level, more flexible workplace practices significantly reduced life-to-job spillovers, improving retention and employee commitment or engagement (Bond and Galinsky, 2006). In a rare investigation using longitudinal data, the positive effects of human resource practices designed to promote better work/family balance actually produced sustained reductions in absenteeism, more than any sustained improvements in productivity or financial performance (Giardini and Kabst, 2008).

In a study of multinational corporations in Hong Kong, China, a crucial determinant of whether a company was more likely to provide flexible employee-centred work programmes and policies was whether or not senior executives believed that such practices could achieve certain organizational goals, such as retention of talent (Ngo et al., 2009). There is much evidence that such practices are indeed able to attract and retain employees (Casper and Buffardi, 2004). However, mixed findings were reported regarding their effects on organizational performance (Batt and Valcour, 2003; Konrad and Mangel, 2000; Perry-Smith and Blum, 2000). In the Republic of Korea, where flexible work schedules are employer-centred, this had a significant negative impact and encouraged employee turnover (although dependent care programmes did enhance employee retention, see Lee and Kim, 2010).

A recent, in-depth case study investigated the turnover effects of an organizational innovation (ROWE—Results Only Work Environment) aimed at moving away from standard time practices to focus on results rather than time spent at work (Moen et al., 2011). It found that the turnover odds are indeed lower for employees participating in the ROWE initiative, which offers employees greater work-time control and flexibility, and that this is the case regardless of employee gender, age or family life stage. ROWE also appears to dampen the potential turnover effects of negative home-towork spillover, physical symptoms, and job insecurity: those in ROWE report reduced turnover intentions. English-speaking and Nordic societal clusters were recently compared and contrasted regarding their flexible working time arrangements in organizations and degrees of turnover (Stavrou and Kilaniotis 2010). Significant differences were found in the flexible working time arrangementsturnover relationship between the two clusters. Specifically, as unsocial hours (overtime, shift work, weekend work) increase in the English-speaking cluster, so does turnover. As schedule flexibility (telework, flexitime) increases in the Nordic cluster, turnover drops off. Generally speaking, turnover is significantly higher in Anglo Saxon cultures than in Nordic countries. Specifically, schedule flexibility in both spheres has a negative relationship with turnover, although it is stronger in the Nordic countries. Part-time arrangements, however, are positively related to turnover. In US case studies, unmet needs for workplace flexibility were found to be a prominent driver of turnover. The firm Deloitte calculated that it had saved over US\$ 41 million in one year by providing more flexible work arrangements for professionals who otherwise were destined to leave the company (Corporate Voices for Working Families, 2011).

e. Effects of flexible work schedules on absences, sick leave and tardiness

A major source of cost savings for organizations is lower rates of absenteeism (Kelly et al., 2008; Kossek and Hammer, 2008). Rates of absenteeism are one indicator of employee commitment that affects organizational productivity. Absence rates in the United States averaged 3.6 per cent in 2001. That is, in a given week, about three and a half of every one hundred employees who usually work full time worked less than a full week, mainly because of illness or injury, other medical problems, child care or personal obligations, or family leave (Bureau of Labor Statistics, 2002). The rate is remarkably constant across age groups, though slightly higher among workers aged 55 and over. The average is considerably lower among men, at about 2.5 per cent (higher for older men), and about one third above the average among women, at 4.8 per cent. When broken down by occupational group, it is over 4 per cent among clerical workers, service occupations, machine operators/labourers and technicians; it is under 3 per cent among managers and administrators. The number of hours lost in the United States is highest among operators/labourers and lowest among managers, professionals and sales staff. There is little variation between industries, although the absence rate is highest in public sector (especially education and health) jobs and lower in construction. In terms of lost work time, the high amount among government workers is matched by workers employed in transportation and nondurables manufacturing. Median monthly employee (job) absence rates averaged 0.6 per cent of scheduled worker days through the first three months of 2011 (Bureau of National Affairs, 2011). In theory, a greater ability to vary or delay start times should discourage absenteeism and tardiness. An early, exhaustive review of the evidence regarding the potentially ambiguous effect of flexible scheduling on absence rates nevertheless found reduced rates of absence in three quarters of cases studied and that organizations using flexitime also experienced reduced use of sick leave (Baltes et al., 1999). In addition, flexitime appears to lower the incidence of tardiness, although the reduction appears to be significant only for women employees (Ala-Mursula et al., 2002).

Evidence suggests that another benefit of flexible work scheduling in the form of flexitime is decreased absenteeism (Casey and Grzywacz, 2008). Employers seem to benefit when employees have working time autonomy to the extent that more flexible working time arrangements reduce absenteeism if they facilitate the combination of paid work with other activities. In the longer term, they may further decrease absenteeism by also improving worker health, through reduced stress and increased job satisfaction (Possenriede, 2011). A nationally representative sample of working adults in the United States found that employees with flexible working hours reported lower levels of absenteeism (Halpern, 2005, supporting the findings of Baltes et al., 1999). Moreover, organizations offering paid sick leave saw their profits go up (Meyer et al., 2001; Beauregard and Henry, 2009). On the flip side, working irregular hours with no control over time tended to increase the amount of sick leave taken by men employed in Norway (Olsen and Dahl, 2010). Flexibility in the work schedules of those working regular hours had little effect on sick leave; this might be explained by the fact that employees in Norway already have substantial, institutionalized flexibility when it comes to leave of absence. Generally, there tend to be some notable, underlying cultural differences in the extent to which work time has spillover effects on family life. Compared to Westerners, Malaysians indicate significantly lower work interference with family (Hassan et al., 2010). This suggests that in cases or cultures in which satisfaction with family life is relatively higher, family interference with work is higher (Hassan et al., 2010).

VI. Policy implications and recommendations

This report has summarized and attempted to synthesize the wealth of findings in separate studies regarding various flexible working time options or practices and outcomes of interest to employers. Little has been said about the importance of government policies and the legal and cultural reference framework. Policies at company or organization level may be enabled, supported, reinforced or complemented by policies at the national level. Such national policies are most prominent in non-

English-speaking developed countries. In the United States, such minimum standards are rarer and it is left entirely up to the employers to introduce practices specific to their organization. In other English-speaking developed countries, flexible working time options have been pushed with laws promoting individualization without national standards.

There are essentially two categories of public policies regarding working time. The first is national standards and regulations and has two subsections, one being limits on hours applied across a swath of, if not all, industries and occupations, and the other more of an attempt to individualize or customize working time via "rights to request" and "rights to refuse" to work certain schedules. The second comprises policies designed to foster and spread "best practices", based on the "business case" that can be made for companies to adopt the kinds of formal, or even informal, workplace practices that fit their organization, production process and labour force. Thus, there is much at stake in a comprehensive summary of the existing recent research to get the business case "right". This may indeed be most important in nations where public policy is not a key driver of organizational work/life balance practices (Beauregard and Henry, 2009). For instance, UK employment legislation decrees that employees caring for young or disabled children, or for elderly dependents, have the right to request a flexible work schedule, and that their employers have a duty to "seriously" consider that request in an expeditious time frame (Hegewisch, 2009). Countries such as the United States and Canada, and, to a somewhat lesser extent now, Australia, rely heavily on the initiative of individual companies and managers to implement more flexible workplace practices, given the underlying business case for them borne out in the research (Beauregard and Henry, 2009). Legislation on "rights to request" proposed in the US Congress would require employers to consider written requests from employees to shorten their own standard workweek or to shift their daily start and end times (Hegewisch, 2009). Access to and support in the use of such practices depends on the work/life culture (Galinsky et al., 2005b). Relying solely on a business case to spread more flexible practices may limit their potential appeal, to the extent that evidence for return on investment in such practices is derived from case studies that cannot be extended by analogy to all organizations. An enhanced legal right to refuse to work employer-requested overtime could target workers who face that situation most often, such as those in the lower income brackets or employed in sectors where there are inflexible scheduling practices, not just long hours associated with injury risks, such as construction and business and repair services (Dembe et al., 2008). It might also be fruitful to extend overtime regulation, such as the US Fair Labor Standards Act (FLSA), in ways that enhance an employee's legal right to refuse employer-requested overtime (beyond just health care employees, a right now recognized in about a dozen US states).

The up-front, direct cost to firms of introducing and incorporating more employees into a flexitime regime make it unrealistic to expect that flexible working time arrangements will be delivered to everyone in the work force who would value it. As with the market failure that occurs when parental leave arrangements fall short — resulting in underinvestment in young children — even voluntarily negotiated private arrangements might fail to yield efficient, socially desirable outcomes (Ruhm, 2005). If there are potential positive (and negative) externality effects, then a public policy of both subsidizing the initial, direct costs and/or enhancing the opportunity costs for firms reluctant to adopt flexitime with taxation might be warranted. For example, a one-time public subsidy to cover the startup costs of introducing flexitime would push the supply outwards, a step that might be particularly necessary to promote the spread of formal flexitime practices. Such a subsidy could be self-funding if there were also taxes that effectively placed a premium cost on firms not providing the flexibility valued by so many workers. Figure 2 illustrates that there may be a socially optimal amount of flexitime at a level perhaps somewhat less than the proportion of the work force that wishes it. However, it is clear from the research summarized herein that flexible work options have been underutilized, not only in the sense that supply is below demand, but because of the unrealized potential gains for employers and organizations in the form of sustainability of labour and reduced long-term labour costs. The direct cost of providing flexitime likely grows exponentially as flexible work schedules are extended beyond the "lowest hanging fruit" jobs that are very amenable to flexible scheduling to jobs where they might be more costly to implement, coordinate or monitor. At the same time, the cost savings for firms shrink as firms provide ever more flexitime.

The strongest force behind the spread of more decent working time arrangements — ones that are both productive and socially healthy — remains a full employment economy plus the new institutional structures that facilitate a formal expression for desired flexibility in working time options. Therefore, companies could and should be offered incentives to adopt and spread flexible working time arrangements, such as flexitime and working time accounts, which are known to improve employee morale and attitudes. This could, in turn, not only enhance individual work performance, but also improve company productivity, quality and, ultimately, the sustainability of firm performance.

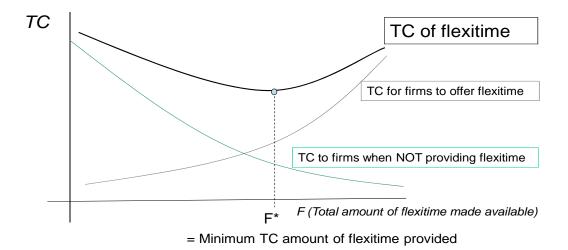
Appendix.

Figure 1. Economics of flexible work: total cost of providing vs. not providing flexible work options

When externalities are introduced, the total cost (TC) to society of flexitime is the sum of the employers' direct cost of providing (the positive externality of) flexitime and the direct cost of not providing it (e.g. absenteeism, tardiness and resignations, lower productivity), plus the indirect cost to society of not providing it (foregone productivity gains). The lowest point on the aggregated, U-shaped TC reflects the optimal amount of flexible scheduling provided in the aggregate economy. If increasing flexible working time is cost-neutral to firms and actually reduces aggregate social costs thanks to positive externalities, any excess demand for flexitime constrains social well-being below its potential (see Altman and Golden, 2007). Even when considering the positive externalities and reduced average cost to all firms in the aggregate when one firm introduces flexitime, it is reasonable to expect diminishing returns to such positive externalities. There will be a point beyond which increasing flexitime raises average cost not only to one firm but to all firms. It is possible to find a point where the marginal social benefit of more flexitime might be exceeded by the marginal social cost of providing it.

Figure 1

Aggregate Total Cost (TC) of providing flexitime



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