

Work–life ‘balance’ and gendered (im)mobilities of knowledge and learning in high-tech regional economies

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Abstract

Over the past three decades, economic geographers have explored how the spatial co-location of firms in regional industrial agglomerations helps foster learning, innovation and economic competitiveness. While recent work highlights the crucial role of labour mobility in promoting inter-firm ‘knowledge spillovers’, it pays little attention to how gendered responsibilities of care and personal-life interests beyond the workplace shape workers’ (non)participation in the relational networks and communities of practice widely theorized as enabling learning and innovation. This article presents new data from two regional economies: Dublin, Ireland, and Cambridge, UK. It documents the role of ‘work–life balance’ provision across IT employers in shaping the cross-firm mobility of workers and the tacit knowledge, skills and competencies which they embody. The article disrupts the powerful premise that ‘cross-firm labour mobility is always and everywhere good’ which informs much of the regional learning literature. It also contributes to emerging debates around ‘holistic’ regional development.

Key words: Work–life balance, gender, worker mobility, learning, innovation, regional economies

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1. Introduction

Neither of the NEG[s] [New Economic Geographies] pays any attention to questions in the immediate sense of the social division of labour between different kinds of paid work and between paid work and caring, or the wider sense of establishing sustainable regional development. Yet these dimensions are central to understanding the well-being of people within regions and therefore to regional or spatial development as a whole (Perrons, 2001, 211).

Over the past two decades, economic geographers have analysed in ever finer detail how the spatial co-location of firms in regional industrial agglomerations helps foster conditions conducive to learning, innovation and economic competitiveness. Studies have repeatedly highlighted the crucial role played by the physical mobility of skilled labour in: (i) accelerating the transfer of embodied knowledge, expertise and

technological capabilities between firms; (ii) allowing work teams to bring new constellations of ideas, skills and accumulated experience to bear upon novel problems and (iii) enabling firms to adapt effectively to changing market conditions and to avoid technological lock-in (e.g. Capello, 1999; Lawson and Lorenz, 1999; Pinch and Henry, 1999; Grabher, 2002; MacKinnon et al., 2002; Gertler, 2003; Bathelt et al., 2004; Eriksson and Lindgren, 2009). However, despite the expansive nature of the regional learning and innovation literature, the majority of insights around cross-firm worker mobility to date have emerged from studies of male workers, or else from studies that collapse all workers into a unitary, genderless category of ‘mobile labour’. Scholars have paid relatively little attention to how gendered identities, varied responsibilities of care and personal-life interests beyond the workplace shape workers’ (non-)participation in the relational networks and communities of practice widely theorized as enabling learning and innovation. Consequently, the regional learning literature continues to reinforce a powerful (and problematic) economic claim that cross-firm labour mobility is always and everywhere a good thing.

In response, this article seeks to bring the regional learning and innovation literature into new productive conversation with research on the gendered geographies of ‘work–life balance’ (WLB), social reproduction and care. The article examines everyday experiences of work–life conflict by female and male knowledge workers in the IT sector in two high-tech regional economies: Dublin, Ireland, and Cambridge, UK. It documents the role of gendered everyday conflicts between work, home and family, and of employer-provided WLB arrangements in shaping workers’ cross-firm mobility pathways, and hence the cross-firm transfer of embodied tacit knowledge, skills and competencies. The analysis draws on a multimethod evidence base collected over a 4-year period (2005–2008) comprising 68 in-depth interviews with female and male IT workers, HR managers and labour organizers; two regional surveys of IT employers (150 firms in total with combined local employment of 8068 workers) and a WLB/labour mobility survey of female IT workers ($N=162$). It also draws on post-recessionary data from a second survey of female IT workers ($N=139$) conducted in December 2010.

The article proceeds as follows. Section 2 presents a critical review of theories of embodied knowledge mobility in regional industrial systems. This is focused on a set of highly cited studies through which these processes have come to be understood, but which are strangely myopic in their almost exclusive focus on male workers, and in their analytically divorcing workers’ knowledge production activities from gendered activities of social reproduction, family and care. Seeking to address this shortcoming, Section 3 explores the rise and significance of the ‘WLB’ agenda and the questions it raises for regional learning and innovation. Following a presentation of the regional case studies, methods and evidence base, Sections 5 and 6 explore: (i) the connections between commonly experienced work–life conflicts and workers’ preferred WLB arrangements; (ii) variations in employer provision of those WLB arrangements and (iii) their combined role in fostering and constraining cross-firm worker mobility and ‘embodied knowledge transfer’. Section 6 focuses particularly on female IT workers, as an under-researched group within the regional learning literature. The article concludes by outlining its broader significance, as part of an emerging research agenda around ‘holistic’ regional development, which integrates an economic focus on (knowledge) production with social reproductive concerns around family, well-being and quality of life.

2. Theorizing (masculinist) embodied knowledge mobility and regional competitive advantage

In the context of the widely purported shift to the ‘Knowledge Economy’, the capacity of firms and regions to foster and support interactive processes of learning, innovation and knowledge production is fundamental to sustainable economic advantage. As cheaper and more extensive communications technologies have made some forms of codifiable or formalized knowledge readily accessible to all, so economic success is increasingly dependent on firms’ abilities to access less ubiquitous embodied forms of tacit knowledge (Polanyi, 1967, 4),¹ which are more difficult to formalize, highly personal and context specific (Maskell and Malmberg, 1999). One important mechanism for the cross-firm transfer of spatially sticky tacit knowledge is through the physical mobility of highly qualified workers (Lawson, 1999; Grabher, 2002; Wolfe and Gertler, 2004; Eriksson and Lindgren, 2009). As employees move between workplaces and interact with new colleagues, comparisons of evolving ideas are made with ‘how things are done in other firms’ (Henry and Pinch, 2000, 198). These new constellations of talent therefore increase the potential for unexpected ideas, new interpretations and synergies as colleagues expose each other to alternative viewpoints, epistemic habits and technical critiques (Grabher, 1993; Malecki and Oinas, 1999). Employees may also maintain advantageous *ongoing* knowledge links between their new firm and their previous firm via personal relationships, integrating them into larger communities of practice. Thus, in contrast to rather esoteric notions of knowledge and innovation residing ‘in the air’ (Marshall, 1890) or in the ‘buzz of urban life’ (Storper and Venables, 2004), cross-firm tacit knowledge transfer is not some disembodied, abstract process. Rather, it is always and everywhere *peopled*.

This is a well-rehearsed set of arguments. Yet, the regional learning literature continues to suffer from a peculiar blindspot: the majority of its insights around ‘knowledge spillovers’ to date have come from examinations of male worker mobility or else from analyses that collapse workers into a genderless, unitary category of ‘mobile labour’. These problems are illustrated by a number of well-known and highly cited studies. Henry and Pinch (2000) provide a convincing empirical demonstration of the concrete mechanisms through which knowledge is spread within Oxford’s Motorsport Valley,² based on the ‘churning’ of designers, managers and engineers between firms, tracked through 100 leading employees’ career biographies. This mapping revealed a move on average of once every 3.7 years, and a total of eight moves in an average career in the industry, with individuals often moving together or continually recombining in different work teams over time. Strikingly however, all of the career history/knowledge mobility case studies tracked are male. In another highly cited study, Almeida and Kogut (1999) tracked regional variations in knowledge spillovers in the semiconductor industry through the interfirm mobility paths of patent holder engineers in 12 US

- 1 Notions of tacit knowledge draw on the work of Michael Polanyi, and refer to the knowledge or insight that individuals acquire which is ill defined or uncoded and which they themselves cannot fully articulate, in contrast to explicit (or codified) knowledge that is transmittable in formal, systematic language. However, the distinction between ‘tacit’ and ‘explicit’ knowledge is not fixed.
- 2 ‘Motorsport Valley’ refers to the regional agglomeration of the British motorsport industry that employs ‘well in excess of 30,000 people and consists of scores of small- and medium-sized firms clustered in a 50-mile radius around Oxfordshire in Southern England. Approximately three-quarters of the world’s single-seater racing cars are developed and assembled in the region’ (Henry and Pinch, 2000, 192).

regions. However, only 10 of the star engineers in their database of 483 patent holders are female. And in Scandinavia, based on an impressive time-series data set of 1.1 million Swedish workers, Power and Lundmark (2004) explore intensities of intra- and inter-firm mobility of professional workers in Stockholm's prominent ICT cluster (centred on Kista Science Park) and find them to be higher in this cluster than in the rest of Stockholm's urban economy. However, while acknowledging that women comprise 29.3% of ICT workers in this cluster, Power and Lundmark fall short of comparing male and female labour mobility patterns, instead lumping both groups of workers together in an apparently genderless mass. Other examples of prominent regional learning-worker mobility studies that fail to explore the gendering of 'knowledge externalities' include: Keeble et al. (1999), Fallick et al. (2005), Lawton-Smith and Waters (2005), Agrawal et al. (2006) and Breschi and Lissoni (2009).

In short, there remains a dearth of regional learning analyses that explore patterns of cross-firm embodied-knowledge mobility beyond a narrow empirical focus on male (or 'honorary male') workers. As evidenced through the reference lists of the studies cited above, the origins of this dominant masculinist analytical lens can be traced back to Saxenian's (1994) seminal account of labour mobility among young, male engineers in Silicon Valley. Many of these engineers had migrated from the East Coast to California where, in the absence of local family ties, they effectively blurred the temporal and spatial boundaries between work and social life. Saxenian explored the role of these 'Silicon Cowboys' in accelerating the cross-firm diffusion of technological capabilities, knowledge and skills in the region, where:

There's far greater loyalty to one's craft than to one's company. A company is just a vehicle which allows you to work... If you can't succeed in one firm, you'll move to another firm.

Semiconductor executive who had worked in the region for 3 decades,
cited in Saxenian, 1994, 36.

According to Saxenian (1994, 34), 'engineers in Silicon Valley shifted between firms so frequently that mobility not only was socially acceptable; it became the norm', with minimal disruption to personal, social or professional ties (Saxenian, 1994, 35). Only 15 of Saxenian's 143 cited research participants were female.

Encouragingly, recent studies have begun to identify a wider, gendered diversity of worker experience within regional industrial systems, exposing the particularity of the 'Silicon Cowboy' model and disrupting some core tenets of the regional learning—worker mobility literature. One example is a study of female knowledge professionals in the ICT sector in Cambridge's high-tech regional economy (Gray and James, 2007). Building on Massey's (1995) earlier analysis of masculinized 'high-tech monasteries' in Cambridge, Gray and James (2007) found significant gender differences in the qualitative nature of job churning between female and male workers, underpinned by processes of 'trailing spouse syndrome' (Hardhill, 2002). Specifically, while female ICT workers changed jobs almost as often as their male counterparts, this was often not for their own personal career advancement, but to accommodate their partner's career moves (see also Dex, 1987), resulting in them taking compromise jobs involving frequent transfers between occupations and sectors that potentially devalue women's embodied knowledge and skills (Gray and James, 2007, 426).

A second example is offered by Benner's (2003) work on 'female-dedicated labour market intermediaries' in Silicon Valley. Benner explores the activities of the Silicon

Valley Chapter of Webgrrls in shaping patterns of embodied knowledge transfer across firms. Webgrrls has a membership of 30,000 women spread across more than 100 chapters worldwide and was founded on a concern that women in high-tech occupations continue to face greater barriers to networking than do their male colleagues. These exclusions have important implications for female workers’ ability to ‘stay on top of industry trends and changing skills demands, to find access to multiple employment opportunities when needed and to build career mobility over time across multiple organizational contexts’ (Benner, 2003, 1819). In response, Webgrrls provides its female members with mentoring programmes, peer support, online job listings and technical discussion boards. This infrastructure enables women to develop and maintain the skills and expertise needed to compete in volatile high-tech regional labour markets, and hence shapes the regional dynamics of cross-firm learning and embodied knowledge spillovers in important—yet under-researched—ways.

This article seeks to extend this nascent research agenda by bringing into new productive conversation core insights from the expansive regional learning and innovation literature with new insights from an equally expansive literature around WLB. Specifically, the article explores the gendered everyday struggles by female and male IT workers to combine activities of home, work and family and the role of differential WLB provision by IT employers in motivating and constraining the cross-firm mobility of workers and the knowledge, skills and competencies which they embody.

3. Explaining the rise and societal significance of the WLB agenda

The ascendancy of ‘work-life balance’ debates within government, academia, business and the media over the past 15 years can be understood as a response to the shifting spatial and temporal boundaries between work, home and family that have accompanied the transition to the ‘New Economy’.³ As firms reorganize work in response to globalization and the opportunities afforded by new technologies, ‘flexibility’ for many workers has come to mean increased workloads, less predictable work schedules and more unsocial work hours, as firms demand they work longer and harder in ways which minimize labour costs (Allen and Henry, 1997; Hochschild, 1997; Beck, 2000; Benner, 2002; Bunting, 2005). At the same time, household life has also become more complex as female labourforce participation rates continue to grow and an ever-increasing proportion of workers are part of dual earner households (Crompton et al., 2007). These problems are reinforced by the decline of the extended family; increasing numbers of lone-parent households and greater eldercare responsibilities in the context of increased life expectancy. Simultaneously, the neoliberal attack on social provisioning has transferred the burden of care down to the ‘natural’ level of home (Bakker and Gill, 2003) where most women retain the major responsibility for the ‘messy and fleshy’ components of domestic and family life⁴ (Katz, 2001; Crompton and

3 The ‘New Economy’ is a short-hand term used to encapsulate the simultaneous rise of feminized services, the global reorganization of business through ICTs, new forms of ‘flexible’ work and employment and the decline of the male breadwinner/female caregiver model since the late 1970s (see, Perrons et al., 2006, for a useful introduction).

4 These ‘messy and fleshy’ activities of social reproduction include: shopping, cooking, cleaning, daily paperwork, social networking, minding, participating in religious or civic organizations, caring for

Brockmann, 2006). The overall result is a complex, gendered, multivariable balancing act between the competing demands of paid work and responsibilities, commitments and life interests beyond the workplace, for which workers have only 'finite resources in terms of time and energy' (Cooper et al., 2001, 50).

In response, the desirability and means of achieving an appropriate WLB have received widespread attention from governments, managers, trade unions, academics and the media. At the individual level, WLB refers to 'the absence of unacceptable levels of conflict between work and non-work demands' (Greenblatt, 2002, 179), or 'the extent to which individuals are equally involved in—and equally satisfied with—their work role and family role' (Greenhaus and Singh, 2003, 2). While encompassing earlier 'family-friendly' perspectives, the term WLB was intended to broaden the debate beyond working mothers to include all workers (e.g. DfEE, 2000), and hence a wider diversity of personal life needs, interests and responsibilities such as religious attendance, sports, hobbies and community and charity work. Alternative WLB monikers include work–life reconciliation, work–personal life integration, work–personal life harmonization and work–life articulation (see e.g. Lewis et al., 2003; Lewis and Cooper, 2005; Crompton, 2006; Gregory and Milner, 2009).⁵

Whatever the label used, the societal and moral significance of the successful integration of paid work with other meaningful parts of life is profound. Many studies have documented how a lack of WLB can result in increased stress, deleterious effects on psychological and physical well-being, and increased family and marital tensions (e.g. Burchell et al., 1999, 2001; Lewis and Cooper, 1999; Gornick and Meyers, 2003; Greenhaus et al., 2003). Moreover, given persistent gender variations in work–life stress as women make the greatest compromises to fit paid work around family (Moen, 2003; McDowell et al., 2005), studies have also highlighted the importance of WLB provision as a potential means for improving gender equity in market employment and household caring (Wise and Bond, 2003; World Economic Forum, 2005; c.f. Connell, 2005). The labour union movement has also emphasized the social importance of WLB as a means of improving workers' quality of life and combating the increasing work pressures that are destabilizing households and societal integration (e.g. ICTU, 2005; TUC, 2005, 2009).

The WLB research literature draws attention to a range of employer-provided arrangements intended to help workers integrate work with other life responsibilities, interests and commitments. These are summarized in Table 1 across four main categories: those that provide greater flexibility of when work is done; greater flexibility of where work is done; reduced total work hours and employer assistance with childcare. While the impact of these various WLB provisions on various aspects of firms' profitability, productivity and competitive performance has been documented,⁶

children and the elderly, and hence mediating with educational, medical and religious organizations (Katz, 2001, 711).

- 5 These alternative monikers each embody a different critique of the WLB term. Gambles et al. (2006) have summarized the problems of 'WLB' terminology, in terms of: its implicit suggestion that work is somehow not part of life; its potentially undermining unpaid care work by implying it is just another part of the non-work domain and its (false) implication of work and personal life as mutually exclusive (see also Batt and Valcour, 2003; Gregory and Milner, 2009). Nevertheless, none of these alternative monikers have the same instant level of recognition by employers, hence the (qualified) use of the WLB term in this article.
- 6 The benefits that accrue to employers as a function of their providing WLB arrangements to help workers reconcile competing activities of home, work and family have been documented as: improved recruitment and retention (e.g. Bevan et al., 1997; Deery, 2008); increased productivity (e.g. Dex et al., 2001; Bloom

Table 1. A typology of employer-provided work–life balance arrangements (James, 2011)

Policy type	Description	Examples
Flexible work arrangements	Policies designed to give workers greater ‘flexibility’ in the scheduling and location of work hours while not decreasing average work hours per week	Flextime (flexible beginning or end work time, sometimes with core hours) Flexplace/Telecommuting (all or part of the week occurs at home) Job sharing (one job undertaken by two or more persons) Annualized hours
Reduced work hours	Policies designed to reduce workers’ hours	Part-time work Compressed work weeks (employees compact total working hours into 4 days rather than 5 days) Term-time working
Personal leave	Policies and benefits that give leave to provide time for personal commitments and family caregiving	Extra-statutory maternity leave Extra-statutory paternity leave Adoption leave Unpaid leave during school holidays Guaranteed Christmas leave Use of own sick leave to care for sick children Leave for caring for elder relatives Emergency leave Study leave Sports achievement leave
Practical help with child care	Policies designed to provide ‘workplace social support’ for parents	Employer-subsidized childcare—in-site Employer-subsidized childcare—off-site Information service for childcare Workplace parent support group Breastfeeding facilities Policy of actively informing staff of benefits available

this literature does not analyse the effects of WLB provision on the cross-firm job-to-job mobility of workers. Rather, existing studies tend to atomize individual case study firms from the regional industrial systems of which they form part. As such, how far different levels and types of WLB provision by employers shape the cross-firm mobility of workers’ embodied knowledge and skills within regional economies remains an important research question which geographers are particularly well-placed to answer—yet one with which economic geographers and feminist geographers alike have yet to fully engage.

4. Case studies, methods and evidence base

This research focuses on the Information Technology sector in Dublin, Ireland, and Cambridge, UK. The intellectual significance of these case studies is three-fold. First, IT represents a knowledge-intensive industry at the vanguard of new working practices (Newell et al., 2002); in which firms compete intensely on the basis of who can bring

and Van Reenen, 2006) and reduced absenteeism (Baltes et al., 1999). See also Dex and Scheibl (1999, 2001) and Dex and Smith (2002).

new products to market quickest; and in which the separation of work and 'life' is substantially more blurred than in more traditional occupations (Hyman et al., 2003; Scholarios and Marks, 2004). Second, Dublin and Cambridge are both recognized as important European clusters of IT growth of interest to policy-makers in other regions (see e.g. Sainsbury, 2002; Ó Riain, 2004) and have similar numbers of computer software firms and employees.⁷ Third, WLB has come to assume a strong national significance in both Ireland and the UK, as a function of long average work hours relative to other EU member states (Cowling/Work Foundation, 2005; see also Drew et al., 2002; Kirby, 2002).

The research strategy employed a mixed methods approach with three core components. First, 30 in-depth semi-structured interviews were carried out with workers in 15 different IT firms in Dublin; and 18 in-depth interviews with workers in 14 different IT firms in Cambridge (2006–2008) (Table 2). The research participant sample was constructed to include a diverse a range of workers with varied extra-curricular/family/household commitments and responsibilities, working in SMEs and larger companies. Interviews lasted between 1 and 2 hours and explored: regularly experienced negative work-to-home and home-to-work spillovers; the relative utility of different WLB provisions in reducing those spillovers and the impacts of using different WLB provisions on *what, how, where, when* and *with whom* work is done. Research participants were also questioned on their 'before-and-after' experiences of significant discontinuities in their use of different WLB arrangements. An additional 20 interviews were undertaken with HR managers, labour organizers, economic development agencies, women's IT organizing initiatives and local academics (Table 2). The interviews were tape recorded and transcribed through secretarial support.

Second, an online survey of IT workers was undertaken in both regions, to document the wider prevalence of key phenomena identified at interview (documenting: worker demographics and household situation; frequency of experience of different dimensions of work–life conflict; workers' uptake of specific WLB arrangements in current employers; career history; and how WLB concerns have shaped patterns of cross-firm job-to-job mobility). The survey participant sample was recruited initially using contacts of interview participants and expanded using email listservs administered by three women's IT networking organizations [the Girl Geeks and womenintechology (UK) and Women in Technology and Science (Ireland)]. In total, 162 questionnaires were completed (May to August 2008). It proved difficult to recruit men ($n=9$) reflecting powerful, ongoing constructions of WLB as a 'female only issue' within the IT sector.

The third methodological component was an online survey of IT employers targeting firms in both regions (May to August 2008). Two employer databases were built first by cross-referencing information from: Cambridgeshire County Council, Cambridgeshire Science Parks and Incubators Directories, and Companies House; and from Enterprise Ireland, Irish Software Association and Hot Origin. This identified 479 firms in Dublin and 504 firms in Cambridge (excluding resellers, distributors and computer maintenance companies) by product, market specialization, address, workforce, key personnel

7 At the time of fieldwork for this study, the Irish software industry employed ~30,000 workers in 900 companies—with 83% of those workers and 76% of those firms located in the Greater Dublin region (see also Crone, 2002; Grimes, 2003). This compares with Cambridge's IT cluster, home to ~700 IT firms and 38,000 IT workers.

Table 2. Summary of in-depth interviews (Dublin and Cambridge, 2006–2008)

Targeted cohort	Job roles included in cohort sample	Examples of diversity of responsibilities, interests and commitments outside the workplace	Research participants’ employers
<p>Working parents with young families</p> <p>Dublin: 7 interviews with working mothers + 7 interviews with working fathers</p>	<p>Female participants</p> <p>Founder and CEO</p> <p>Director of Software Devt</p> <p>Directors of Marketing</p> <p>Sales Manager</p> <p>IT Engineers</p>	<p>School run, relieving the nanny, attendance at school sports events, parent–teacher meetings, running a Cub Scout group, charity fund raising, home schooling</p>	<p>Dublin: 7 multinational IT companies (over 250 employees)...</p> <p>... and 5 indigenous IT SMEs</p>
<p>Cambridge: 9 interviews with working mothers + 3 interviews with working fathers</p>	<p>Male participants</p> <p>Chief Executive Officer</p> <p>Chief Technology Officer</p> <p>Software Engineers</p> <p>Computer Programmers</p>		<p>Cambridge: 4 multinational IT companies (over 250 employees)...</p> <p>... and 8 locally founded SMEs</p>
<p>Workers with ‘non-traditional’ work–life balance requirements</p> <p>Dublin: 9 interviews</p> <p>Cambridge: 10 interviews</p>	<p>Developer, Software Development Lead, Chief Technology Officer, Chief Executive Officer, Software Engineers</p>	<p>Choral singing, acting, international travel, further study, sports, outdoor pursuits, gym, care for horses, labour organizing, home schooling children</p>	<p>Dublin: 6 different IT companies</p> <p>Cambridge: 10 different IT companies</p>
<p>HR Managers delegated with coordinating workplace WLB programmes (many of whom are also working parents themselves)</p> <p>Dublin: 7 interviews</p> <p>Cambridge: 1 interview</p>	<p>7 HR managers (including 1 male) with responsibilities for over 1500 IT workers in Dublin</p> <p>1 HR manager in a Cambridge SME</p>		<p>Dublin: 7 different IT companies (predominantly large multinationals)</p> <p>Cambridge: 1 SME</p>
<p>Industry watchers with a WLB interest</p> <p>Dublin: 10 interviews</p> <p>Cambridge: 5 interviews</p>	<p>Trade union representatives, economic development officials, government officers, media correspondents, female IT labour organizers</p>		<p>Irish Equality Authority, SIPTU, Irish Congress of Trade Unions, Irish WLB Network, Irish Business Employers Confederation, National Centre for Partnership and Performance, Economic and Social Research Institute, Irish Times, Girl Geeks, Womenintechnology</p>

and ownership. These databases were used to survey IT employers in both regions, and thereby identify significant patterns across seven sets of variables: (i) basic characteristics (age, size, ownership); (ii) workforce social composition; (iii) in-house technological capabilities and innovative capacity;⁸ (iv) competitive performance (revenue, productivity, revenue growth); (v) labour turnover; (vi) WLB provision and (vii) managerial perceptions of WLB impacts on productivity, female recruitment, female retention, workforce diversity, company image to potential recruits and learning environment. The employer survey yielded a final data set of 150 firms, employing 8068 workers in the Dublin/Cambridge regions (average 19.3% female workforce), with combined 2007 revenues of £827 million.

The strength of the analytical strategy rests on the principle of convergence: that when multiple data sources (each with their own limitations) are brought together and provide similar and/or complimentary findings, the credibility of the analysis is increased. The survey data sets were analysed using basic statistical techniques to identify significant regional correlations and patterns for subsequent explanation through the interview data. Analysis of the interview transcripts was carried out through detailed coding and cross-comparison of coded transcripts to draw out key themes, commonalities of experience and sources of difference with the aim of building theory iteratively. Member checking was also used to gauge the credibility of evolving ideas and theories.

5. When the Silicon Cowboys (and Silicon Cowgirls) hang up their spurs . . .

The regional learning and innovation literature pays little attention to how gendered identities, varied responsibilities of care and personal-life interests beyond the workplace shape workers' participation (and non-participation) in the relational networks and communities of practice that enable learning and innovation. The dominant portrayal of IT workers within this literature is instead of young, carefree 'Silicon Cowboys' without family commitments and responsibilities instead forming their primary identities around work, and regularly working long hours to complete large workloads in short periods of calendar time (see e.g. Saxenian, 1994; Bronson, 1999). However, this stereotype sits uneasily with workforce demographics and work-life realities in the UK and Irish IT sector (see also O'Carroll, 2005). First, while not denying the reality of long hours for some research participants (figures of over 60 h per week were not uncommon), the majority of research participants typically worked 40–45 h per week. Indeed, previously young, single male developers commonly identified significant shifts in work hours over the life course:

I don't do anywhere near the amount of hours I used to do. In the space of three years that I worked at [previous firm] I worked five years! I was pulling unbelievable shifts, all-nighters, sometimes working until two or three in the morning. Which isn't so bad when you're young and single, but getting married, people tend to do much less: they've got a bit older, got a bit wiser, settled down, got a family, got a house. People just say, 'We're not going to do it anymore'.

Software developer, father of two pre-school age children, Dublin.

8 R&D intensity, in terms of: (i) R&D expenditure as a % of total revenue and (ii) R&D employment as a % of total employment.

The results suggest that everyday experiences of work–life conflict in the UK and Irish IT sector are less a function of long hours *per se*, but of the temporal variability of work hours over the course of software product development and sales life cycles: ‘Could have a 6 month project, could be 11 months, 18 months, 23 months. The closer you get to that date, they work longer, they work weekends. It’s part of the job’ (software development manager, female, Dublin). Other commonly cited sources of work–life conflict by research participants are illustrated in Table 3, including: the need for rapid response to client system emergencies, communication between international work team members in different time zones, being on-call for trouble-shooting, international customers and weekend travel, and the continual need to maintain skillsets in the context of a continually changing industry.

Second, while there is no simple homogeneity, the results suggest that IT workers’ everyday experiences of conflict across the work–home boundary are also gendered. In contrast to the popular image of Silicon Cowboys cranking out code, women make up an increasingly significant proportion of the European IT workforce (European Commission, 2010). Within the Dublin and Cambridge IT employer sample ($N = 150$), firms employed an average 19.3% female workforce locally, or 1551 women. The data indicate how workers’ everyday struggles to juggle competing activities of work, home and family are particularly acute for female IT workers with young children who, despite a gender convergence in parents’ contribution to childcare time (O’Brien, 2005; Lewis and Campbell, 2007), continue to undertake the majority share of household labour and childcare responsibilities:

Your life is lived at a speed, constantly running to get to work, get home from work, get a meal on, get the laundry done, have homework, you don’t know what it is to relax. Just keeping up with the kids’ schedule, you actually construct that kind of a momentum for yourself during your free time. You try and do the jigsaw on the floor while doing the dinner, while checking to see that the laundry hasn’t yet finished, while trying to hold a conversation with my other daughter. So all this constant running, the only answer is just to have more time.

Female, software business development manager, MNC, mother of two, Dublin.

The kinds of pressures experienced by female workers with children are rooted in wider social constructions of ‘a good mother’ which invoke an everyday presence and involvement in childrearing that is absent from dominant societal expectations of what constitutes ‘a good father’ (Hardhill and Van Loon, 2006; see also Gerson, 1993; Strazdins and Broom, 2004; Tang and Cousins, 2005). Indeed, the most extreme instances of work–life conflict documented in this research were also articulated by working mothers:

When I was having my contractions I was making copious notes for my deputy thinking, ‘oh I’m going to be out for a while now’. Then when I was on maternity leave, I’d be breastfeeding and I’d be answering phone calls, I tended to carry on working through that. That’s why I cut short my maternity leave to six weeks when I could have had three months off. I thought ‘well, I’m working from home anyway, I might as well come back to work’.

Female, director of IT, MNC, mother of two, UK SE.

It’s whatever it takes. I was pregnant, sitting here at night ‘til 12, one o’clock in the morning just trying to close deals. I remember sitting at our offices in town, like seven and a half months

Table 3. Illustrating major sources of work–life conflict among the research participants (Dublin and Cambridge)

Source of conflict	Indicative example quotes from research interviews
Project deadlines: variability of workflow	You look at releases going out into the marketplace when we would have people who were working 24 hours at times, wrongly. Similarly in some of the shared service centres, people are closing the books at the end of the month, they might work for 18 hours at a stretch. HR manager, male, two young children, Dublin.
Rapid response to client system emergencies	Going through customer trials, it's very time critical: they pick up the phone and say, 'Oh, we found this bug, we need it sorting out,' and it was my job to like run around and make sure that that was sorted out. It could be any day, and there was the potential for the phone to go 15 minutes before I'm supposed to leave for the school run and that would be difficult, probably follow it up with a phone call when I've picked the children up. Yeah, so that would be a bit more tricky. Female, engineer (subsequently sales manager), mother of two, Cambridge.
Evening and weekend working	Emails have ruined my weekend, particularly in Amazon, it was just like, 'I'll just check email,' and then all of a sudden I see that the website's down or whatever it is, 'That's mine, how do I solve that' You know, and that's my weekend gone spent thinking about that and being unhappy because of that. Male, software engineer, father of two, Dublin.
International work team communication and extended work hours	I had to get up early in the morning in order to have a conference call with a customer in Malaysia, and then I had to stay late in order to have a conference call with somebody in Chile. I wouldn't have a problem with having a conference call at midnight or one o'clock in the morning if it solves a problem for the next day and actually have some resolution on it. If you're dealing with somebody in a different time zone you have to make those accommodations in order to have your project run smoothly. CEO, male, Dublin.
International customers and weekend travel	When I was at [previous IT MNC] a lot of times you'd go over weekends. Certainly every other month, two to three days, to a longer stint. They'd encourage you to travel on a Saturday, because that's how British Airways prices their flights, so you lose your weekend, work Monday and then usually catch a Friday flight, don't land until Saturday afternoon. So you lose always two weekends out of a week, and that's challenging. Female, IT consultant, Cambridge.
Ongoing need to maintain relevance of skills	There is definitely pressure because it's changing so fast. I was just at a training course yesterday, but it means finding time to do it keeping up with all the new software. There is a pressure to keep up your skill level and I don't know what time when exactly you're going to do this. The very, very last thing that I want to do is spend my weekend on the computer. Female, designer, Dublin, no children

pregnant, two in the morning, you know, negotiating deals. So it's not everyday of the week but when it happens, that's what has to be done and there are no excuses.

Female, software business development manager, MNC, mother of two, Dublin.

Third, the data also suggest that in addition to domestic labour and childcare responsibilities, Irish and UK IT workers maintain a wide range of other personal

responsibilities and interests beyond the workplace, which for the research participant sample included: self-building a new house, running a Cub Scout pack, singing in a choir, doing voluntary work, regularly taking time out for international travel, labour organizing, caring for horses and home schooling children. Add to these the kinds of daily work demands placed on IT workers shown in Table 3, and the everyday stresses and strains of juggling work, home and family in the Irish and UK IT sector become clearer. The most commonly cited outcomes of these various work–life conflicts in the interviews included: missing out on children’s activities, interrupted sleep patterns, stress and exhaustion impacting on relationships with children and partners, working when feeling unwell, missing out on leisure time and hobbies and an overall reduced quality of life.⁹

In response to these challenges, research participants were asked to identify their preferred employer-provided policies and practices, which are most effective in helping them to reconcile everyday work–life conflicts. Strikingly, despite a clear gendering of work–life conflict as described, the results do not indicate a similarly clear gendering of preferred WLB arrangements.¹⁰ Indeed, the interviews suggest that there is no panacea: WLB requirements vary not only within gender groups (by job function, department, household situation) but also for individual workers over the life course. Thus, while working mothers and fathers with young families often identified extra-statutory provision of maternity and paternity leave, plus employer-subsidized childcare, as their preferred employer-provided WLB arrangement, this was less important for working parents with children of school age (some of whom preferred term-time working) and an irrelevance for research participants without children. And while other research participants favoured ‘flextime’, other workers with lengthy commutes instead preferred greater spatial flexibility of work, citing the personal advantages gained from working from home, and of 3- or 4-day work weeks as: more time for extra-curricular activities, hobbies and interests; better quality of personal time; reduced levels of stress and exhaustion; increased autonomy and, particularly for working parents with young families, better quality of time spent with children.

In short, the results indicate that different home and work factors mean WLB provisions suitable for one class of employees at one point in time may have little or no effect in reducing work–life conflict for another class (see also Phillips et al., 2002). In seeking to integrate the mainstream focus of the regional learning and innovation literature on (knowledge) production with concerns around social reproduction, family well-being and quality of life, this diversity of workers’ WLB preferences raises important questions. Specifically, how do these preferred arrangements compare with the kinds of WLB policies and practices that employers are making available to workers? And hence, what are the consequences of WLB for shaping the kinds of cross-firm labour mobility pathways widely identified as a key mechanism for

9 The worker survey ($N = 162$) also documented particular problems for women with dependent children and a partner working full-time outside the home, of whom the majority experienced the following work–life conflicts on a weekly or daily frequency: inability to relax and forget about work (77%); difficulties fulfilling family responsibilities because of work (64%); missing out on leisure time or hobbies (79%) and finding time to maintain friendships (72%).

10 Compare this with a nationally representative study in the Irish context by O’Connell and Russell (2005) which documented women more often reporting a preference for part-time hours and job sharing, and men a preference for working from home.

cross-firm knowledge transfer within dynamic regional industrial systems? These form the focus of the next section.

6. Connecting 'WLB' and cross-firm knowledge transfer in regional economies

6.1. Unevenness of WLB provision by IT employers—and its consequences for worker mobility

The IT employer survey reveals an unevenness in the specific *types* of formal WLB arrangements employers are willing to make available to employees. Table 4 shows that the most widely available types of employer-provided WLB arrangements are flextime (67% of firms); working from home 1 or 2 days a week (66% of firms) and part-time working (54% of firms). Compare this with the much greater diversity of workers' WLB preferences identified in Section 5 which include, for example, the preferences of working mothers and fathers with young families for extra-statutory provision of maternity leave (available in only 22% of firms), extra-statutory paternity leave (available in only 11% of firms) and employer-subsidized childcare (available in only 6% of firms). Likewise, identified worker preferences for compressed working weeks (available in only 37% of firms), or term time working (available in only 9% of firms). The employer survey data also document unevenness in the *total suites of WLB provision* available to workers across different IT employers (Figure 1).¹¹

Against this backdrop of uneven provision of WLB arrangements by IT employers, the analysis suggests that WLB considerations are actively shaping workers' decision-making processes around cross-firm job-to-job mobility, in ways previously unexplored within the regional learning and innovation literature. The interviews with IT workers revealed three qualitative dimensions to this phenomenon, all of which disrupt the dominant masculinist conceptions of worker mobility apparent in the regional learning literature motivated by 'the cause of advancing technology' and 'far greater loyalty to one's craft than to one's company' (Saxenian, 1994, 36). The first dimension relates to workers' concerns to move between employers in pursuit of more comprehensive levels of *formal* WLB provision. In other words, workers seek to move from employers on the left-hand side of Figure 1 to employers situated on the right-hand side by 'voting with their feet' to reduce everyday conflicts between competing activities of work, home and family:

With my current employer [US MNC], they promote teleworking for WLB. I rejected a job offer from a company closer to home because they were not open to the idea of working from home or even starting 30 minutes later than the others, to sync my commute with my wife. I am happier and able to incorporate personal tasks into my day when working from home. It is a feature that keeps me in the current company.

Software engineer, male, Dublin.

11 'WLB provision scores' were calculated simply for each firm by adding up the different types of WLB arrangement available to employees at the time of the survey (Table 4). Scores ranged from a maximum of 16 down to 0, with a mean average of 4.

Table 4. Dublin and Cambridge IT employer provision of (formal) WLB arrangements (2008)

Category	Formal WLB arrangement	Dublin (N = 74)		Cambridge (N = 76)		Combined (N = 150)	
		n	%	n	%	n	%
Flexible work arrangements	Flextime (flexible beginning/end time, sometimes with core hours)	54	73	46	61	100	67
	Flexplace (work from home 1 or 2 days a week)	55	74	44	58	99	66
	Flexplace (work from home 3 or 4 days a week)	26	35	40	53	66	44
	Job sharing (one job undertaken by two or more persons)	7	9	3	4	10	7
	Annualized hours	6	8	8	11	14	9
Reduced work hours	Part-time work	36	49	45	59	81	54
	Compressed work weeks (total work hours in 4 days rather than 5 days)	23	31	22	29	55	37
	Term-time working	6	8	7	9	13	9
Personal leave	Extra-statutory maternity leave	24	32	9	12	33	22
	Extra-statutory paternity leave	10	14	7	9	17	11
	Career break/sabbatical	14	19	5	7	19	13
Practical help with child care	Employer-subsidized childcare	3	4	6	8	9	6
	Information referral service for childcare	3	4	2	3	5	3
	Workplace nursery	2	3	1	1	3	2
Other	WLB counselling/training	11	15	3	4	14	9

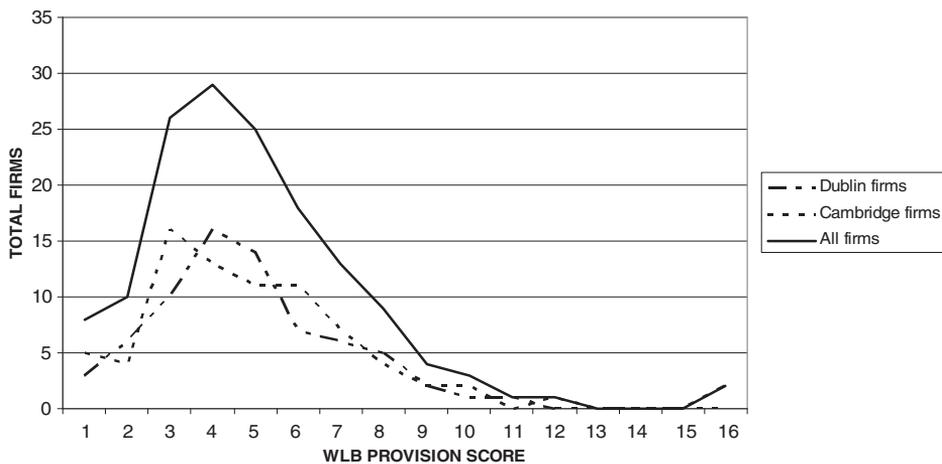


Figure 1. Unevenness of total suites of WLB provision across IT employers (Dublin and Cambridge, 2008).

Indeed, in some cases, mobile workers are willing to incur a pay cut in pursuit of an improved WLB:

Firms that are either very pro-family or have a full suite of WLB policies, if I had to look for another job that would be one of my top priorities. My husband changed his job about 15 months ago. He had four offers and he took the one that enabled him to get home for six o'clock to have dinner with us every night, that was his primary driver, he took a three grand pay cut compared to these other offers, on that sole point. He's a hardware engineer.

Software engineer (subsequently sales manager), mother of two, Cambridge.

The second qualitative dimension to WLB-motivated patterns of cross-firm worker mobility relates to differences in *informal* workplace practices that enable and sanction the uptake of formally provided WLB arrangements. These include the role of managerial buy-in, and cultural ratification of non-traditional patterns of working in motivating some workers to move to an alternative employer:

My current boss is quite fine to give me the flexible hours. But the previous company, I had a very tough time and that's the main reason for me to look elsewhere. Although HR gave me permission to work from home one day, my boss was very against it, that if you allow somebody to work from home they are not going to do any work. The flexibility, it all depends on the person more than the company, your immediate, who you are reporting to, how they understand the flexible working, and what sort of rapport you have with them, that determines a lot.

IT specialist, mother of young twins, Cambridge.

The third qualitative dimension through which WLB considerations are actively shaping workers' decision-making processes around job mobility relate to significant *constraints* on cross-firm mobility, given the potentially disruptive impacts of any new job on workers' families and households. As identified at interview, these include concerns to avoid disruptions to delicately balanced commuting patterns combining nursery, school and a partner's commute; redistribution of domestic duties; possible relocation of home and school and disruptions to established networks of family and community support (i.e. other forms of WLB provision outside of the workplace) (see also Felmler, 1982; Folbre, 1994; Dumelow et al., 2002; Gray and James, 2007). As part of this, the interviews also documented several highly qualified working mothers in professional managerial IT roles re-entering the labour market post-maternity leave and moving to a less demanding job role:

When you come back to work and you've got a 12 month old baby, teething, got a cold, whatever, they're up two or three times a night, to move into a less responsible job where it's not so interesting, not as challenging, not as motivating... That's fine—because I'm not doing this to further my career, I'm doing this as something different to keep me working until the children are old enough where I can go back and do something that I really want to do.

Sales manager (previously software engineer), mother of two, Cambridge.

Significantly, the interviews did not document any similar compromise patterns of downward job-to-job mobility among working fathers.

In combination then, these three sets of short interview quotes begin to illustrate the ways in which WLB considerations actively inform some IT workers' decision-making

processes in relation to cross-firm job-to-job mobility in ways previously unexplored in the regional learning and innovation literature.

6.2. How widespread is WLB-informed labour mobility among IT workers?

The interviews identified three qualitative dimensions along which WLB considerations actively inform some workers’ decision-making around cross-firm job-to-job mobility. Survey evidence from a larger cohort of IT workers ($N=162$) suggests these are far from isolated cases (Table 5). Among the IT worker sample in Dublin and Cambridge ($n=123$), average employment tenures are 3.5 years (c.f. Henry and Pinch, 2000), with 81% of workers classified as ‘mobile’ (no longer working in their first IT company). Of this mobile worker cohort, 33% of workers (c.f. 39% of mothers with dependent children) identified ‘poor WLB provision’ by their previous employer as a ‘very important’ or ‘important’ reason for leaving that company. Additionally, 65% of workers (c.f. 76% of mothers with dependent children) identified ‘better WLB provision’ as a ‘very important’ or ‘important’ reason for moving to their current company.¹² Importantly, around half of contractors ($n=15$) and workers in temporary contracts ($n=16$) also identified WLB as an important consideration in moving to their current position. In other words, WLB concerns are not the exclusive preserve of permanent workers. Indeed, the interviews also revealed how some workers had quit their previous employers to become independent contractors in part driven by dissatisfaction with long work hours and work–life conflict in their previous companies.

Extending the analysis, Table 5 shows that while WLB provision is an important consideration for the majority of female IT workers surveyed in their decision to move to their current employer, these considerations are most pertinent for working mothers. This is also consistent with some companies’ own internal surveys of the impacts of employer-provided WLB provision on labour turnover, recruitment and retention:

What we have noticed is that a lot of women make their decision early on, if they’re getting married and are thinking about having children, they move to a company where they feel it would be right . . . A lot of that came out from our women survey. We asked ‘what’s the main reason you’re leaving the company?’ and ‘what’s the main reason you’d stay with the company?’, it’s work-life balance. And it’s increasing . . . since our last women’s survey two years ago, work-life balance went from 28% to 40% as the primary reason why people would stay or leave.

Diversity manager, large US MNC, female, two children, Dublin.

We’d spent a lot of time and money as a company in developing people, and we were seeing female workers have kids and then leave because they couldn’t handle the overtime. There was all this talent and knowledge of all the processes we’d put in, it was quite innovative, all

12 In seeking to understand why the ‘WLB pull’ factor is stronger in the survey than the ‘WLB push’ factor, the interviews offer some interesting insights, suggesting a potential undercounting on ‘WLB push’. During the interviews, I asked research participants to outline their career history, and to reflect on how its shape coincided with significant events in the life course (especially marriage, childbirth, care for elder relative). While WLB factors were initially accorded limited significance by some workers, over the course of many interviews, as we talked through and compared current experiences of employment with previous firms, research participants themselves become aware of the significance of everyday work–life conflicts, or their boss’s intolerance of non-standard working practices, that they had initially not considered to be significant.

Table 5. IT worker mobility in response to uneven WLB provision by employers (Dublin and Cambridge, $N = 162$)

Cohort	% Non-movers (excluded from subsequent calculations)	Average employment tenure (years)	WLB arrangements provided by previous employer not useful (%)	WLB PUSH Inadequate WLB provision in previous firm as 'very important'/'important' factor in decision to leave (%)	WLB PULL Good WLB provision as 'very important'/'important' factor in decision to move to current firm (%)
% Workers valid response	100	100	85	93	87
Dublin and Cambridge All workers ($n = 123$)	19	3.5	41	33	65
Women only ($n = 115$)	19	3.6	39	30	65
Working mothers only ($n = 45$)	16	3.8	36	39	76
UK outside of Cambridge ($n = 39$)	26	3.3	48	36	68

vanishing out the door. So we developed a working from home policy. Did it impact our turnover? Absolutely . . . we put in home working and turnover came down by 25%.

HR manager, large MNC, male, two young children, Dublin.

The IT employer survey (150 companies, employing 8068 workers locally in Dublin/Cambridge) measured managerial perceptions of the impacts of WLB provision and take-up on different dimensions of labour turnover for the period 2004–2007. Specifically, of the 142 companies responding to Section 5 of the survey (Impacts of Flexible Working/WLB Provision), 63% of managers indicated ‘improved company image to potential recruits’; 52% ‘increased retention of women post-maternity leave’; 44% ‘increased workforce diversity’ and 36% ‘increased female recruitment’. Importantly, these figures are higher for firms with more comprehensive suites of WLB provision.¹³ These managerial perceptions of positive change are also consistent with measured increases in these same firms’ total female workforces over the same time period, and with documented reductions in labour turnover (James, 2009, 22–23). Indeed, recent research by Working Families has also documented similar recruitment outcomes as a function of WLB provision among firms outside the IT sector (Swan et al., 2011).

6.2.1. WLB and the quality of mobile knowledge, skills and expertise?

In sum, the interview and survey data identify multiple ways in which WLB considerations actively shape IT workers’ decision-making processes around cross-firm mobility, in ways previously unexplored within the regional learning and innovation literature. Critics might argue, however, that the implications of this for female technological knowledge spillovers are limited given that many women in IT tend to be horizontally segregated in HR, marketing and other support roles, rather than in technical roles (Ghoshal and Passerini, 2006). In response, Table 6 shows that 76% of the female worker cohort in Dublin and Cambridge were employed in technical managerial, technical or research roles at the time of the survey. Only 6% were employed in HR or marketing roles. Moreover, of the mobile workers who identified ‘poor WLB provision’ in their previous company or ‘better WLB provision’ in their current company as a ‘very important’ or ‘important’ reason for moving (Table 5), each brought to their new employer an average of 11.2 years accumulated experience in the IT sector, and experience of doing IT work in four different companies previously. And while 51% of these workers had a Master’s degree or PhD, this figure increases to 71% when considering working mothers in isolation.

As such, the survey data demonstrate further how gendered identities, responsibilities of care and personal-life interests beyond the workplace are crucial for understanding fully the cross-firm mobility of embodied knowledge, skills and expertise in regional industrial systems.¹⁴ Likewise, IT employers in Dublin and Cambridge also recognized

13 Cambridge and Dublin IT employers combined [excluding firms with WLB provision scores <4 (mean average)] ($n=86$): 72% indicated ‘improved company image to potential recruits’; 63% ‘increased retention of women post-maternity leave’; 45% ‘increased female recruitment’ and 44% ‘increased workforce diversity’.

14 By attracting and retaining a workforce with a diversity of caring responsibilities and other extra-curricular responsibilities and commitments (themselves rooted in other dimensions of worker diversity such as gender, age, position in the life course, organizational tenure and accumulated

Table 6. Quality of female mobile embodied knowledge (Cambridge and Dublin, $n = 115$)

Category (current job)	Most common examples	<i>N</i>	%
Senior managers	Director, CEO, Managing director	16	14
Technical managers	Project manager, services manager, IT director, product development manager	33	29
Technical engineer	Software engineer, developer, tester, web producer, designer, system administrator	43	37
Research	Research associate, business analyst	12	10
Human resources	HR systems administrator, HR coordinator	2	2
Marketing	Marketing manager, marketing, business communications executive	5	4
Other	Academic	4	3

(Male cohort job roles: director, solutions architect, software engineer, software engineer, web developer, software engineer, technical support).

the ways in which WLB provision enabled them to access new sources of external knowledge beyond their existing internal competencies as a function of improvements in recruitment and workforce diversity:

At the time of employment we negotiate with the individual to say, ‘What days are good for you, what days are good for us, how does it fit?’ It’s very high on the agenda because life becomes before work for an awful lot of people. And certainly parents who are caring for children, there is no question of them taking employment if it does not present them with the ability to do what actually is their first priority. The flexibility plainly affords us a greater talent pool.

CEO and manager, IT SME, male, Cambridge.

When you’re a start up it’s sometimes hard to attract people, and so one of the propositions that I offered very early on was the opportunity to work at home, or to work three days a week. So as I able to attract the woman who used to run [big well-known IT MNC] in Europe to come work for us. She was interested in working at home to spend more time with her daughter, working three days a week instead of five, and not having to commute anymore. She’s somebody who I wouldn’t have been able to get if it hadn’t been for offering that kind of benefit. There’s a number of other people we got for the same reason.

Female CEO, Cambridge.

These processes of WLB-informed cross-firm mobility and embodied knowledge transfer therefore help to explain why 54% of companies responding to the employer survey indicated ‘an improved corporate environment for learning and creativity’ as a function of their WLB provision. Significantly, these managerial perceptions were also consistent with measured improvements in firm performance for these same companies over the same time period (2004–2007).¹⁵

experience) research participants outlined significant consequences for fostering everyday innovation, creativity and learning through transfer of embodied skills, competencies, experience and knowledge. These benefits are explored in depth in a separate paper.

- 15 WLB provision (2004–2007) identified as generating a ‘better environment for learning and creativity’ by 62 companies completing the employer survey. Consistent with these managerial perceptions, those same firms exhibited measured improvements in revenue (average £817,082 increase) and worker productivity

6.2.2. Uneven regional geographies of WLB?

Finally, in seeking to understand the connections between gendered work–life conflict, WLB provision by employers and cross-firm worker mobility, it is important to locate regional industrial systems within the national economies of which they are part. Indeed, the terms in which the WLB agenda is cast also vary between nation-states (Esping-Anderson, 1999). There are three key points to note here. First, the data suggest that female IT workers in Dublin generally exhibit greater levels of work–life conflict than do their female colleagues in Cambridge.¹⁶ These patterns are also consistent with a series of specific negative work-to-home spillovers (inability to relax and forget about work; difficulties fulfilling family responsibilities because of time spent working; missing out on leisure time or hobbies; difficulties finding time to maintain friendships), all of which were experienced on a daily or weekly basis by a higher proportion of female IT workers in Dublin than in Cambridge (James, 2009).

Second, to explain these higher levels of work–life conflict in the Irish context, research participants highlighted the role of urban sprawl associated with Ireland’s Celtic Tiger growth period. Strong house price increases over the past decade (Horner, 1999) have forced many workers to move out of Dublin in search of more affordable housing, yielding commutes of up to 4 h per day in some cases. Such lengthy commutes were rarely identified at interview among the Cambridge research participants. The worker survey also documented similar disparities: 19% of Dublin workers surveyed commute 3 or more hours per day (or 15 h or plus per week) compared with 7% of Cambridge workers. Against this backdrop, employer provision of working-from-home arrangements has a greater meaning and significance for workers in the Dublin urban context.

Third, Ireland and the UK evidence different gendered welfare regimes in relation to paid work and care. Crucially, there is currently no statutory provision for paternity leave in Ireland (compared with the UK at 1 or 2 weeks at 90% pay). Similarly, there is no legal right to work part-time in Ireland—part-time work, job sharing, flextime and teleworking are all at employers’ discretion (Russell et al., 2009).¹⁷ In addition, the statutory paid maternity leave entitlement is lower in Ireland than in the UK (26 weeks plus 16 weeks unpaid, compared with statutory 39 weeks paid plus 13 weeks unpaid in the UK). Reinforcing these challenges, compared with other European countries, Ireland exhibits higher costs of childcare in relation to average incomes (OECD, 2007). Against this backdrop, employer-provided ‘extra-statutory’ maternity leave, paternity leave and flexible working arrangements have an enhanced meaning and significance in Dublin than in Cambridge, with consequent effects for patterns of cross-firm job-to-job mobility. Thus, while IT employers in Dublin reported ‘increased female retention

(average £44,635 increase in revenue per head) over the same time period. Only three firms identified a worsened corporate environment for learning and creativity as a function of their WLB provision (2004–2007), but this was inconsistent with measured *improvements* in these firms’ performance over the same time period (e.g. average £20,500 revenue increase). A series of other *intra*-firm mechanisms through which WLB provision was identified by managers and workers as enhancing corporate environments for learning and creativity are explored in a separate paper.

- 16 Thus, while 46% of female IT workers surveyed in Dublin were unsatisfied with their current WLB, this compares with 30% in Cambridge. And while only 8% of female IT workers in Dublin indicated that they are ‘very satisfied’ with their current WLB, this is higher in Cambridge (16%).
- 17 C.f. UK statutory right to request part-time work: ‘If you have a child aged 16 years or under, you are an employee (but not an agency worker or in the armed forces) and you have worked for your employer for 26 weeks continuously before applying, you will have the statutory right to ask for flexible working from 6 April 2009’).

post-maternity leave' (57%) and 'increased workforce diversity' (49%) as a function of their WLB provision (2004–2007), this is less apparent among the Cambridge IT companies surveyed (equivalent figures of 42% and 37%).

Thus, while these data offer some preliminary insights into differences across these two regional economies in terms of relative levels and sources of work–life conflict for similar cohorts of IT workers, and of uneven employer provision of different WLB arrangements in shaping female IT workers' cross-firm mobility, much remains to be done in future research to explore these regional differences in greater depth.

7. Postscript: WLB, female IT worker mobility and the economic downturn

The data upon which this article is based were collected in Dublin and Cambridge between 2006 and 2008. To begin to gauge the degree to which WLB concerns continue to inform the cross-firm mobility of female IT workers in the post-recessionary period, a second online survey of IT workers was rolled out in November to December 2010. Participants were recruited in the first instance by targeting research participants from the earlier phase of fieldwork and expanded using the Girl Geeks and womenintechology (UK) and WITS (Ireland) email listservs. This second survey yielded a data set of 139 female IT professionals. While the majority are UK based, these workers exhibit a similar skills and competencies profile to the 2008 IT worker survey sample with an average 11.6 years' work experience in the IT sector across 3.8 different employers. Additionally, 39% had a Master's degree or higher; 70% were employed in technical managerial, technical or research roles at the time of the survey and only 7% in HR, marketing or sales roles. The 2008 and 2010 survey samples also exhibit similar age distributions, and proportions of working mothers with dependent children of pre-school age and in full-time primary education.

The 2010 survey data begin to extend the analysis presented in this article along four dimensions. First, they evidence negative changes in female IT workers' experiences of work–life conflict through the economic downturn, as a function of: 'more commuting to the office to be seen where previously you would have worked from home; doing more hours as you are required to if colleagues have left or you just want to look like a contributing member of the team; and a less predictable schedule as bosses try to come up with new urgent schemes to get us out of the current hole' (senior manager, US-owned IT multinational, UK SE region). Other drivers of negative change identified in the survey include: higher workloads, increased frequency of weekend working and increased wage dependency on bonus incentives.

Second, the 2010 survey data also evidence changes in female workers' preferred WLB arrangements through the economic downturn. While there remains no single, universally preferred arrangement, it is striking that while 31% of workers in the 2008 survey identified 'reduced hours' as their preferred WLB arrangement, only 5% of workers did so in December 2010. In the context of an economic downturn, reduced hours working is problematic for many workers because of its associated pay reduction.

Third, the 2010 survey also documented workers' varied experiences of changing employer provisions of WLB arrangements through the economic downturn. Most notably, while the 2010 data fail to document any widespread employer rollback of WLB arrangements, 40% of survey participants identified a lesser willingness to use

formally provided WLB arrangements in practice, for fear of lack of employer ratification. However, the survey also identified some IT employers in Dublin and Cambridge expanding and enhancing their suite of WLB provision for working parents in the post-recessionary period, in order to improve their abilities to recruit and retain talent.

Combining these three dimensions of change, finally, the 2010 survey documented the role of work–life conflict and varied employer provision of formal and informal WLB provision in *continuing* to shape workers’ cross-firm mobility pathways through the post-recessionary period. Within the sample of female IT workers surveyed in December 2010 ($n=139$), over half (78) had changed employers in the previous 3 years. Of this mobile worker cohort, 31% of workers (c.f. 37% of mothers with dependent children) identified ‘*poor* WLB provision’ by their previous employer as a ‘very important’ or ‘important’ reason for leaving that company. Additionally, 42% of workers (c.f. 58% of mothers with dependent children) identified ‘*better* WLB provision’ as a ‘very important’/‘important’ reason for moving to their current company. While we need to recognize the role of layoffs in complicating these patterns of mobility,¹⁸ only 17 workers identified WLB provision as ‘irrelevant’ in their decision to move to their current IT employer.

Thus, while work remains to be done in refining and extending these data (not least to the Irish context), they nevertheless provide some preliminary evidence to suggest that: in the post-recessionary context, work–life conflict, gendered responsibilities of care and employer provision of WLB arrangements continue to shape the cross-firm mobility patterns of highly qualified female IT workers; in ways which unavoidably shape the mobility of embodied tacit knowledge, accumulated skills and expertise between firms within regional industrial systems.

8. Conclusion

In contemporary ‘knowledge-based economies’, the capacities of firms, regions and nations to foster and support interactive processes of knowledge production have been identified as key sources of sustainable competitive advantage. However, in seeking to understand the geographical foundations of learning and innovation, the majority of analytical insights to date have emerged from empirical studies of male workers or else from analyses that collapse all workers into a unitary, genderless category of ‘mobile labour’. In contrast, geographers have paid relatively little attention to how gendered identities, varied responsibilities of care and personal-life interests beyond the workplace shape workers’ participation (and non-participation) in the relational networks and communities of practice widely theorized as enabling learning and innovation. In response, this article has developed an enlarged focus of analysis that spans the work–home boundary, to document a series of gendered everyday struggles by female and male knowledge workers in the IT sector in Dublin and Cambridge to combine activities of home, work and family. It has also examined the kinds of employer-provided WLB arrangements that workers find most useful in helping reconciling those everyday work–life conflicts; and analysed the role of uneven levels of WLB provision by different IT employers in motivating and constraining workers’

18 One-third of the workers surveyed had experienced a period of unemployment in the previous 3 years.

cross-firm mobility pathways; and hence the transfer of workers' embodied tacit knowledge, skills and competencies between firms.

In short, this analysis suggests that the kinds of cross-firm job-to-job worker mobility so widely celebrated in the regional learning and innovation literature—and in regional development policy—as positively underpinning regional economic competitiveness are also premised on: a gendered *dissatisfaction* with work–life conflict; unequal divisions of household labour; uneven and often inadequate employer WLB provision and worker concerns around care and a better quality of life—that is, by issues of social reproduction that span the work–home boundary. Indeed for some female research participants, concerns around WLB also *constrain* inter-firm job-to-job mobility as workers seek to avoid the potentially disruptive impacts of a new job on delicately balanced commuting patterns combining nursery, school and a partner's commute; redistribution of domestic duties; possible relocation of home and school and disruptions to established networks of family and community support. In so doing, this analysis begins to disrupt the powerful economic/technological premise that 'labour mobility is always and everywhere good' which informs much of the regional learning literature. More broadly, the article also contributes empirically to an emerging 'holistic regional development' agenda (Pike et al., 2006, 2007), which seeks to move beyond narrow economic 'desiccated indicators of development' (Morgan, 2004) to develop a broader and more progressive conception of regional 'development' that integrates economic concerns around competitiveness, growth and productivity with normative questions around workers' quality of life, gender equality, well-being and social reproduction (see also Rees, 2000; Perrons, 2001; Blake and Hanson, 2005). In so doing, the traditional priority of first 'fixing the economy' as a prelude to and platform for securing social well-being is challenged (Pike et al., 2006, 256). It is therefore imperative that economic geographers bring issues of work–life conflict, gender, care and social reproduction to the *core* of their expanded regional learning and innovation analyses, rather than continue to sideline them as an assumed independent variable best left to feminist geographers.

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