Post-industrious society: Why work time will not disappear for our grandchildren

Technical Paper 2014 - 1
Updated 1 June 2015
Centre for Time Use Research
University of Oxford, United Kingdom

Jonathan Gershuny and Kimberly Fisher

ABSTRACT: *We provide a comprehensive focussed discussion of the long-term evolution of time budgets in a range of European, North-American and Pacific democracies, summarising arguments about the changing balances between work and leisure as well as paid and unpaid work. We contrast economists' assumptions about the purely instrumental nature of work, with sociological and social-psychological arguments as to why we might want or need work in and for itself. We use evidence from 16 countries drawn from the day-diaries included in the Multinational Time Use Study to describe trends in paid and unpaid work over five decades. We demonstrate: (1) the approximate historical constancy and cross-national similarity in the total of paid plus unpaid work time; (2) a gender convergence in work patterns and the emergence of the phenomenon of iso-work; and (3) a reversal in the human-capital-related work-leisure gradient, which we associate with a relative decline in "industriousness" in the paid work of early 21st century societies.*

KEYWORDS: time use; diaries; work; leisure; cross-national comparative analysis

ACKNOWLEDGEMENTS: We gratefully acknowledge the support of the UK Economic and Social Research Council (grant references ES/L011662/1; ES-060-25-0037, ES-000-23-TO704 and ES-000-23-TO704-A), the USA National Institutes of Health grant R01HD053654, subcontract through the University of Maryland; and the European Research Council (grant reference 339703) for their financial support. We also thank Professor Michael Bittman for enabling the Professor Gershuny to conduct analysis on the Australian data in Sydney during January 2013 for inclusion in Section 6.

Post-industrious society: Why work time will not disappear for our grandchildren

1 Introduction

In his discussion (in its first 1924 outing) of the economic prospects for the grandchildren of his Cambridge undergraduate student audience, Keynes looked to technological change to bring about a work-week of just 10 or 12 hours. He was reiterating John Stuart Mill's 1848 prediction of the emergence within two or three generations, of an economic "steady state", a view also espoused by Keynes' own (economist) father. A regular modest growth in economic productivity, the result of technical innovation, "operating like compound interest", in Keynes phrase, would lead fairly immediately to the satisfaction of all reasonable human wants. For the whole of the period between Mill and Keynes, and for five or six decades following Keynes' talk, socialists, liberals and conservatives—if for quite a variety of different reasons—all saw the reduction of working hours as the natural and proper concomitant of economic progress. Dumazedier (1974) interpreted the recent economic and social history of the developed world as progress "towards a society of leisure", and 20 years later, Schor's (1993) observation of the "Overworked American" assumed that the apparent end of this progression in the USA was somehow a symptom of errors in the management of the US economy.

But through much of the 20th century—parallel to this leisure society prediction, and indeed sometimes held simultaneously and ambiguously by its proponents—was a quite different view. Keynes himself, in the final version of his essay, expressed eloquent doubts (expressed through the doggerel verse of a folk ballad) about the problem of filling the leisure void vacated by the decline in work. "The Leisure Problem" was widely addressed in 1930s literature: what would people *do*, if they were not working? Jahoda, Lazarsfeld and Zinsel (republished in 1972), investigating the consequences of unemployment, and many more recent contributors to the social-psychological literature (Ezzy 1993, Anand and Lea 2011), have focussed attention on the non- or extra-economic attributes of work, whose absence can cause health problems if work disappears. These considerations cast considerable doubt on the desirability of the "end of work" as a general social programme.

There is no doubt of a dramatic decline in paid work time for manual and other workers since (perhaps) the 1860s high point of industrialism (if we accept economic historians following Thompson (1967) and others) until sometime in the later part of the 20th century. But much modern empirical research into post-industrial societies since Schor's (1993) "Overworked American" thesis (including Cook 2007, Hook 2010, Burda, Hamermesh and Weil 2013, Ramey and Francis 2009, Aguiar and Hurst 2007), however, casts doubt on the continuation of the trend of paid-work-time reduction and the growth of leisure.

What of unpaid work? Hildegard Kneeland (1929) was, we believe, the first modern economist to draw attention to the partial and unsatisfactory nature of systems of economic statistics which ignore that work (principally of women) which is contributed not in exchange for money payment, but unpaid, on the basis of reciprocity. The example known in the UK as the "Hicks' paradox" (widowed clergyman marries housekeeper and reduces National Product, see Kennan 1986), is predated by

Kneeland's observations, based on empirical calculations of women's time-use diary evidence from the 1920s. Because of its strongly gendered nature, and since substantial volumes of economic activity move both *into* and *out of* the economy over historical time, *unpaid* work is an unavoidable element in any discussion of long-term work trends. Extensive empirical research from the 1970s onwards (Bianchi et. al. 2000, Bianchi et. al. 2006, Bittman and Folbre 2004, Ramey 2009, Vanek 1978, Dias 2009) suggests that, though its content may change substantially, the total volume of time devoted to unpaid work in developed economies has not diminished over the many decades that we have been able to measure it.

But why should we *expect* overall totals of work time to continue to decline? Economic theory, in fact, does not predict this. Keynes' (1930) discussion focussed on paid work becoming more productive, workers thus being able to work less and still buy more goods. But operating against this "price effect" that might lead to work-time reduction we can postulate a countervailing "income effect" in which work time rises because the higher earnings mean that work becomes more attractive relative to leisure time. Becker (1965) reasons that each of the various ways of providing for human wants requires, for each unit of provision, both inputs of specific quantities of commodities, and hence, in the absence of unearned income, specific amounts (dependent on wage rates) of paid work time to pay for these, and also specific amounts of the time necessary for unpaid work or consumption. Some ways of satisfying wants require relatively large inputs of purchased commodities (hence "paid work-intensive"), others, larger proportions of unpaid work, others still, larger proportions of consumption time. We might thus imagine historical changes that might lead to relative increases in any of leisure, unpaid and paid work - the uncertainty reflecting essentially unmeasurable preference or utility functions. Ramey (2009: 4-6), who specified a very general household time-use optimisation model, establishes that, depending on changes in the organisation of provision for individual wants and the associated personal preferences, time devoted to any of these three categories of time use might in principle grow, remain unchanged, or diminish over historical time.

Economic theory yielding ***essentially*** indeterminate results, we turn instead to consider sociological reasoning. The substantive contribution of this paper is an attempt to summarize the entire corpus of time-diary-based evidence on historical change in the work-leisure balance, across a large part of the developed world. But first, we set out, in a brief and sometimes rather speculative manner, a set of views of the determinants of time allocation patterns drawn selectively from sociological and social-psychological literatures.

While the purely instrumental function of work is a fundamental principal of economics, sociologists emphasize four (variously micro and macro) perspective which, in various ways, contradict this view. Work, as seen by sociologists, is (1) intrinsically enjoyable for some, (2) a psychological necessity for all, (3) an important determinant of individuals' social positions, and (4) an essential constituent of social solidarity. The latter two of these are not discussed at length here, though they are, for reasons we outline briefly in what follows, of considerable importance. Wage-earning capabilities are of course of the highest importance for determining life chances. In what follows we will discuss the first two of these perspectives, approaches that focus on societal and psychological meanings of work and leisure that are not primarily related to individuals' incomes.

But ultimately, what counts best for understanding the future is not theory but evidence about what has passed. In the later sections of this paper we deploy a large collection of harmonised time diary

surveys, the Multinational Time Use Study (MTUS), covering a period of more than 50 years, in 16 developed societies (Fisher and Gershuny 2013b). The MTUS provides over 800,000 diary-days, more than 15 million individual events, drawn from 63 nationally-representative samples stretching back to 1961 (however we use only the 570,000 diary days from respondents aged 20-59 in what follows). We investigate issues of life-balance, considered as the distribution of time among paid work, the various sorts of unpaid work and leisure, and viewed through the lenses of gender and social class (in the Weberian sense of access to economically-salient resources). We consider national- and regime-level differences in historical changes in the use of time. We do not predict an end to work in an imminent post-industrial leisure society. But we will identify the importance of the phenomenon that Veblen (1899) called "exploit", as a key to the maintenance or even future growth of paid work time, in the context of a *post-industrious* society.

2. Conceptual foundations

"Exploit", and the intrinsically enjoyable work of the "leisure class"

An interesting feature of that little-read 1899 American sociological classic ***The Theory of the Leisure Class***, is Veblen's unwillingness to engage directly with the concept of "work". Writing at the turn of the 20th century, he tells us simply that leisure is what rich people do, and aspirant middle classes emulate by proxy through the activities of their non-employed wives and demonstratively idle servants. Leisure, in Veblen's remarkable phrase, is "the badge of honour", the mark of superordinate social status. Instead of work and leisure, Veblen starts his book with a less familiar pair of concepts: "industry" and "exploit". "Industry", to Veblen, used in the sense of "industrious***ness***" is both the foundation of economic development, and the origin of the class system. Industry is repetitive and arduous, perhaps involving the manipulation of inanimate objects, originally but not necessarily involving physical labour, giving rise to moderate but predictable rewards. "Exploit", by contrast, is meeting a challenge from an animate and cunning adversary, or from a difficult technical problem, with an uncertain outcome, perhaps a degree of danger. The leisure of the leisure classes consisted, to some degree, of honorific idleness—but free time only really implied honour, for Veblen's social leaders, when it indicated, not mere freedom from industry, but specifically the availability for exploit. Exploit is how Veblen's leisure class demonstrated its superordinate status.

How do these poles of activity map onto the work and leisure categories? Industry must involve work—though, as we shall see in a moment, it nevertheless provides some benefits beyond mere livelihood. But, for reasons set out below, the coveted category of exploit is not necessarily coterminous with leisure, certainly not so in a modern context.

This observation makes for some problems with received definitions of work. That first literary injunction for leisure, the Second Commandment, uses the Hebrew words for work,

"m'lacha", or service "m'lechet avoda", derived from a linguistic root that carries a sense of "sending on a mission". This conceptualisation is consistent with the standard economists' identification of work by the "third person criterion" (Reid 1934). Work is any business that *could* be conducted on your behalf by some agent without loss of the final product. You can wash your own shirt or pay someone to wash it for you: you get the clean shirt irrespective, and either you or the launderer has done some work. Note the conditionality: work that *could* be undertaken by a paid agent but *is in fact* undertaken unpaid for one's self or own household, or on a volunteer basis for others, is still work though it lies outside any specific exchange relationship.

But, if the activity for which you may or not be paid is itself entertaining, absorbing, enjoyable, or challenging, and hence intrinsically and directly rewarding for you as the doer *as well as* for the done-for, how exactly might we operationalize the third person criterion? (And indeed, what do we think about a Sabbath that stops us doing these activities that we enjoy and find intrinsically valuable?) We shall see in a later section that a parallel to the ambiguity in the relations of exploit to work arises also in relation to the intrinsic value of industry.

The two distinct sorts of work activity (paid and unpaid) take place in two distinct economic-sociological contexts. Unpaid work, whether within a household or undertaken for members of a wider community, happens in the context of some scheme of generalized reciprocity, in which work is contributed and its outcome received, not as a result of one explicit exchange of a specific valued object or service for another, but on the basis of ongoing customary rights and responsibilities, as in Mauss' (1969) gift relationship. Early conomic historians expected that the process of economic growth would progressively shift work time away out of the sphere of reciprocity into explicit exchange relationships (Polanyi 1944), through a process of commodification. However, the succession turns out to be much more complex.

The two conceptual contrasts, of industry versus exploit and exchange versus reciprocity, together provide a helpful basis for approaching a number of problems—empirical as well as conceptual—in the idea of the work-leisure balance. In what follows we discuss various theoretical perspectives and expectations about shifts in the balance of a society's time budget among the four quadrants (exploit-exchange, industry-reciprocity) defined by them.

Veblen's developmental theory, as set out in the opening chapters of his 1899 ***Theory of the Leisure Class***, has the startling claim that in the beginning there was, in effect, a "leisure sex". He maintained - a hypothesis that economic anthropologists (Minge Klevana 1980) have subsequently substantiated - that in communities making the transition from hunter-gathering to gardening economic cultures the division between industry and exploit is invariably strongly gendered (presumably related to women's lack of control over their own fertility in these societies). Women remain close to the home, hoe and plant, grind roots or

grains, men range widely, explore, and pursue what is instructively identified as "game". And, crucial to Veblen's caricature, as a by-product of hunting, the men become skilled in the use of weapons, which may also be used for brigandage, winning booty in the form of stores and slaves. The slaves (of both sexes) are set to industrious pursuits, while the superordinate warrior class specializes in violent exploits, which enable a continuing exploitation of the subordinate classes. The dominant class emphasizes the nature of its dominant position by maintaining extensive households consisting of, on one hand, enforcedly idle women, restricted to prayer and needlework and waited-on by industrious slaves, and on the other, a cadet class of armed men (gens d'armes, gendarmes) who police the new feudal order.

Veblen's (1899) 19th century leisure class consisted of the inheritors of feudal nobility, plus manufacturing proprietors and various merchant and professional groups, who, while by no means leisured themselves, emulated the upper class style of leisureliness, through the possession of large and impressively wasteful establishments, the maintenance of large numbers of underemployed servants, and the assurance that their wives and daughters would abstain from anything that could possibly be mistaken for industry. As the upper class inheritors played games and pursued game, so also—while the husbands spent their hours in their counting houses, offices, surgeries or exchanges—the wives and fortunate children of the aspiring upper-middle classes asserted their newfound social prominence by ostentatiously *not working*.

Nevertheless we may suspect that even the landed proprietors and gentlemanly inheritors of industrial capital who were the target of Veblen's powerful irony were not in reality wholly idle. Consider what members of Veblen's privileged class actually did with their time: hunting, fishing and sports, certainly, but also intellectual activity, politics and the magistracy, management of estates, military and academic pursuits. Now compare these with occupational structure of a modern economy: it is easy—without working pedantically through the details of standard classifications—to see these and related fields of 19th century upper class "leisurely" exploit, by the Darwins, Gladstones, Graces, Nightingales and so on, of each advanced 19th century nation, as having a degree of equivalence to the paid work of the upper part of our current occupational structures.

For every upper class gambling wastrel male described by the English and American novelists of the 19th century (and particularly by the women writers Austen, Gaskell, Eliot), we find several scholars, active investors in estates or plantations, conscientious magistrates, members of parliament, improvers of rural land or urban living conditions. The women is similar standing were merely ***nominally*** idle, while in fact managing large households, maintaining extensive correspondence on literary, artistic or charitable questions, sponsoring and campaigning for good causes, nursing, counselling and caring for less-well provided neighbours. These members of the 19th century leisure class were, in short, active in sports, arts, justice and law, scientific research, charitable and caring activities, administration of

large enterprises. They were often ***working***, in the third person criterion sense, and often indeed doing things that are entirely familiar to us as the ***paid*** work of various parts of the dominant class in the 21st century: precisely, sports, arts, law and justice, scientific research, charitable activities, and the administration of large enterprises

Work time and changes in the nature of productive capital

The US sociologist Daniel Bell (1973) provided the first extensive discussion of post-industri***al*** society, describing the newly emerging social form as being characterised by a change in the nature of the central ("axial") forms of wealth creation. In industrial society, wealth was produced, for the most part, by the use of capital goods to produce material objects, and in turn wealth consisted principally of the ownership of these capital goods. In post-industrial societies, by contrast, wealth is increasingly produced directly through the application of knowledge (theoretical, scholarly, artistic or other acquired capacities) in the production of services. To translate Bell's proposition into modern sociological terminology, production is proportionately less dependent on fixed capitals, and increasingly dependent on the deployment of embodied capital or capabilities—that is, on skills that can be exchanged for premium wages.

Bell explained the increasing premium being placed on economically salient skills as the effects of ongoing processes of mechanization and automation. These, particularly when combined with the expatriation of remaining low skilled manual assembly work to low wage economies, directly imply the increased importance—and monetary value—of theoretical knowledge while also reducing the real cost and the availability of fixed capital. These processes seem at least as relevant to the developed world now as they did forty years ago. And the new modes of service provision associated with the internet, discussed in a later section, are likely to amplify these processes which privilege the value of knowledge.

There is one crucial difference between the sorts of incomes generated by the ownership of fixed (or financial) capital and possession of high levels of embodied human capital. Owners of substantial fixed capital rarely add their own labour to produce income, even in previous times, landowners seldom acted as farm labourers. Owners of shares in the factory had no work obligations but simply waited for time to pass until their dividends were due, just as the landowners had to wait on the seasons for their rents. Leisure time would then be considered honorific, just by association with this *freed time* for the rich. But however high their *potential* hourly wages, those who depend on embodied capital for their large *actual* incomes—since the productive potential is literally embodied within themselves—must necessarily devote their own time to long hours of paid work. So as ever-higher earnings

accrue to human capital, and the ownership of this becomes ever more central to economic processes. By a similar association, work, not leisure, becomes "the badge of honour"[1].

"Industry" (or industriousness), and its importance for psychological well-being

From the middle of the 19th century there was a period when it was generally accepted that the subordinate industrious classes ought to be working *less than they then were*. Irrespective of whether EP Thompson's (1967) thesis of increasing paid work time from the middle ages to the late 1850s is correct, the uncontrovertibly long working hours of the mid-19th century manufacturing sector did give rise to a remarkable unanimity of view in the world's first large-scale industrial society. In London, liberals, revolutionary socialists and conservatives all agreed on the need for shorter working hours. JS Mill's **Political Economy** (first published in 1848) gave in its successive editions ever increasing space to arguments involving an evolution towards a steady state of economic activity in which work time would decline as human needs were ever more adequately satisfied within systems involving both producer and consumer cooperatives. Marx in **Capital** defined the rate of exploitation as the ratio of actual work time to the work time needed to support the reproduction of the labour force, implying that action to reduce hours of work would reduce profits and ultimately lead to the downfall of the capitalist system. In 1878, even the British Tory party consolidated the Factory Acts of the previous half-century, holding maximum working hours to just 60 per week and extending these limits to apply to all workers.

But the reduction in working hours itself brings new problems. The second half of Keynes' 1924 essay, almost at odds with the first, is a discussion of the "problem of leisure". We do what we know how to do. We know how to spend our days at work. But if there is no work what do we do instead? Keynes introduces, with what we may now see as rather distasteful disdain, a music-hall song describing an overworked domestic cleaner looking forward to her afterlife, likening leisure-time radio-listening to hearing heavenly choirs of angels. A substantial literature emerged, during the 1930s, devoted to this "problem of leisure": what

[1] We can also speculate on the influence of demographic change on the intergenerational transmission of capital. In pre-industrial, and to some extent in industrial societies, social position, at least for the superordinate classes, could be reproduced across successive generations through the posthumous transmission of wealth. Land, goods, fixed and financial capital would be inherited, and (particularly male) children would succeed to their parents' social position, (at least to the extent permitted by inheritance norms such as gendered primogeniture), at the time of their parents' (father's) death. With a relatively short life expectancy, parents could expect to pass on their property before their children entered middle age. But increasingly life-expectancy, combined with an increasing likelihood of a long retirement period during which financial capital is depleted, means that children increasingly expect to inherit, if at all, at the time of their own retirement—much too late in the life-course for any reliable transmission to the grandchildren. Thus, demographic change itself means that the intergenerational transmission of social position through posthumous inheritance is unreliable. So, as an alternative to transmitting position by transfer of the financial wealth which may well be consumed in their protracted own old age, rich parents instead adopt the strategy of exchanging, in their mid-life-course, large financial capital expenditure on the elite ends of the educational system, to provide their children with the high-end human capital that they can deploy immediately through paid work.

can a labour class do, other than listen to the radio (perhaps read "television"), when, untrained for leisure, it loses its work?

Keynes' disdain contrasts with the serious approach to this issue adopted by Jahoda, Lazarsfeld and Zinsel (1930, reprinted in 1972) in their study of the circumstances of the unemployed men and women who, following the closure of one large factory, constituted the majority of the population of the small Austrian town of Marienthal. The authors identify five "functions" (in later developments of this work (Jahoda and Rush 1980, Warr 1987, Ezzy 1993) these are renamed "common experiences") of paid work: physical exercise, sociability, time structure, social meaning and purpose. Previously healthy individuals, losing the structures that once shaped their daily lives, progressively experienced physical and mental breakdown.

Of course unemployment is very different to shorter working hours with adequate pay. But the Jahoda et. al. (1972) categories of work experiences identify things that people get from their employment, irrespective of ***either*** the material circumstances ***or*** the financial rewards of the job. The need to clock-on (or at least to be available for work at specific points) requires the worker to get up at some particular time, and also to go to bed in time. The requirement to be present in the workplace requires a certain minimum of physical exercise, if only through the need to travel to work. The individual's work station requires some form of social relationship with co-workers. And so on. While in principle these useful structural requirements could as well be provided through leisure routines, they are now, just as they were for the workless of Marienthal, for most people in the middle courses of life, ***actually*** provided by work. Even where employment does not provide the satisfactions of exploit, its rules and rhythms provide something else of real importance that is independent of pay.

Many (though perhaps not all) of these experiences of paid work also are found, or at least, were found previously, to a large degree also in unpaid work. The 60 hours of housework per week found by Pember-Reeves (1913) in the diaries of her working class London wives, or by Kneeland (1929) in her town- and farm-women's accounts, corresponded to or exceeded their husbands' hours of paid work. Unpaid work provided, especially in non-mechanised homes, plentiful physical exercise, a sense of purpose (through care provided for the immediate family members), time structure, even if at second remove, governed by their husbands' factories' whistles, but perhaps more geographically limited social contact.

Effects of technology and public regulation on modes of provision for wants

Technological and public regulatory changes are associated with changes in the balance and distribution of different sorts of work and leisure. Our own version of this discussion (Gershuny 1983) starts from a definition of a "technology" as a "chain of activities providing for the satisfaction of human wants". Any technology, in this sense, involves some particular

combination of **paid labour time** producing infrastructure, goods and services for purchase by, or distribution by the state or other institution to, private individuals and households, **unpaid work time** to be combined with purchased or otherwise distributed commodities and infrastructures to produce final services, and **time devoted to consumption** of these final services. Paid labour time, unpaid labour time and consumption time are the three ***factors of provision*** that satisfy human wants. Different technologies—different ***modes of provision***—involve different combinations of these various sorts of time. Together with changes in public sentiment about the relative financial rewards to be paid to workers in different sorts of occupation, as well as shifts in the balance among preferences for the different sorts of wants to be satisfied, they lead to changes in the society's allocation of its time to these three activities. The concept of "commodfication" (eg Esping-Andersen 1990) captures the central issue of the balance between (final service) labour undertaken in exchange for money, and work-like activity undertaken on the basis of relationships of reciprocity.

Two sorts of technological change influence this balance. First, are innovations in complex technological systems (Dosi et. al. 1988): infrastructural investment (providing, for example, electricity generation and distribution capacity, piped fresh water) combined with bundles of mutually potentiating inventions (such as plastics and pressed steel for casings, fractional horsepower electric motors, electromechanical relays for control) allow innovative and relatively cheap consumer products to reduce requirements for human power and immediate human presence or supervision in the production of final services. Rather than Gronau's (1973) prediction of continuously and necessarily rising costs of final services, these innovative products, when purchased by private households—in effect as domestic capital equipment—allowed the transformation of final demand for low productivity-growth final services (entertainment, domestic services), into demand for high productivity growth manufactured products (televisions, washing machines and other "labour saving" domestic equipment). Well-graded roads and private automobiles similarly provide the opportunity for domestically-provided transport to substitute for trips on public transport. As a result much of what had once been paid work in service industries was substituted for by unpaid labour within the household (Gershuny 1977).

The domestic "white goods", transport, and entertainment products led—in the 1930s to 1960s in the US, and in the post-war 1950s to 1970s in Europe and the rest of the developed world—to the 30 year "wave" of consumer innovation-led economic growth described by francophone social scientists as the "trente glorieuse". More recently, telecommunications infrastructure combined with micro-processor-based entertainment and computing equipment in private households, provides an analogously-sourced, and still increasing range of final consumer services. Despite the false start of the "dot.com revolution" at the turn of the millennium, expanded informatics-based services—ranging from home-based shopping (with associated warehousing, distribution and consumer advisory services) via downloaded passive entertainment, to developments of gaming and remote interactive play close in feel to

virtual tourism, (and with likely down-stream spin-offs in the form of new sorts of demand for *actual* face to face service consumption and real tourism)—might still, in coming decades, have economic stimulation effects analogous to those of the mid-20th century wave of new consumer products.

These innovations have complex consequences for the balance between the spheres of exchange and reciprocity, and between paid and unpaid work. Esping-Andersen (1999) correctly asserts that while some work may be transferred from a paid to an unpaid basis, much work also, in effect, moves in the other direction. The growth of eating out-of-home, for example—as well as the increasing availability of finished or semi-finished meals for home consumption—leads to transfers of work from private to commercial kitchens. (It is however far from clear that the original theorists of post-industrial unpaid work really predicted a monotonic shift in the other direction.) And clearly the newer informatics-based innovations lead mainly to substitutions among different sorts of paid work: for example, software and home-delivery workers substituting for employment in retail establishments in the home shopping case.

They also have consequences for the overall work-leisure time balance. The historically rising trend of productivity growth across the economy must - if it is not to lead to the sort of "Midas Plague" (the term derives from Frederick Pohl's 1954 short story of this name), described in Linder's (1970) "Harried Leisure Class" - be accompanied by an increase of time available for the consumption of services, in turn necessitating a reduction of (paid plus unpaid) work time. Becker (1965) provided a socially differentiated view of consumption, in which high-wage individuals might choose to consume expensive "time-intensive goods" (eg power boating, "standing under a cold shower tearing up $20 bills") which maximise the affective return-per-minute of their consumption time, and increasing their paid work time to finance these, while low-wage individuals reduce their paid work and consume low-cost time extensive goods ("walks in the park").

A second and much more specific category of technical innovation associated with change in time allocation over the last half-century, is constituted by the technologies for control of reproduction, diffusing throughout the 20th century, culminating in the birth control pill in the 1960s, allowing convenient and effective control of fertility, directly under women's own control. It allowed women to make choices about their balance between paid and unpaid work that were previously more constrained. Other related developments—particularly regulation of hours of work in the labour market, parental leave and the provision of childcare services—vary radically across countries, and differentially affect women's ability or willingness to transfer work between the unpaid and paid spheres. But, as we shall see, wherever time allocation evidence is available we find a historical convergence between men's and women's paid/unpaid work balance, albeit driven more by a reduction of unpaid work done by women than by an increase in that done by men (Kan et. al. 2011).

3. Historical Changes in National Time Budgets

National accounts and the boundaries of work

The boundaries of national accounts of economic activity have been disputed since before the beginnings of modern social science. Adam Smith considered the entire service sector ("the Fleets and the Magistracy", as well as the work of servants) as unproductive and hence outside the economy. This view remained fundamentally unchallenged for a century, until the economic statistician Robert Giffen (1904) noticed that those key indicators of economic activity, the Income Tax and the Poor Law Register were respectively rising and falling despite a long-term decline in manufacturing, a fact he explained, comparing occupational distributions in the 1871 and 1881 Censuses, by the growth of what he termed "incorporeal functions"—the production of services.

The fundamental contribution of Kneeland and her fellow "domestic economists" in the first part of the 20th century was first to identify, and then, using time-use diary methods, to measure, the remaining, and as we shall see very large, sector of work that lies outside the money economy. It may not produce money income, but as Kneeland argues eloquently in her 1929 **Annals** article, it nevertheless certainly does provide for human wants. The third-person criterion serves to define work in a comprehensive manner. It also clearly identifies the existence of a category of work outside of *paid* work. Is this an important category? How does the analysis of unpaid work add to our knowledge of the operation of economic processes?

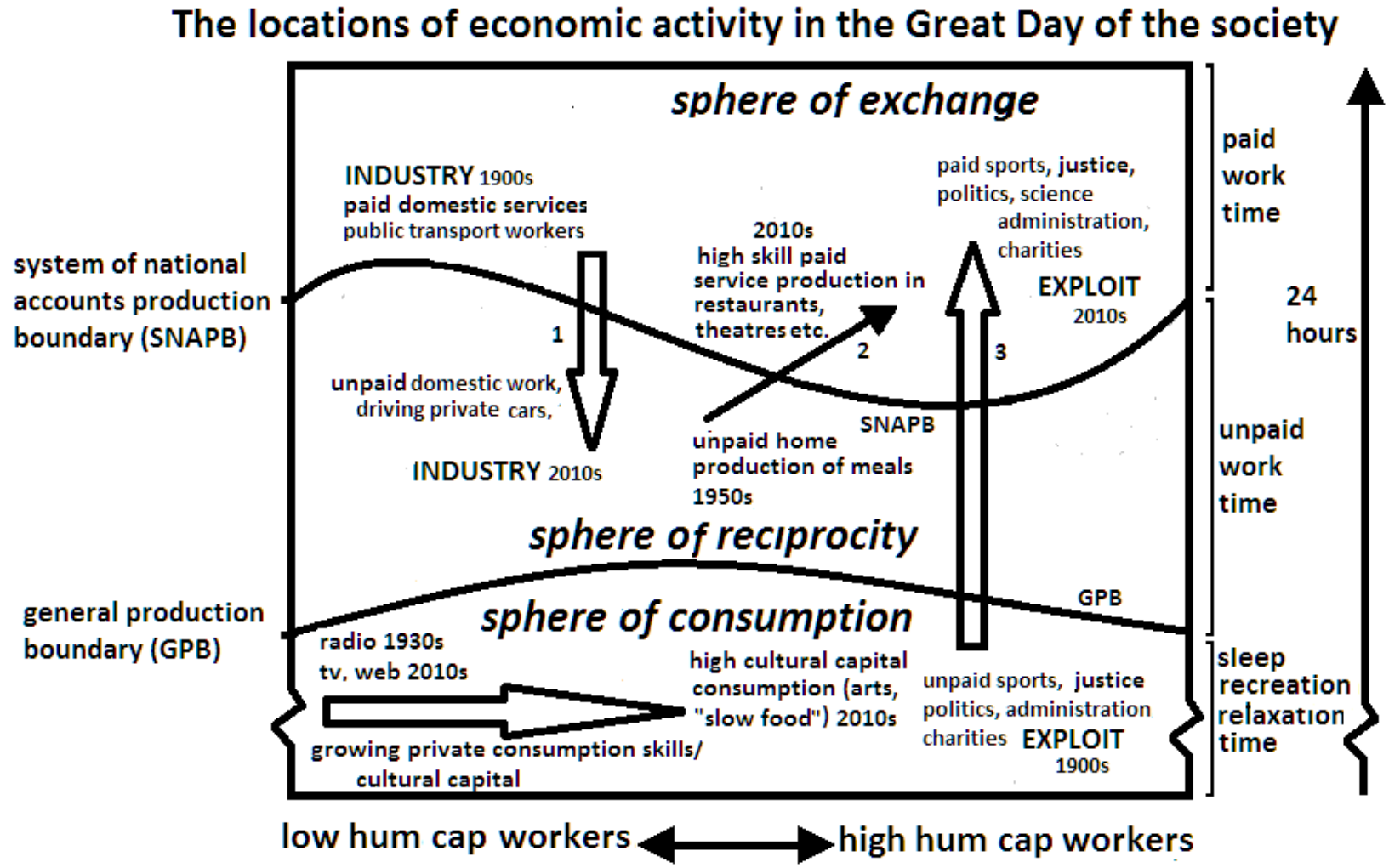
We try to answer these questions in a more general way related to gender- and intergenerational equity in the conclusion. For the moment however we focus just on the relationship of the balance between paid and unpaid work to the level of economic activity. Kneeland's discussion of decisions about whether to purchase domestic services (1929 p. 33), and Hicks' view of marriage (Kennan 1986) as a means to detach domestic services from the money nexus, both envisage activities which satisfy human wants shifting between the paid (formal) and unpaid (informal) sectors. Plainly, within a given set of historical circumstances, decision-making about household formation and domestic outsourcing has some influence both on labour supply and on the level of demand for the service and other sectors. As historical circumstances change, therefore, these decisions may systematically alter the level of economic activity. Recent moral panics about household formation and below-replacement fertility in some developed societies (Craig and Siminski 2011 and Giménez-Nadal et. al. 2012 provide examples). Over the longer term, the previously-discussed diffusion of "labour saving" devices throughout the developed world (irrespective of whether they in fact "save labour" - see Bittman et. al. 2004) having effects on both labour supply and service sector

demand provides another. We can conclude that the determinants of change in the balance of paid with unpaid work contribute significantly to our understanding of the evolution of economic activity as a whole.

The boundaries between paid and unpaid work, and between all sorts of work and other activity, are conventionally provided by the UN System of National Accounts (UNSD 2014). The key delimiters are the System of Natonal Accounts Production Boundary (SNAPB) which includes all activities conducted wholly or partly (as might be the case for vegetable gardening) for money, and the General Production Boundary (GPB), which includes all other activities identifiable as work through the third person criterion. For sociologists, these concepts map quite neatly onto the distinction between the **sphere of exchange**, within which each individual work event has a corresponding payment in money or kind to the worker, and the **sphere of reciprocity** within which work is undertaken by individuals as a result of general feelings of obligation or responsibility, and without any fixed expectation of return.

Work within the sphere of reciprocity, until the second half of the 20th century, often rather casually, was dismissed as archaic or at least developmentally outmoded. For example, Polanyi (1944), who conceded that this is a socially regulated and politically-driven phenomenon, saw economic development as a continuous shift towards the market as production is progressively and irreversibly monetized. Esping-Andersen initially (1990) saw "commodification" in a similar manner, though he among others (Gershuny 1983, Esping-Andersen 1999) also observed that, in both industrial and post-industrial societies, provisions for different sorts of wants, and hence specific sorts of unpaid and paid work, may be moving in both directions at the same historical time-point.

Figure 1


The locations of economic activity in the Great Day of the society
sphere of exchange
INDUSTRY 1900s
paid domestic services
public transport workers
2010s
high skill paid
service production in
restaurants,
theatres etc.
paid sports, justice,
politics, science
administration,
charities
EXPLOIT
2010s
system of national
accounts production
boundary (SNAPB)
1
2
3
unpaid domestic work,
driving private cars,
INDUSTRY 2010s
unpaid home
production of meals
1950s
SNAPB
sphere of reciprocity
sphere of consumption
GPB
general production
boundary (GPB)
radio 1930s
tv, web 2010s
high cultural capital
consumption (arts,
"slow food") 2010s
unpaid sports, justice
politics, administration
charities EXPLOIT
1900s
growing private consumption skills/
cultural capital
paid
work
time
24
hours
unpaid
work
time
sleep
recreation
relaxation
time
low hum cap workers
high hum cap workers

Shifting locations of economic activity

Three processes are represented schematically by the three numbered arrows in Figure 1. The figure schematically represents the Great Day (or time budget) of a society—the total of billions of minutes experienced by all the members of a society, distributed, in the horizontal dimension by the economic capabilities (or human capital) possessed by the individuals in the population, and in the vertical by the 24 hours of an average day. The shape of the SNAPB and GPB delimiters reflects our initial intuitions about the likely distributions of paid and unpaid work and consumption time across people with differing levels of human capital. In keeping with the generally descriptive intentions of this paper we do not advance any strong theoretical models, but merely illustrate a range of archetypal historical shifts in time balances.

Type 1 shifts consist of activities moving from the sphere of exchange to that of reciprocity. It includes activities affected by the so-called "cost disease" process (Baumol 1993) in which technological innovation increases manufacturing productivity, putting pressure on service sector wages while reducing the costs of the machines used in final service production, to the point that they become feasible purchases by private households. This produces the "self servicing" phenomenon (Skolka 1977, Gershuny 1977) described in the previous section, where tram, train and bus services are exchanged for privately driven motorcars, purchase of domestic services (such as laundry) for domestic equipment (such as washing machines) operated by members of private households, and so on. (We should note, however, that the same technological changes are often also associated with moves of labour in the reverse directions—not merely in the form of paid manufacturing work producing the domestic equipment, but also, for example, with industrially manufactured semi-finished meals replacing home cooking, the work being shifted into wage-labour staffed industrial kitchens.)

Changes of this sort also reflect the state of public finances. Thus, an area of provision such as care for the elderly, which in the UK shifted somewhat from the private sphere of family reciprocity to publicly funded paid provision during the mid-twentieth century, may now shift proportionally back into the unpaid sphere as demographic pressures outstrip available tax funding . Publicly funded social services are substituted by family care or (to a much more limited extent) by volunteer organisations.

Type 2 shifts reflect both technical change and developments in consumption tastes. Technology may also increase the efficiency of service provision in the paid sphere. In restaurant food for example, the low end of paid provision is strongly influenced by computer based logistics[2]. And at the high end of service provision, rising levels of consumption skill

[2] We are familiar with this in the USA as "Macdonaldisation", but in fact the very first entirely commercial programmable computer was developed by and specifically for Lyons Tea Shops in the UK between 1948 and 1952: Ferry (2003).

may be associated with growth in paid employment. The emergence of sophisticated and cosmopolitan food cultures, for example, may be associated with a growth in relatively high skill paid employment in restaurants. Similarly change in artistic tastes, initially associated with a growth in home reproduction of musical performance on radio, records or CDs, may eventually lead to a reverse increase in live theatrical performance, reflecting tastes acquired from performances experience outside the cash nexus. In this case a growth of skills in consumption - cultural capital (Bourdieu 1985, Chan and Goldthorpe 2007) - may be associated with a growth of high skill paid service work.

And Type 3 shifts are the aforementioned movement of what were once upper class leisure activities (which, though they were not seen this way at the time, we should perhaps alternatively consider as unpaid work) into the sphere of exchange. Of course, "exploit" has always been rewarded by honour, though not always or necessarily in the form of financial rewards as well. But mechanisation and automation, together with large-scale production, and with the growing demand for access to intellectual property distributed in the form of "software" (records, videos, DVDs and downloads) increasingly imply what Bell (1973, 1978) called "the primacy of theoretical knowledge"—and hence the financial premium associated with the deployment of the special skills required for the organisation and delivery of economic activity. In parallel, the virtual disappearance of the premium previously attached to physical strength and control in primary, construction and manufacturing industry, adds to the relative importance of—and relative financial return to—the skills of Bell's "knowledge elite". And over the same period, the growth of mass communications and broadcast entertainment media have added to the effective demand for—and hence financial returns to—skills in sporting and artistic endeavours. Fields of activity that were once occupied by more or less well prepared upper-class amateurs and badly paid (if well-regarded) professionals, are now occupied by highly-trained millionaire arts and sports stars, as well as numerous moderately well-paid aspirants, who together constitute a non-negligible part of the new dominant knowledge/high-skill class.

So far this discussion has made no mention of gender. One of the more striking modern findings in recent national time budget research is of overall gender *equality*. Burda, Hamermesh and Weil (2013) found (in common with a number of others, starting with the sociologists Young and Willmott 1975) the phenomenon of "iso-work": when we add all the different sorts of activity that could be described as work, across the combined spheres of exchange and reciprocity, we find, in many countries and period, that men and women have a very similar total of work time. But this is a rather unequal sort of equality. "Symmetry" - ie different in the distribution as between paid and unpaid, even though similar in total - to use Young and Willmott's description, only gives equality in the long term under a rather stringent set of assumptions. In particular once marriage is no longer life-long the symmetrical differences implied by traditional gender norms imply a substantially gendered inequality of long-term life-chances. Endogamy, the marriage of similar sorts of people - in

particular with similar levels of education - is the norm in the developed world. But if, after marriage, and particularly after the birth of the first child, the husband works longer at the his job and the wife works longer in the home, when the marriage ends, he will, typically, depart with the bulk of the couple's human capital, while she is left with the babies.

We have set out, in the previous paragraphs, a range of different influences on the balances among different sorts of time use. There are the influences of technological innovations of various sorts. There are potential changes in tastes—for leisure in general, or for particular sorts of leisure consumption, and for different aspects of work. And there are regulatory changes, taxes, subsidies, work time restrictions and requirements. All of these have influences on their own and in combination. Certainly some extended and careful theorization is required here. But the considerations are complex, so we could only hope to arrive at testable theoretical propositions that cover only a small and constrained part of the issues described in Figure 1. *Instead*, in what follows we adopt a rather less ambitious programme, exploring historical changes, effects associated with human capital differences and - to provide some clues as to generalisability - national differences in time budgets, *descriptively*. Our results constitute the most comprehensive-ever description of the long-term progress of the work-leisure balance in the developed world.

4. Methods

The Multinational Time Use Study (MTUS)

Though time is indeed, in a sense, a social construction (Zerubavel 1981), it is probably also correct to say that the system of measurement of time is, in a unique way, responsible for the modern social forms that we study, rather than vice versa. So the calibration of time in days, hours and minutes is perhaps the only example of a system of measurement of a social phenomenon that is entirely consistent across all modern societies. The pioneers of time use measurement in the United States (Hildegarde Kneeland) and Soviet Russia (Stanislav Strumilin) in the 1920s established very similar research methods. While an earlier US time use study (Bevans 1913) was mistakenly identified as a diary study by Sorokin and Berger (1939) - Sorokin himself previously was a colleague of Strumilin in Moscow - there may be a prior link via the British Fabian Socialist Maud Pember-Reeve (1913) (whose 1912 chapter on London women's time-use is the first English language diary study), back to time-use studies of Russian peasant households dating from around 1900 (Robinson et. al. 1989, Sacks 1977, Zuzanek 1980). This Russian link may also explain the unfounded accusation in the US press that Kneeland was a Soviet agent (or perhaps it was just her loose association, as an employee of the US Department of Agriculture in Washington, with the Roosevelt Brains Trust: Laurie 2009). At any rate, the first major US academic study of time use (Lundberg et. al. 1934) explicitly identifies Kneeland's USDA work as the source of their methodology. By

the 1960s, large-scale diary-based time-use studies were underway in the UK, France, Hungary, Poland Czechoslovakia and elsewhere.

This pre-history means that by the time of the first properly designed, ex-ante (ie pre-fieldwork) harmonised cross-national time use study, funded in the mid-1960s by UNESCO and led by the Hungarian sociologist Alexander Szalai (Szalai 1972) there was already a considerable international convergence of research practise. And in turn the Szalai study provided a model for much of the national-level time diary research that followed. So the task of the MTUS, of ex-post harmonisation of the micro-level data of all the time-diary based studies whose samples have survived to the present time is, while painstaking and protracted, essentially straightforward.

The MTUS is by far the largest collection of comparative and historical time-use materials available anywhere, with currently nearly 70 surveys from 21 countries (Fisher and Gershuny 2013). A full description of the study, collected and managed by the Centre for Time Use Research (CTUR) at the University of Oxford, is appended. In summary, it consists of three sets of files (Fisher and Gershuny 2013), most of which are straightforwardly downloadable from the www.timeuse.org website. A majority of the surveys are maintained in a fully harmonised version of the original diary sequence, primary and, secondary activities, co-presence and location throughout each diary day, the activities classified into 69 standardised categories (the Harmonised Episode File). Most of the studies are also available in an easier-to-use format which calculate the minutes per day devoted to each of these 69 activity categories, together with a full set of around 30 demographic and classificatory variables describing the diary respondents and their households (the Harmonised Aggregate File). Some of the surveys survive only in the aggregated form, while many of the earlier ones have rather deficient lists of classificatory variables. So we also maintain a Harmonised Simple File (HSF) including all the usable surviving surveys in the aggregated daily time use format, with a simpler 20-activity classification system and a much shorter list of socio-demographic classifiers.

In what follows we use a subset of 56 surveys from the Simple File, covering 16 countries, including only the 546,546 days of diary data contributed by respondents aged between 20 and 59 (detailed in Appendix Table A1a).

Analytic strategy

Our primary object is to describe historical change and national difference in time budgets, further differentiated by levels of human capital. But comprehensive tabulation of 16 countries by two genders, by three levels of educational attainment (used as proxies for human capital) for each of five categories of activity (paid work, core housework and

cooking, other unpaid work , uncommitted time and sleep) are not susceptible to any sort of clearly comprehensible interpretation.

So we adopt a simplifying strategy, based on previous work by CTUR using earlier versions of the MTUS Simple File. Esping-Andersen (1990) introduced a three category classification (Anglophone liberal-market, corporatist, Nordic-social-democratic) of modern welfare state regimes. Subsequently, time-use researchers, observing a reasonably close match between the differing ideological foundations of Andersen's welfare regimes and the family policy regime differences that seem to underlie national time budgets, have used rather similar national groupings as a simplifying device (Pacholok and Gauthier 2004, Sullivan and Gershuny 2003, Bonke and Weser 2003, Hook 2010, Rice et. al. 2006, Cooke 2007). Most recently Kan et. al. (2011), using a smaller subset of surveys from an earlier version of the HSF, demonstrated that adding a "Southern" category to produce a four-regime family policy classification provided sufficient differentiation to demonstrate contrasting national-historical trends in childcare, domestic and other unpaid work.

We use a version of this four-regime classification in what follows. Our sixteen countries are grouped into Nordic (including Denmark, Finland, Norway and Sweden), Liberal Market (Australia, Canada, UK, USA), Corporatist (Austria, France, Germany, Israel, Netherlands, Slovenia) and Southern (Spain, Italy) categories, which are used in a set of very large scale regression models. Following the example of the much simpler models in Kan et. al. (2011) we interact the regime variable with a linear date (survey year minus 1961, the year of the first HSF survey), together with date-squared and date-cubed terms to allow for different patterns of historical variation within each regime group. And we have introduced additional interaction terms to encourage the emergence of independent variation by gender and level of education across the regime groupings. Descriptive statistics for all the root (non-interacted) independent variables and the five dependent variables are provided in Appendix Table A1b.

We use a straightforward OLS regression approach. The same coefficients could be derived from a Seemingly Unrelated Regression (SUR) analysis—but the underlying covariance of the dependent (time use) variables is not in itself germane to our descriptive purposes. We were concerned that the results of our analysis should not be unduly influenced by the size of more recent vary large surveys available for some countries, so in addition to analysing the 550k days reweighted so as to correctly represent the days of the week within each survey, age group and, gender category, we also provide a parallel analysis adopting the radically conservative approach of down-weighting the larger surveys to provide just 3000 weighted cases for each survey. Inspection of Appendix Table A1a demonstrates that only 9 of the 56 surveys have fewer than 3000 actual cases, and only 3 have fewer than 2000 cases. Nonetheless the 167942 resulting cases (56*3000=168000 minus 58 cases with missing variables) are quite sufficient to provide good models, with mainly significant coefficients. The analyses of the dataset with and without the down-weighting step produce very similar

summary results. Compare, for example the Appendix Figures A1 and A2, which give paired instantiated estimates using the two approaches. The stories they tell, hardly differ.

We also recognise that this somewhat aggressive use of regression results to summarize very complex processes can sometimes be misleading. So in the Appendix, we provide tables and charts of the simple means of the five dependent variables broken down by country, period and sex, to demonstrate that the main conclusions we draw with respect to historical trends of and gender similarities in total work, are consistent with the more detailed national-level data (Appendix Figures A3, A4a, A4b and A5).

5. Results

Table 1 sets out the regression modelling of the five distinct sorts of time use. “Core domestic work” includes the total minutes devoted to cooking and other food related activity (clearing and washing up) during the diary day. “Other unpaid” covers other household jobs. (shopping, child- and adult care, gardening, care of pets, and other non-routine jobs undertaken by household member), “Paid work” includes commuting time, and short work breaks, as well as school/University time for those in fulltime education. “Uncommitted time” includes all other activity with the exception of sleep and personal cars. Since all the time in any day must by these definitions be located in one or another of the five activities—and since time spent in one “primary” activity, cannot, again by definition, be spent in another primary activity, each of the sets of five partial regression coefficients relating each of the independent variables to the time spent in each activity, must necessarily sum to zero. And similarly, the intercepts must necessarily sum to the 1440 minutes of the day.

The family of regressions contain eight root independent variables: age, sex, educational level, presence or absence of children in the household, total number of people in the household, type of country (policy regime type), day of week (amalgamating Tuesdays, Wednesdays and Thursdays) and historical period (calculated as survey start year minus 1961, which is the date of our earliest information). We have included a large number of interaction terms (which allow, for example, policy regimes to have different effects at different historical periods, or educational level to have different effects under different regimes), And these variables have additional quadratic and cubic terms (the last two allowing up to two different changes of direction in the historical trends). We see that, because of the very large size of the sample, the great majority of the regression coefficients are strongly significant. Even in the radically down-weighted 3000-cases-per-survey version set out in the Appendix Table 2, with the 546,546 cases reduced to an apparent 167,492, the great majority of the coefficients in all five models are still statistically significant.

In Table 1, we see that the age and age-squared terms together produce an inverted-U age-trend for all three work categories, implying a maximum of work time in mid-adult life. And

(because of the adding-up-to-zero characteristic of these coefficients) the uncommitted and sleep totals have the converse U-shaped age-trend, with free and rest time both being at their maxima relatively early and late in the life-course. But these root variable coefficients are in general difficult to interpret independently of the associated interaction terms. Note for example that high levels of education, which are associated with an extra 29 minutes core housework for the sample overall, also have a strong *negative* effect on core domestic work when associated with female gender and period—women's core domestic work time reduces markedly over time.

So, rather than discussing the regression equations themselves, we will work with a set of "instantiations" of these equations, in which we take a standard household of three persons, consisting of a couple with one child, and consider the predicted behaviour of men and women aged 40, at each educational level, in each regime type, over the historical period for which we have available data (which varies slightly across regime types).

Table 1 Five activity day regressions averaged across 7 days (original sample N=546,546)

(*** p>.0005 ** p>.005 * p> .05)	**core**		**other**		**paid work**		**uncommited**		**sleep**	
R Square	***0.29***		***0.13***		***0.29***		***0.19***		***0.09***	
age	5.25	***	1.08	***	9.35	***	-10.64	***	-5.03	***
age squared	-0.04	***	-0.01	***	-0.14	***	0.14	***	0.06	***
gender (def: man)										
woman	176.05	***	31.82	***	-118.13	***	-81.71	***	-8.03	*
Education (def: incomplete secondary)										
medium (complete secondary)	-18.57	***	2.23	***	28.18	***	-4.50	***	-7.34	***
high (some tertiary)	-28.59	***	24.76	***	-14.55	*	29.44	***	-11.05	**
child in hh (def: none)										
1 or more children	22.05	***	49.09	***	-30.43	***	-35.30	***	-5.42	***
household size	2.37	***	1.58	***	-4.39	***	0.57	***	-0.14	
family policy regime (def: corporatist)										
Nordic	-30.98	***	10.34	*	29.70	**	5.78		-14.84	***
Market	-43.81	***	-39.68	***	94.16	***	46.32	***	-56.99	***
southern	-14.79		49.79	***	37.65		-11.53		-61.12	***
Period	-50.95	***	-1.25		-58.21	***	118.40	***	-7.98	***
period squared	9.40	***	0.08		12.47	***	-20.19	***	-1.76	***
period cubed	-0.50	***	0.03		-0.80	***	0.98	***	0.29	***
day (def: Sunday)										
Monday	-47.86	***	-22.98	***	413.27	***	-252.82	***	-89.61	***
weekday	-36.67	***	-23.38	***	415.03	***	-262.72	***	-92.27	***
Friday	-48.55	***	-10.30	*	407.01	***	-241.58	***	-106.58	***
Saturday	-6.20		21.04	***	154.48	***	-80.27	***	-89.06	***
nordic* period	14.51	***	-9.47	***	4.98	***	-16.22	***	6.21	***
market*period	11.09	***	1.83	***	-12.69	***	-14.21	***	13.98	***
southern*period	-4.73	*	-19.88	***	-2.87		5.04		22.44	***
nordic* period cubed	-0.15	***	0.10	***	-0.15	***	0.26	***	-0.06	***
market*period cubed	-0.09	***	0.04	***	0.03	*	0.09	***	-0.08	***
southern*period cubed	0.06	***	0.17	***	0.00		-0.03		-0.20	***
Monday*period	13.17	***	10.83	***	-30.30	***	0.28		6.02	***
weekday*period	7.84	***	11.05	***	-29.83	***	5.46	*	5.49	***
Friday*period	14.33	***	10.26	***	-47.38	***	15.37	***	7.43	***
Saturday*period	8.60	***	6.19	***	-40.70	***	11.32	***	14.58	***
Monday*period squared	-1.25	***	-1.24	***	2.56	***	0.63	**	-0.70	***
weekday*period squared	-0.84	***	-1.28	***	2.73	***	0.07		-0.69	***

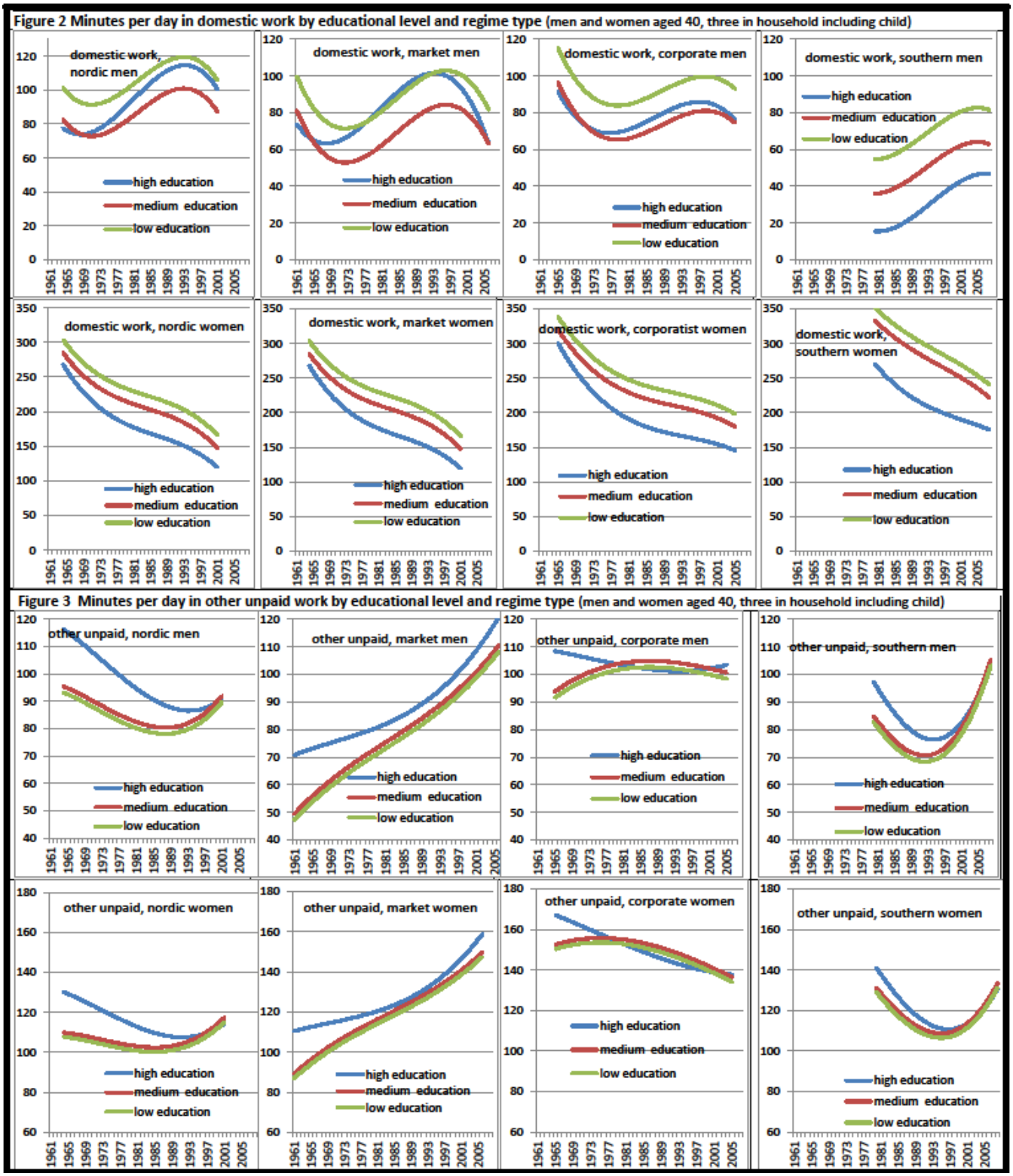
Friday*period squared	-1.41	***	-1.31	***	4.44	***	-0.81	***	-0.91	***
Saturday*period squared	-0.86	***	-0.68	***	3.44	***	-0.57	*	-1.33	***
Monday*woman	96.75	***	37.30	***	-248.24	***	97.34	***	16.85	***
weekday*woman	79.21	***	43.74	***	-255.33	***	110.15	***	22.23	***
Friday*woman	80.28	***	36.66	***	-215.40	***	76.28	***	22.17	***
Saturday*woman	19.28	***	17.32	***	-54.62	***	8.61		9.42	*
Monday*woman*period	-9.29	***	0.10		14.12	***	-4.70	***	-0.24	
weekday*woman*period	-7.50	***	-0.31		14.26	***	-5.62	***	-0.83	
Friday*woman*period	-7.97	***	0.01		10.85	***	-2.00	*	-0.88	
Saturday*woman*period	-2.34	***	-1.14	*	3.81	**	-0.10		-0.23	
Nordic*woman	-22.00	***	-48.02	***	93.52	***	-23.43	***	-0.06	
Market*woman	-28.13	***	-21.12	***	14.70	*	28.94	***	5.61	*
Southern*woman	183.47	***	-4.70		-9.19		-152.74	***	-16.84	***
Woman*period	-17.25	***	-1.80	*	13.26	***	4.50	**	1.29	
woman*period squared	0.85	***	-0.08		-0.75	***	-0.05		0.04	
Nordic*woman*period	-3.62	***	4.28	***	-3.42	**	3.12	**	-0.35	
Market*woman*period	1.32	**	2.73	***	0.76		-3.88	***	-0.93	*
Southern*woman*period	-13.02	***	-0.07		-0.07		13.08	***	0.08	
high educated*period	5.53	***	-8.54	***	16.79	***	-17.88	***	4.09	**
high educ*period squared	-0.47	***	0.70	**	-1.15	***	1.43	***	-0.51	***
high educ*period*woman	-15.90	***	-1.01	*	17.48	***	-0.47		-0.10	
hi educ*period*woman sq	1.33	***	0.09		-1.51	***	0.10		-0.01	
hi educ*period*nordic	1.09		6.54	***	-7.27	**	6.35	***	-6.72	***
hi educ*period*market	7.00	***	2.68	***	-3.84	*	-5.00	***	-0.84	
hi educ*period*southern	-9.56	***	6.03	***	-6.11	*	16.48	***	-6.85	***
hi educ*period*nordic sq	0.01		-0.81	***	0.56		-0.55	*	0.79	***
hi educ*period*market sq	-0.77	***	-0.21	*	0.51	*	0.54	***	-0.07	
hi educ*period*southern sq	0.82	***	-0.71	***	0.82	*	-1.74	***	0.81	***
(Constant)	8.25		19.59	***	43.16	***	667.93	***	701.08	***

The eight panels of Figure 2, illustrate the modelled evolution of core domestic work, separately for men and women, in each of the regime types, and separately for the three educational levels (respectively incomplete secondary, complete secondary, and some tertiary). The pattern for women is straightforward and easy to describe. In all four regime types, women are reducing their domestic work time markedly, and in the Nordic, Liberal Market and Corporate regimes, declining at an increasing rate. Presumably the decline reflects the combined influence of domestic mechanisation and reduction in available time due to entry into the paid labour force. In all four regimes, the higher the educational level, the less the core domestic work, presumably reflecting both an effect of their generally higher wage on the possibilities both of purchasing domestic equipment and of outsourcing some of the domestic labour, as well as the diminished time available as a result of their generally longer hours of waged work (seen in Figure 6 below). Indeed, in all except the Southern group, the disparity between high and low education groups is growing absolutely over this period, perhaps reflecting an increased differential in earnings. At each educational level and historical time point the Nordic women do least core domestic work, followed by the market, and the corporatist women, while the Southern women do most .

The men's pattern historical trend is more complex and differentiated. We see, in the first three cases an initial decline followed by a rise, and then a second decline in the level of this activity. (We were concerned that the second of these declines might reflect the excessively large number of cases from the US at the beginning of the new century—but just the same general pattern emerges in the alternative 3000-cases-per-survey reweighted version of the model.) For southern men we see again two clear points of inflection, but, starting from a rather lower base, they show a reasonably continuous increase throughout the historical range. The pattern of differentiation by educational level is more complex than for women., with the highly educated men's core domestic work time lying generally somewhere between the low and the high educated. The double dip may reflect the changing balance among the competing effects of domestic mechanisation on one hand, and changing gender equality norms on the other.

Note the different scales of the vertical axes for men and women: 0 to120 minutes for men, 0 to 350 minutes for women. At the start of the period, women did approximately three times as much routine work as men, and still did about twice as much by the end of the period.

Figure 3, other unpaid work—this is chiefly childcare and shopping time—shows much more varied patterns among regime groups, but with much more similarity between the sexes within each regime. The two market regime panels are straightforward: the self-service shopping revolution, and the growing requirement for childcare and human investment in children (explaining the higher level of time from the better-educated) combine to produce a continuous pattern of growth of time devoted to these activities. But, while the higher level of contribution from the better educated fits the previous explanation, the behaviour of the other three regime categories is puzzling to us at present. The gender differential is smaller here, but still quite marked: women have around a third more of this sort of work than do men.



The totals of routine plus other unpaid work are estimated in the Appendix Figure A1. The overall patterns correspond pretty well to those of its main component, routine domestic work as in Figure 2. For men, we see an initial small fall, then a substantial rise, followed by a levelling off, or small further fall. For women, a continuous fall, amounting to 100-150

minutes per day, and much more marked for the best-educated women who do substantially the least unpaid work.

The picture of historical change in paid work time that emerges from the massed diary data is more familiar. For men paid work time per day fell remarkably over the first part of the period—by around 100 minutes per day, partly as a result of reductions in the length of the working day, but also importantly because of the lengthening of the weekend , in many if not all of the countries covered here, from one-and-a-half days to two days, as Saturday ceased to be a normal working day. From the 1980s the reduction levelled off and indeed for some categories of workers within the labour force, showed some gentle increase. At the beginning of the period, and for all of the three regime groups for which we have evidence from the 1960 and 1970s, highly educated men worked least and medium educated men worked most. By the end of the period, in the liberal market, corporate and southern regimes at least, by the beginning of the present century, the highly educate men worked on average the longest hours.

Women in the liberal market economies were the first to enter the labour market. So the initial decline in women's average hours of paid work corresponds to the balancing out of a continuing rise in women's participation in paid work (albeit largely on a part-time basis) with the same initial reduction in work time as the men show in each of the regime groups. Then from the mid-1980s onwards, we see the stronger pattern of growth with a particularly marked reversal of the human capital/leisure gradient: the best educated women, who previously worked on average less for money than the worst educated, now work much the most of the three education groups.

Figure 5 shows the historical evolution of the sum of the routine, other unpaid and paid work time totals. Each of the three components of work, routine and non-routine unpaid, and paid work show really marked gender differences, both in average levels of work time, and (for routine unpaid and paid work) in historical trends. But in this final group of figures, representing the most aggregated possible view of the history of work through the last half century, gender differences virtually disappear. The male and female trends have just the same historical shapes, and for the most part the same levels.

This is the essence of the symmetrical-but-different isowork interpretation of "gender equality" in all work. If we follow through each of the pairs of curves in the upper and the lower, men's and women's, halves of Figure 5, we see, at least for the first three Nordic, Liberal Market and Corporatist groups, hardly a case in which the male/female work time ration moves more than a single point above or below 50/50. (The southern countries appear to be exceptions to the "iso-work" rule and we leave them aside from the following.) How this degree of equality is achieved is itself something of a mystery, insofar as those of us who engage in the various activities aggregated into the "work" category are mostly quite unaware

of what our work time totals *actually are*[3]. But we presume that behind these equal totals, however estimated by men and women, are ethical principles about fairness in daily life. Irrespective of differences in behavioural gender norm, people being expected to work longer or shorter hours on any given day simply because of their gender, seems patently unfair, irrespective of its long-term consequences. (And we will suggest in the concluding discussion, the short-term symmetrical-but-different version of fairness in the distribution of the burden of work, produces, via the mechanism of gender differentials in rates of human capital formation, a substantial and clearly unfair inequality in men's and women's life-chances.)

Presumably as a consequence of this life-course gender inequality, the extent of the gendered short-term differences in the distribution of unpaid work time have been changing, throughout the period covered by our data, in a regular and substantial way. The balance between men's and women's share of unpaid work have changed in the manner indicated by Figure 6, in every country for which we have cross-time historical diary evidence (Gershuny 2000, 2009, Fisher et. al. 2007, Kan et. al. 2011).

Pretty much continuously through the whole period (though note the hint of a slight upturn detectable for the most recent period for the market societies) the women's proportion of the unpaid work time has been falling, and falling substantially, with changes in excess of 10 percentage points over 20 years. The rate of change and historical trend-shapes vary according to national policy regimes, pretty much as we might have expected. The Nordic countries are consistently the most advanced toward gender equality , though with the market economies catching up fast, the corporatist regimes lagging and the southern countries starting from historically very high levels of inequality but catching up fast. And within each regime group the educational levels have the expect positive association with equality. Compare the left and right panels of Figure 6 representing respectively low and high educated men and women: in all the regime groups, men and women with the highest educational levels are sharing unpaid work more evenly than those with the lowest educational levels. Note that the best educated Nordic women and men share the unpaid work 55/45. The trend toward equality does not seem to have stalled here at least!

Figure 7 provides another way of looking at these changes. The overall consequence of the shifts and gender redistribution trends, as that men are proportionately shifting their work time away from paid work towards unpaid, and women, away from unpaid, towards paid work.

[3] One suggestion is that within couples, partners attempt to do "third-person-criterion" activities *simultaneously* through the day, providing mutual "Zeitgeber" or time-guides, and these "work timings" provide activity norms to which others conform (Gershuny et al 1994, Sullivan 1996)

Figure 4 Minutes per day in paid work by educational level and regime type (men and women aged 40, three in household including child)

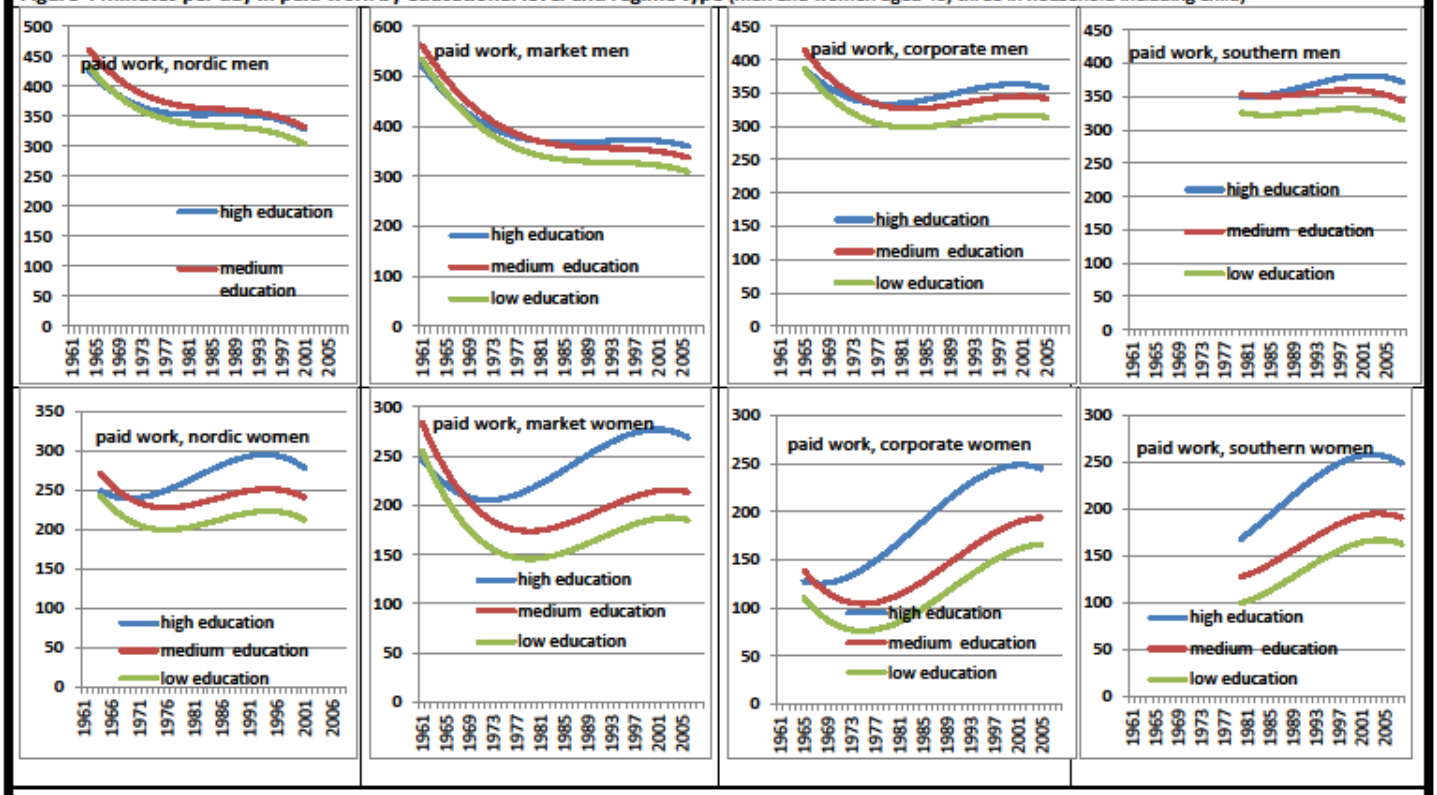


Figure 5 Minutes per day in all work by educational level and regime type (men and women aged 40, three in household including child)

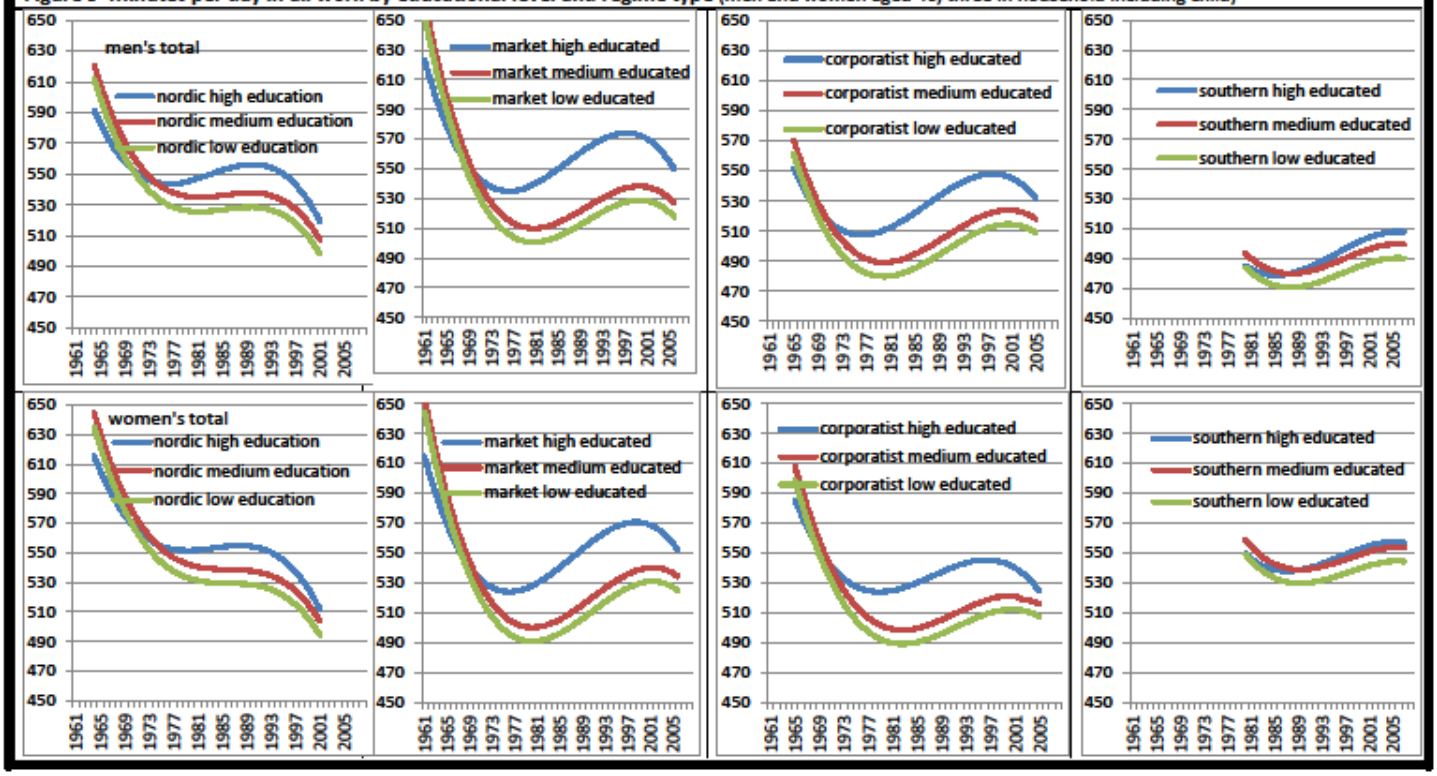


Fig 6 Women's total unpaid work time as % of men's + women's (both aged 40, three in household including child)

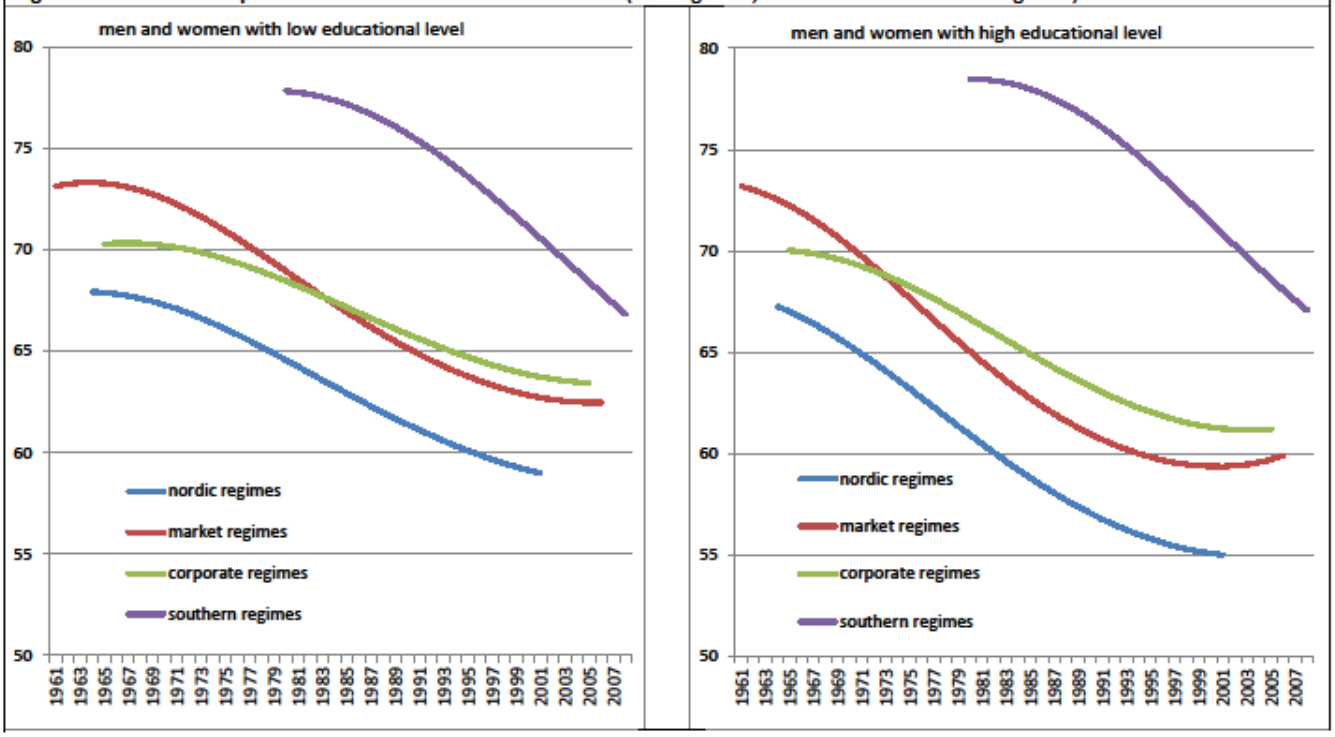
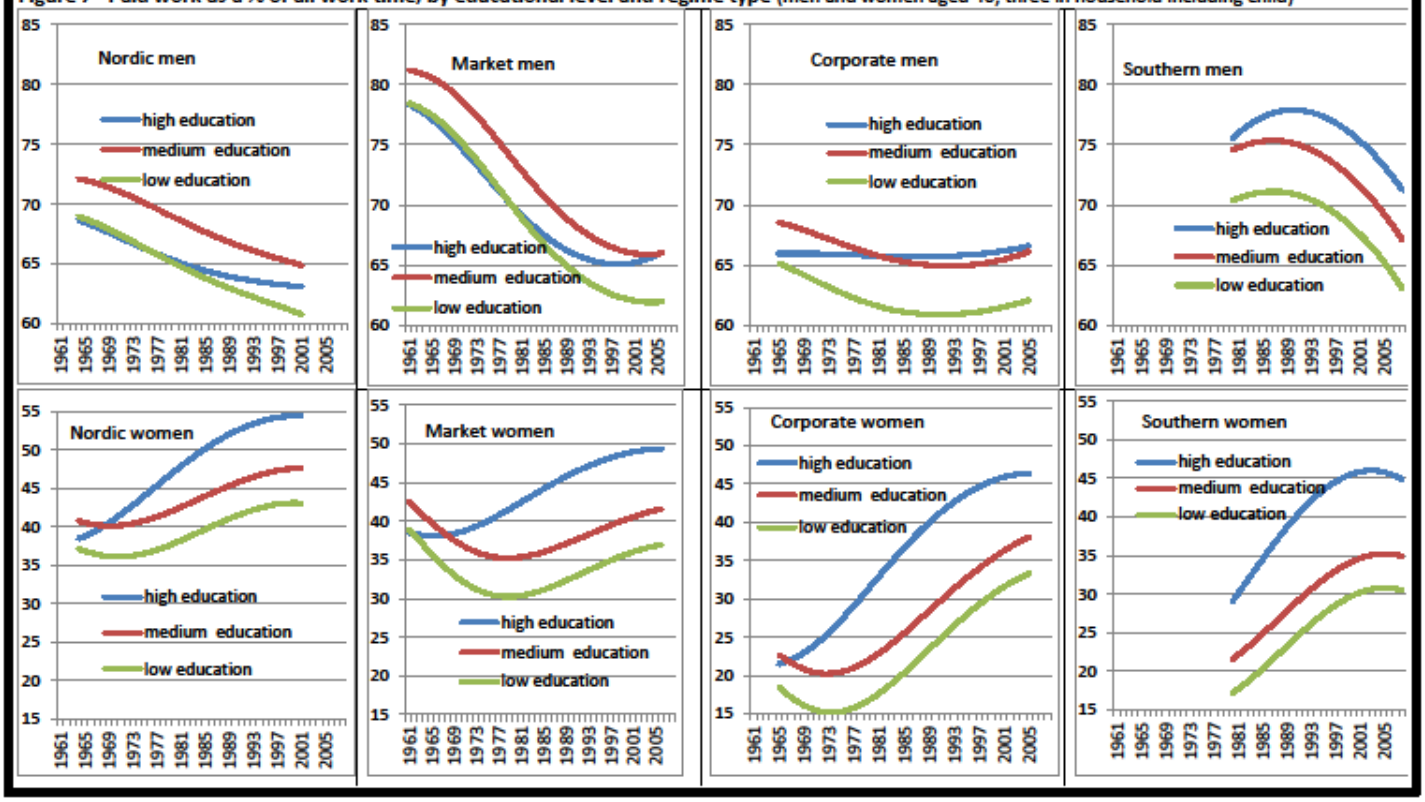


Figure 7 Paid work as a % of all work time, by educational level and regime type (men and women aged 40, three in household including child)



5. Summary and conclusions

Economic theory on the subject of work receives privileged attention by public policymakers. Is this appropriate, considering the indeterminacy of its predictions? In particular, given the multiple meanings of the word "work" and the wide range and great complexity of reasons for engaging in it, can we be at all certain that work is itself a suitable subject for theorising? Emerging from the sociological arguments and evidence in the foregoing sections, we are starting to suspect that quite different sorts of theory may be needed in this case.

Let us go back briefly to our starting point: exploit and industry, respectively play-like and dutiful, both necessary for the society at large, both *in*trinsically rewarding (though in very different ways) for the individual worker; and then paid and unpaid work (respectively with and without *ex*trinsic reward), the former undertaken in exchange for money, the latter as part of a scheme of reciprocal duties and obligations—often, simply unconsidered, habitual.

And then we considered a really rather wide range of processes that change the quantitative (time budgetary) balance between exploit and industry, their location in the spheres of exchange and reciprocity, and their distribution between different sorts of people (more or less well-educated, men and women). We mentioned theories of technical change, public regulation, and sentiments about whether, and if so how highly, some particular activities should be extrinsically rewarded. We also discussed issues of fairness, as between men and women, and the implications that these might have on changing the distribution of activities. (Note that wages and preferences for payment were generally present, in these discussions, but rarely prominent in them.)

We arrived at a number a number of general trends (which are also predictions) some of which are summarised in Figure 1. In particular we focussed: (a) on a shift of rather basic production activities out of the sphere of exchange in to that of reciprocity (as they become mechanised and the equipment that supports them become cheap enough to be owned by private households); and (b) on the shift of some of the more play-like activities into the sphere of exchange (as the ever more technically complex nature of production requires more embodied capital (knowledge) relative to physical capital).

The unpaid industrious activities within the household yield a range of indirect advantages (we mentioned health and psychological balance—we could also have referred to their function of communicating love and cohesions within households). The paid exploit in the exchange sphere is, if not necessarily always directly pleasurable, still quite generally considered as a central life interest to those lucky enough to have jobs in this category. It is not clear why we might necessarily expect, or even want, either sort of activity to diminish or disappear.

Now assuming that the less-well-educated have relatively easier access to the industrious type of activities, and the best educated have advantages in access to exploit, we would expect a progressive historical sorting of the two categories along the educational dimension. And this

is exactly what our empirical evidence shows us. The best-educated women move much more determinedly out of the industrious category of routine housework (Figure 2). Men's relation to routine housework is more complex and differs between the national regimes, with well-educated men in the Nordic societies, which have the strongest gender-equality norms, contributing more substantially, and by contrast the best educated men from the more paternalistic southern regimes contributing by far the least. The other unpaid work, (Figure 3) mostly shopping and childcare—which some may think of as closer in character to exploit—shows both well educated men and well educated women contributing most, but in this case the educational differential diminishes over time

The best educated men used once to work much shorter hours for pay, an echo, still in the 1960s, of the end-of-19th century leisure-class ideology (Figure 4). But by the beginning of the 21st century they are working the longest hours in their exchange-economy jobs. And the best-educated women in each of the regime types, show an even more decisive differential movement into paid work.

Now add these trends together (Figure 5) and we see, unambiguously, the revised 21st century education/leisure gradient, with the best educated no longer the leisure class, since both men and women are working, overall, a much larger part of the day than the medium-level educated, and who in turn do more than the lowest educated. At least from the 1970s onwards, we see no decisive decline in overall work time, perhaps the slightly the reverse, with a slight historical increase, particularly for the best educated, in the range 530 to 550 minutes per day.

In each of the regimes except the south with its remaining traditional paternalism, men's and women's totals of work are the same to within a few minutes. This "iso-work" still reflects a symmetrical-but-different pattern—which Figure 6 shows to have been regularly diminishing, in all regime types without exception, throughout our period: everywhere, year by year, women taking on a reducing proportion of the unpaid work. But still, even in the most advanced group within the most advanced regime type, highly educated Nordic men still only do 45% of the unpaid work.

And Figure 7 gives us the rebalancing between type of work and spheres of provision. For men, paid work, work in the sphere of exchange, is a diminishing part of the total of work, while those men with the highest level of education taking an increasing share of what remains—paid exploit. And the most educated—the most advantaged—women, everywhere, decade by decade, stepping further and further away from the life dominated by industriousness, that had been their lot from ancient days.

Finally, a brief afterword, not on theory *per se*, but on the appropriate empirical evidence for theorising about the work-leisure balance. People's lives fit together, not just in overall time budget terms, *so much* of this activity, *so much* of that. But also as sequences *first* you do this *then* you do that. And these sequences align, within households, as he makes breakfast then they eat it together, and across wider groups, as she gets into the bus and the driver shuts the door. And these daily sequences recur and recur as they accumulate into the life course. Time diary studies contain, not just time budgets but also, and we believe ultimately more important, activity sequences. The MTUS has now more than forty activity sequence files, with large nationally representative samples of individual-level data. These are the appropriate raw evidence for a quite new sort of theorising about the nature of work.

Appendix

Table A1a: Sub-sample of the MTUS Simple File used in this analysis

	1960-	1965-	1970-	1975-	1980-	1985-	1990-	1995-	2000-	2005-	Total
Austria							15973				15973
Australia			1247			2274	9835	10065		9503	32924
Canada			1499		1881	6922	6435	7712			24449
Denmark	2842					2582					5424
Finland				8617		10569			6572		25758
France		2893	4634					10191			17718
Germany		3687					16894		22244		42825
Israel							3208				3208
Italy					2118	22324			29376		53818
Netherlands				6595	13670	16465	17142	17436	8987	9984	90279
Norway			3918		4043		4174		5031		17166
Slovenia/Yugoslavia		2223							7899		10122
Spain							3359	3343	32089	4333	43124
Sweden							6370		5835		12205
United Kingdom	6896		11706		6828	9906			12723		52796
USA		1821		5170		2255	6998		33908	53342	103494
N of cases	9738	10624	23004	20382	28540	73297	90388	48747	164664	77162	551283
N of Surveys	2	4	5	3	5	8	10	5	10	4	56

Table A1b: Characteristics of Variables

INDEPENDENT VARIABLES	N	%
educational attainment		
incomplete secondary or less	156849	28.5
completed secondary	209553	38
above secondary education	170807	31
Missing	*14076*	*2.6*
Total	**551285**	
regime type		
Nordic (Denmark, Finland, Norway, Sweden)	60553	11.0
Liberal market (Australia, Canada, UK, USA)	213664	38.8

Corporatist (Austria, France, Germany, Israel, Netherlands, Slovenia)	180125	32.7	
Southern (Spain, Italy)	96943	17.6	
Total	**551285**		
number of children			
none	265686	48.2	
1	117180	21.3	
2	111599	20.2	
3	35264	6.4	
4	8761	1.6	
5	2059	0.4	
6 or more	856	0.1	
Missing	*9881*	*1.8*	
Total	**551286**		

	N	mean	sd
age	551285	38.7	11.0
household size	528111	2.7	2.8
DEPENDENT VARIABLES (minutes per day)			
paid work time	551285	267.97	276.8
core unpaid work time	551285	122.46	134.8
other unpaid work time	551285	89.67	111.3
uncommitted time	551285	465.79	200.5
sleep time	551285	494.11	111.0
Total		**1440**	

Table A2 Five activity day regressions averaged across 7 days (surveys weighted to 3000 cases, N=167942)

(*** p>.0005 ** p>.005 * p> .05)	core domestic		other unpaid		paid work		uncommitted		sleep	
R Square	***0.31***		***0.13***		***0.29***		***0.20***		***0.09***	
Age	4.85	***	0.30		9.31	***	-9.77	***	-4.69	***
Age squared	-0.04	***	0.00		-0.14	***	0.13	***	0.05	***
Woman (gender def = man)	194.16	***	31.30	***	-110.50	***	-100.27	***	-14.69	***
Education (def: incomplete secondary)										
Medium education (complete secondary)	-16.29	***	1.98	**	23.60	***	-1.67		-7.63	***
High education (some tertiary)	-39.04	***	8.50	*	-4.46		51.48	***	-16.48	***
1 or more children in household (def=none)	25.28	***	47.45	***	-32.78	***	-34.35	***	-5.60	*
Household size	1.38	***	1.51	***	-4.95	***	1.69	***	0.37	**
Nordic (family policy regime def: corporatist)	-17.60	**	-0.48		35.82	**	0.57		-18.31	***
Market	-31.30	***	-28.43	***	76.35	***	35.41	***	-52.02	***
Southern	3.26		57.10	***	37.56		-26.35		-71.57	***
Period	-31.16	***	-2.35		-28.52	***	72.22	***	-10.19	***
Period squared	5.92	***	0.47		8.80	***	-13.60	***	-1.59	***
Period cubed	-0.32	***	-0.02		-0.67	***	0.72	***	0.28	***
Monday (day def: Sunday)	-37.88	***	-12.21	*	445.86	***	-299.83	***	-95.93	***
Weekday	-31.57	***	-13.48	**	446.50	***	-307.06	***	-94.39	***
Friday	-39.25	***	-7.45		472.84	***	-313.31	***	-112.84	***
Saturday	2.26		23.29	***	245.71	***	-167.06	***	-104.20	**
Nordic* period	11.75	***	-5.62	***	4.17		-14.55	***	4.25	***
Market*period	9.34	***	-0.61		-7.50	***	-13.61	***	12.38	***
Southern*period	-6.60	*	-20.17	***	0.69		3.56		22.53	*
Nordic* period cubed	-0.12	***	0.07	***	-0.16	***	0.25	***	-0.03	***
Market*period cubed	-0.07	***	0.06	***	-0.01		0.09	***	-0.07	***
Southern*period cubed	0.07	***	0.16	***	-0.07		0.03		-0.19	***
Monday*period	7.49	***	4.71	*	-49.86	***	27.42	***	10.25	***
Weekday*period	4.17	*	5.03	**	-45.04	***	28.63	***	7.22	***
Friday*period	9.98	***	5.73	**	-76.98	***	49.77	***	11.50	***
Saturday*period	3.34		2.07		-79.24	***	51.31	***	22.52	***
Monday*period squared	-0.71	***	-0.55	**	4.49	***	-2.14	***	-1.08	***
Weekday*period squared	-0.48	**	-0.59	***	4.14	***	-2.23	***	-0.85	***
Friday*period squared	-1.01	***	-0.67	***	6.94	***	-3.96	***	-1.30	***
Saturday*period squared	-0.32		-0.18		6.54	***	-4.04	***	-2.01	***
Monday*woman	79.93	***	37.39	***	-223.20	***	90.57	***	15.31	***
Weekday*woman	72.28	***	44.55	***	-246.29	***	108.95	***	20.51	***
Friday*woman	62.66	***	41.44	***	-209.69	***	82.81	***	22.78	*
Saturday*woman	28.60	***	22.85	***	-82.98	***	18.97	*	12.56	
Monday*woman*period	-7.49	***	-0.62		11.70	***	-3.39	*	-0.20	
Weekday*woman*period	-6.79	***	-1.28	*	14.06	***	-5.34	***	-0.64	
Friday*woman*period	-5.84	***	-1.57	*	11.84	***	-3.43	*	-1.01	
Saturday*woman*period	-4.14	***	-2.45	**	9.39	***	-1.91		-0.90	
Nordic*woman	-13.69	*	-37.47	***	45.75	***	-0.54		5.95	***
Market*woman	-37.91	***	-10.83	***	5.82	***	30.42	***	12.50	
Southern*woman	136.30	***	4.68		-87.61	***	-48.05	***	-5.31	*
Woman*period	-21.16	***	-3.39	**	12.64	***	8.86	***	3.05	
Woman*period squared	1.12	***	0.24	*	-0.95	***	-0.34		-0.06	
Nordic*woman*period	-5.14	***	2.79	***	2.76		0.78		-1.19	***
Market*woman*period	2.53	***	1.61	**	1.61		-3.55	***	-2.20	
Southern*woman*period	-9.91	***	-1.36		11.64	***	0.98		-1.35	*
High educated*period	7.56	***	-4.72	**	20.86	***	-27.62	***	3.91	*
High educ*period squared	-0.58	**	0.50	**	-1.80	***	2.33	***	-0.45	
High educ*period*woman	-15.03	***	0.52		14.64	***	0.03		-0.16	
High educ*period*woman sq	1.24	***	-0.11		-1.20	***	0.05		0.02	*
High educ*period*nordic	1.46		6.13	***	-10.91	**	7.01	*	-3.69	
High educ*period*market	7.40	***	4.98	***	-9.56	***	-3.06		0.25	***
High educ*period*southern	-9.99	***	4.44	*	-6.70		18.54	***	-6.29	
High educ*period*nordic sq	-0.01		-0.76	***	1.01	*	-0.67		0.44	
High educ*period*market sq	-0.80	***	-0.54	***	1.14	**	0.38		-0.18	**
High educ*period*southern sq	0.94	***	-0.56	*	0.88		-1.98	***	0.71	***
(Constant)	-15.21	*	39.50	***	-12.86		728.93	***	699.65	

Figure A1a Minutes per day in all unpaid work by educational level and regime type (M&F aged 40, 3 in HH incl. child)

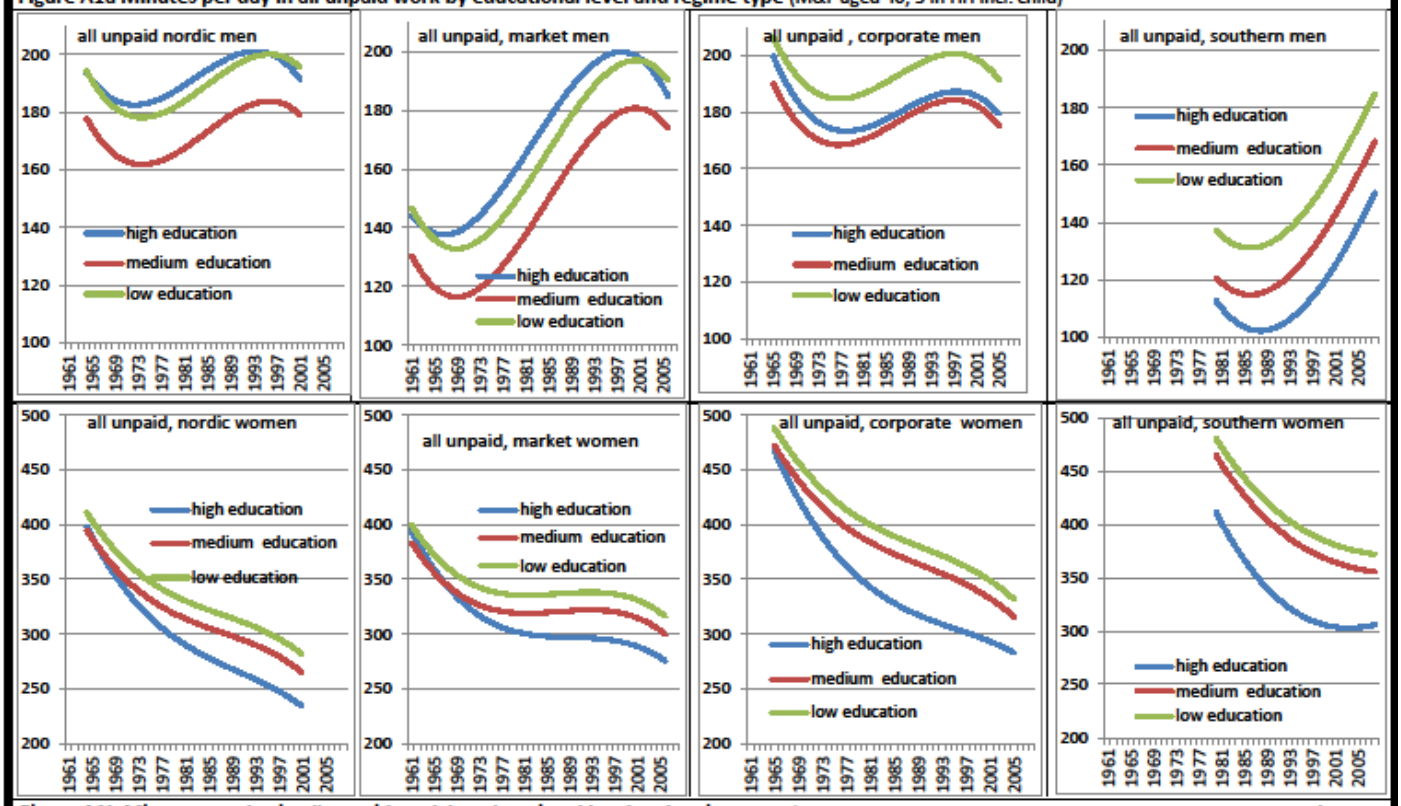


Figure A1b Minutes per day in all unpaid work by educational level and regime type (M&F aged 40, 3 in HH incl. child, **downweighted to 3000 cases/survey**

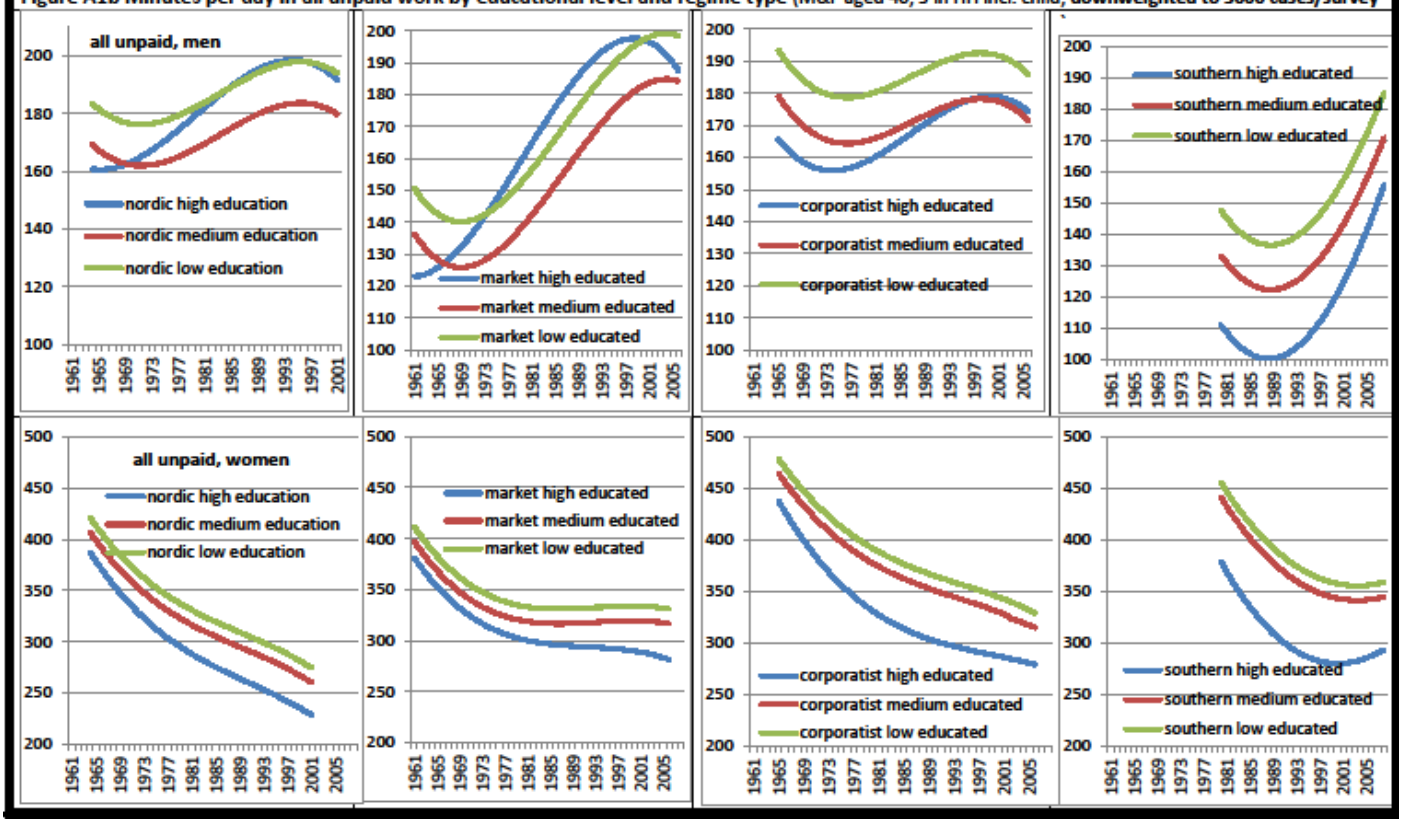


Figure A2a Minutes per day in paid work by educational level and regime type (men and women aged 40, three in household including child)

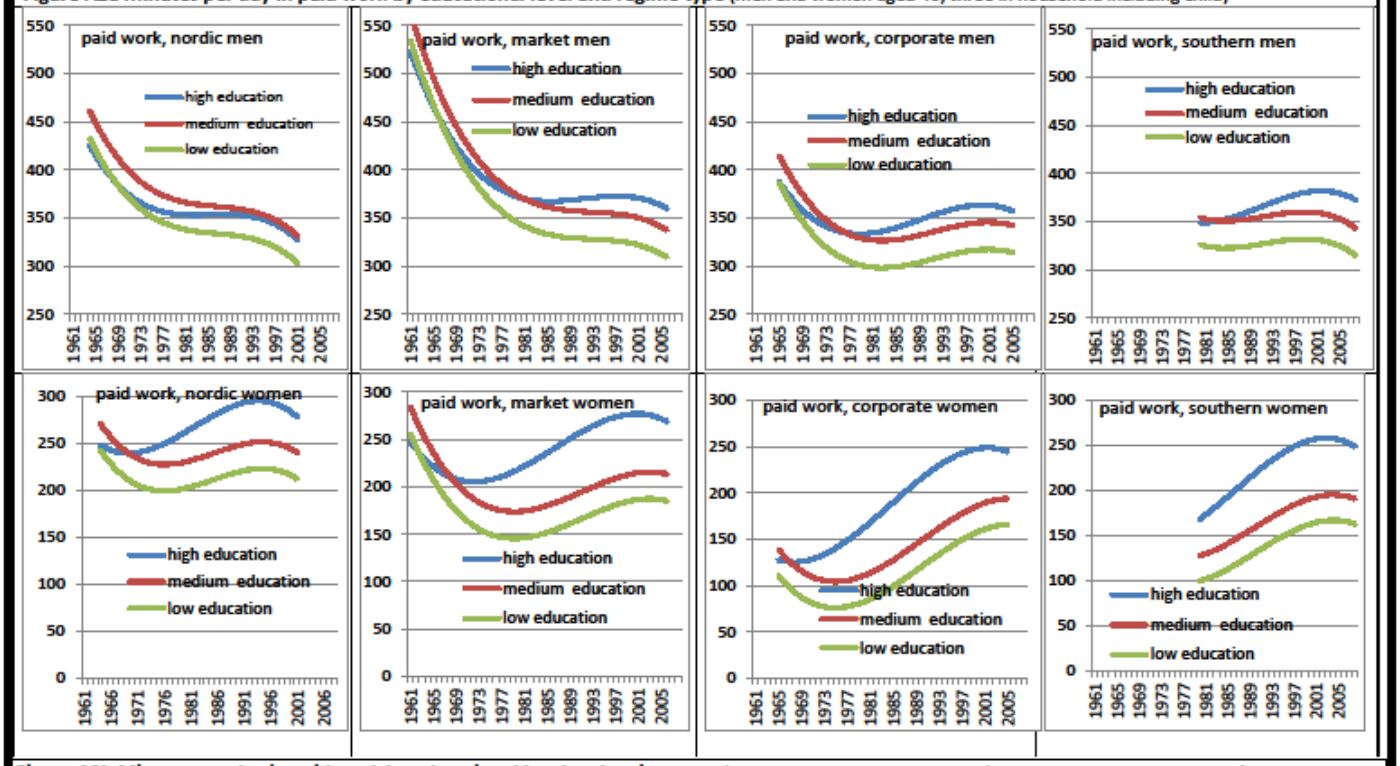


Figure A2b Minutes per day in paid work by educational level and regime type (M&F aged 40, 3 in HH incl. child) **downweighted to 3000 cases/survey**

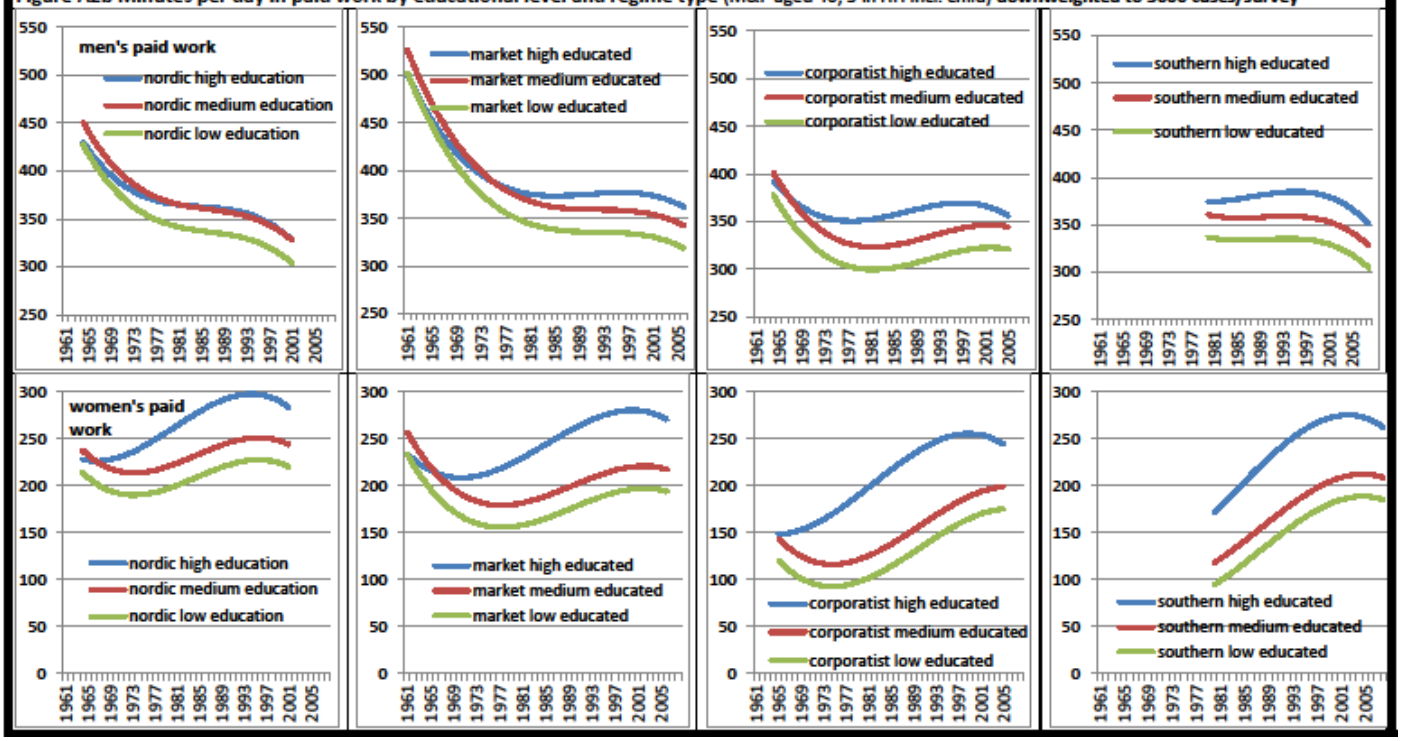


Figure A3 Domestic work and caring in 16 countries 1960s-2000s.

Men (a - d) and women (e - h) aged 20-59: minutes per day

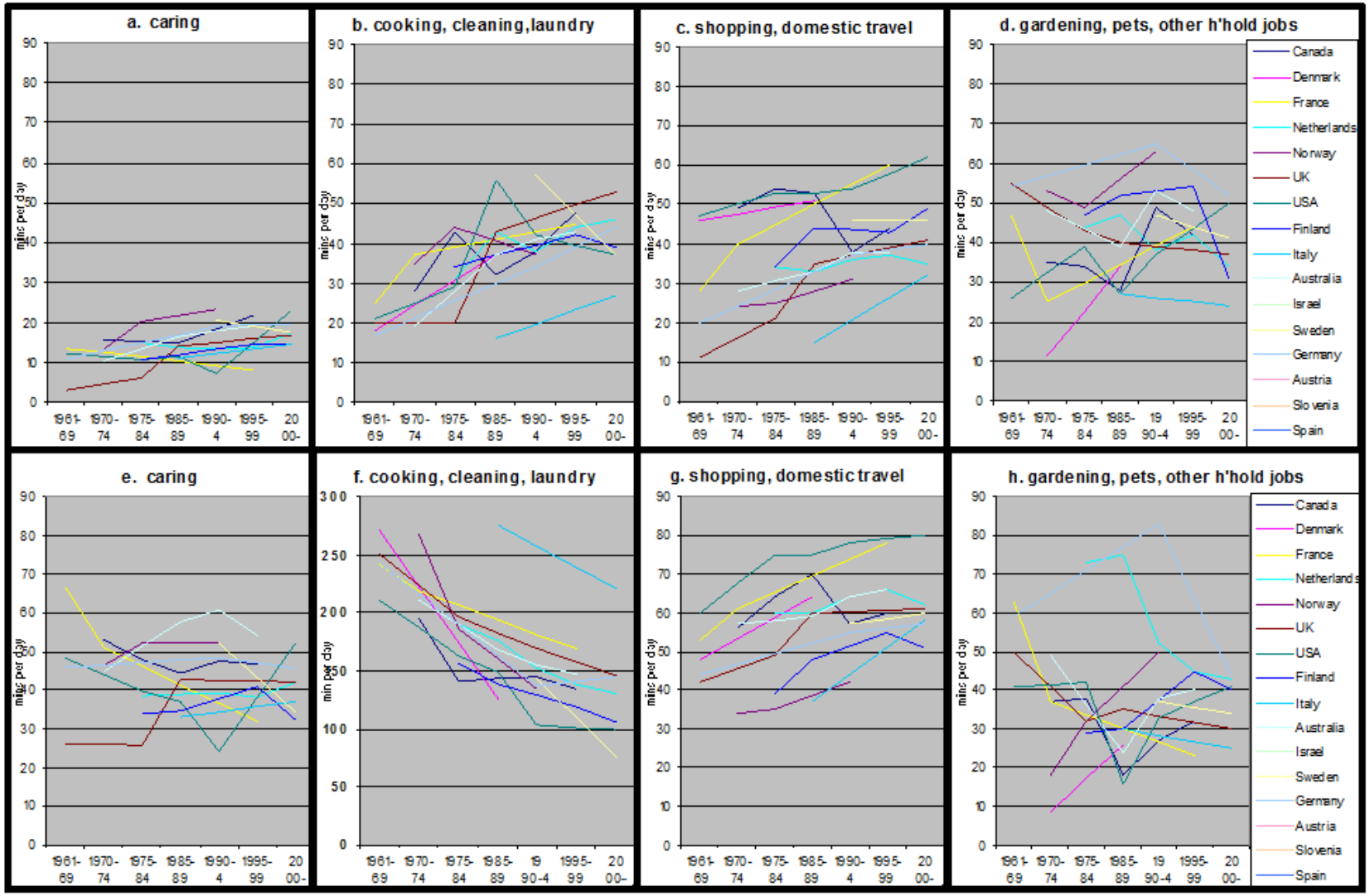


Figure A4a The gender balance in unpaid work:

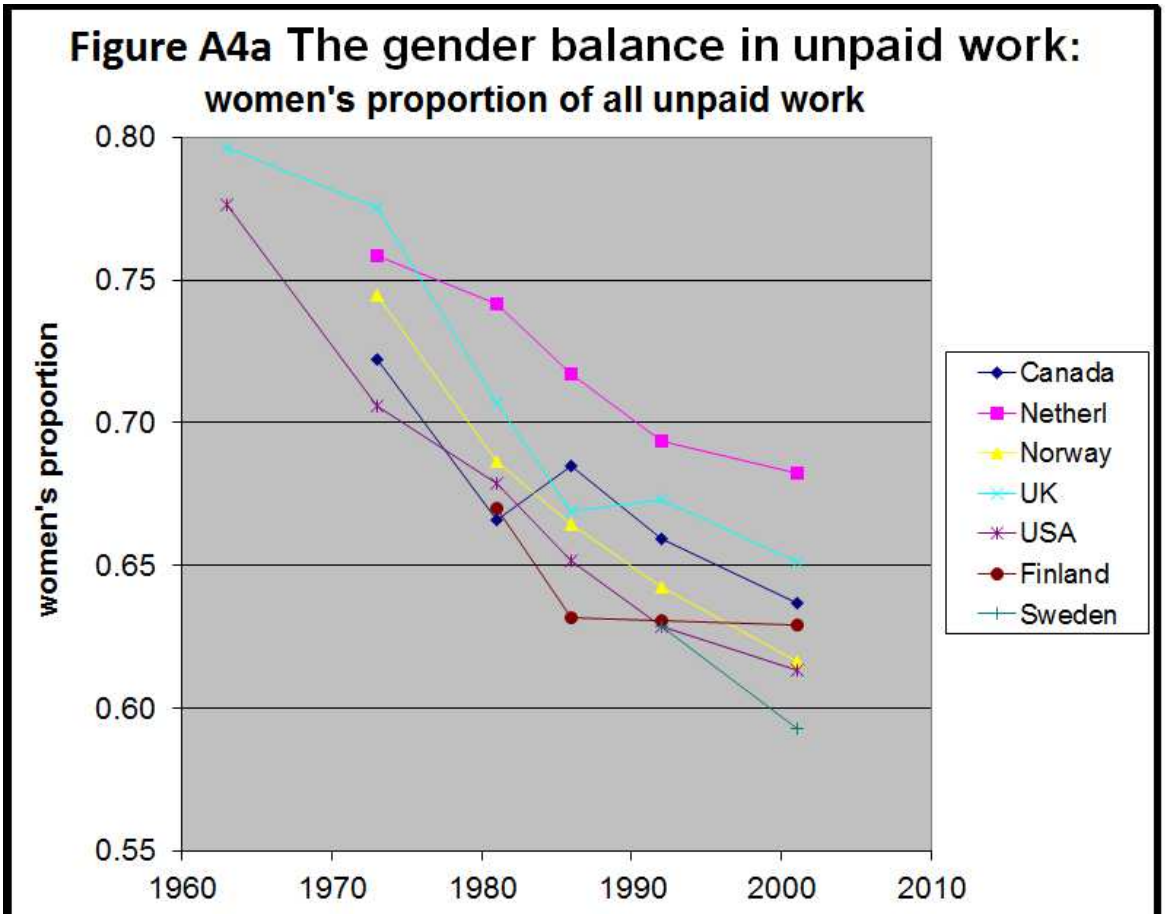
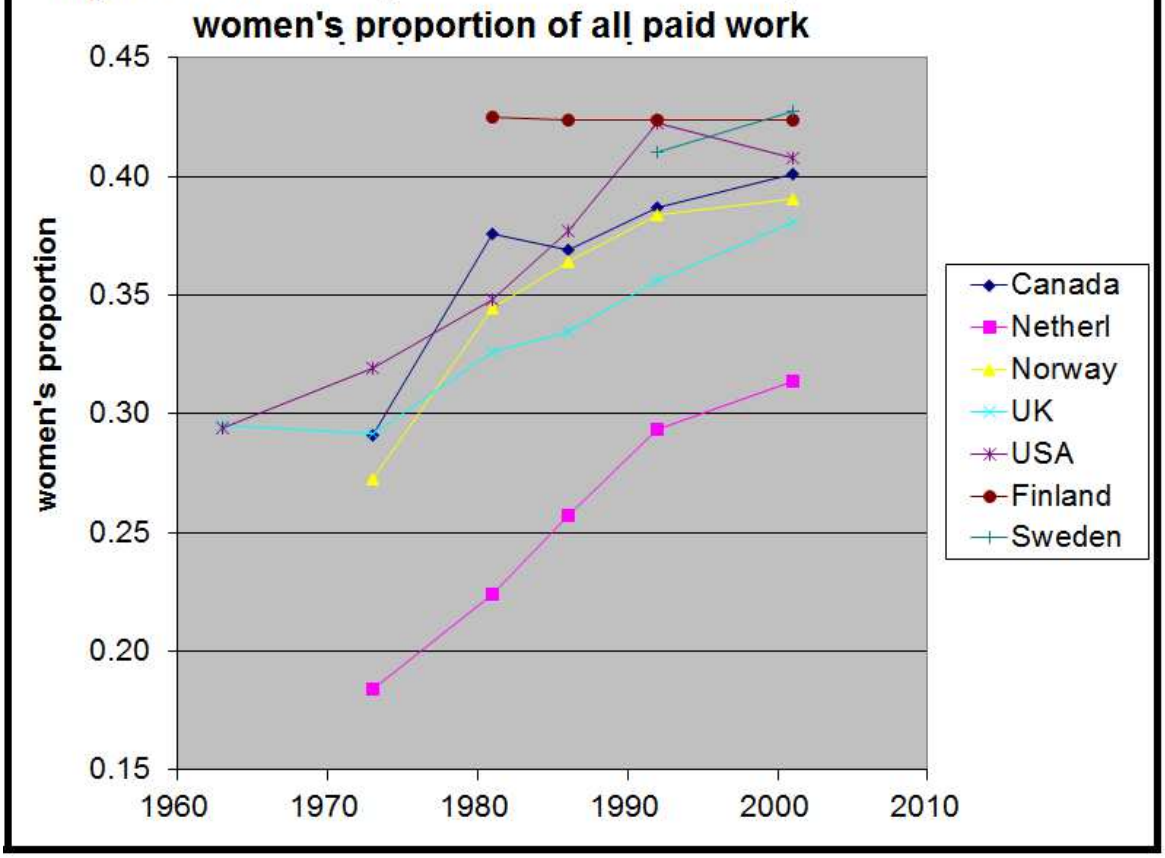
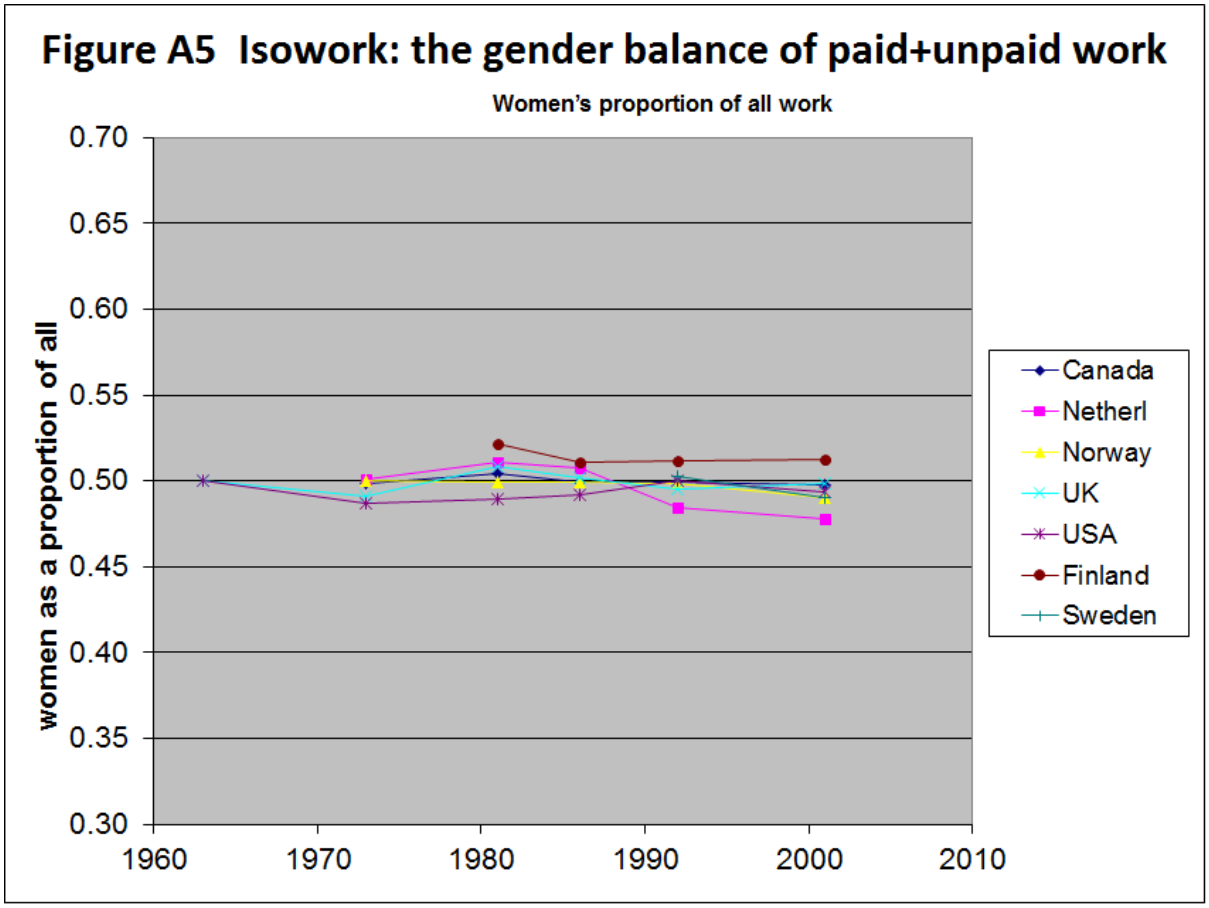


Figure A4b The gender balance of paid work:





References

Aguiar, Mark, and Erik Hurst. 2007. "Measuring Trends in Leisure: The Allocation of Time Over Five Decades." *Quarterly Journal of Economics* 122(3): 969-1006. 10.1162/qjec.122.3.969

Anand, Paul, and Stephen Lea. 2011. "The Psychology and Behavioural Economics of Poverty." *Journal of Economic Psychology* 32(2): 284-293. 10.1016/j.joep.2010.11.004

Baumol, William J. 1993. "Health Care, Education and the Cost Disease: A Looming Crisis for Public Choice." in Charles K. Rowley, Friedrich Schnieder, and Robert D. Tollison (eds.) *The Next 25 Years of Public Choice* New York: Springer: 17-28.

Becker, Gary S. 1976. *The Economic Approach to Human Behavior* Chicago: University of Chicago Press.

Becker, Gary S. 1965. "A Theory of the Allocation of Time." *Economic Journal* 75(299): 493-517.

Becker, Gary S. 1991. *A Treatise on the Family, enlarged edition* Cambridge: Harvard University Press.

Bell, Daniel. 1973. *The Coming of Post-Industrial Society* New York: Basic Books.

Bell, Daniel. 1996 (originally published 1978). *The Cultural Contradictions of Capitalism* New York: Basic Books.

Bevans, George E. 1913. *How Working Men Spend Their Time* New York: Columbia University Press.

Bianchi, Suzanne M., Melissa A. Milkie, Liana C. Sayer, and John P. Robinson. 2006. *Changing Rhythms of American Family Life* New York, USA: Russell Sage Foundation.

Bianchi, Suzanne M., Melissa A. Milkie, Liana C. Sayer, and John P. Robinson. 2000. "Is Anyone Doing the Housework? Trends in the Gender Division of Household Labor." *Social Forces* 79(1): 191-228.

Bittman, Michael, and Nancy Folbre (eds). 2004. *Family Time: The Social Organization of Care* New York, USA: Routledge.

Bittman, Michael, James Mahmud Rice, and Judy Wajcman. 2004. "Appliances and Their Impact: the Ownership of Domestic Technology and Time Spent on Household Work." *British Journal of Sociology* 55(3): 401–423. 10.1111/j.1468-4446.2004.00026.x

Bonke, Jens, and Elke Koch Weser. 2003. "The Welfare State and Time Allocation in Sweden, Denmark, France and Italy." *Advances in Life Course Research* 8: 231-253. 10.1016/S1040-2608(03)08011-0

Bourdieu, Pierre. 1985. L'amour de l'art: les Musées d'art Européens et leur Public. Paris: Les Éditions de Minuit.

Burda, Michael, Daniel S. Hamermesh, and Philippe Weil. 2013. "Total Work and Gender: Facts and Possible Explanations." *Journal of Population Economics* 26(1): 239-261. 10.1007/s00148-012-0408-x

Chan, Tak Wing, and John H. Goldthorpe. 2007. "Social Stratification and Cultural Consumption: Music in England." *European Sociological Review* 35(2-3): 168–190. 10.1016/j.poetic.2007.05.002

Cooke, Lynn Prince. 2007. "Policy Pathways to Gender Power: State-Level Effects on the US Division of Housework." *Journal of Social Policy* 36(2): 239-260. 10.1017/S0047279406000584

Craig, Lyn, and Peter Siminski. 2011. "If Men Do More Housework, Do Their Wives Have More Babies?" *Social Indicators Research* 101(2): 255-258. 10.1007/s11205-010-9644-1

Dias, Rafaela Cyrino Peralva. 2009. "Trabalho, Temporalidade e Representações Sociais de Gênero: Uma Análise da Articulação Entre Trabalho Doméstico e Assalariado." *Sociologias* 21 (1): 66-92. 10.1590/S1517-45222009000100005

Dosi, Giovanni, Christopher Freeman, Richard Nelson, and Luc Soete (eds.). 1988. *Technical Change and Economic Theory: Global Process of Development* (IFIAS research series) New York: Continuum International Publishing.

Dumazedier, Joffre. 1974. *Sociologie Empirique du Loisir: Critique et Contre-Critique de la Civilisation du Loisir* Paris: Éditions du Seuil.

Esping-Andersen, Gøsta. 1999. *Social Foundations of Postindustrial Economies* Oxford: Oxford University Press.

Esping-Andersen, Gøsta. 1990. *The Three Worlds of Welfare Capitalism* Cambridge: Polity Press.

Ezzy, Douglas. 1993. "Unemployment and Mental Health: A Critical Review." *Social Science & Medicine* 37(1): 41-52. 10.1016/0277-9536(93)90316-V

Ferry, Georgina. 2003. *A Computer Called LEO: Lyons Teashops and the World's First Office Computer* London: Fourth Estate.

Fisher, Kimberly, and Jonathan Gershuny. 2013a. "Coming Full Circle – Introducing the Multinational Time Use Study Simple File." *Electronic International Journal of Time Use Research* 10(1): 91-96. 10.13085/eIJTUR.10.1.91-111

Fisher, Kimberly, and Jonathan Gershuny. 2013b. *Multinational Time Use Study User's Guide and Documentation Release 6* Oxford: Centre for Time Use Research.

Fisher, Kimberly, Muriel Egerton, Jonathan Gershuny, and John P. Robinson. 2007. "Gender Convergence in the American Heritage Time Use Study (AHTUS)." *Social Indicators Research* 82(1): 1-33. 10.1007/s11205-006-9017-y

Giffen, Robert. 1904. *Economic Inquiries and Studies* London: G. Bell and Sons.

Gershuny, Jonathan. 2000. *Changing Times: Work and Leisure in Post-industrial Society* Oxford: Oxford University Press.

Gershuny, Jonathan. 1983. *Social Innovation and the Division of Labour* Oxford: Oxford University Press.

Gershuny, Jonathan. 1977. "Post-Industrial Society: The Myth of the Service Economy." *Futures* 9(2): 103-114. 10.1016/0016-3287(77)90003-9

Gershuny, Jonathan. 2009. "Veblen in Reverse: Evidence from the Multinational Time-Use Archive." *Social Indicators Research* 93(1): 37-45. 10.1007/s11205-008-9369-6

Giménez-Nadal, José Ignacio, José Alberto Molina, and Almudena Sevilla Sanz. 2012. "Social Norms, Partnerships and Children." *Review of Economics of the Household* 10(2): 215-236. 10.1007/s11150-011-9120-y

Gronau, Reuben. (1973) "The Intrafamily Allocation of Time: The Value of the Housewives' Time" American Economic Review 63(4): 631-654.

Hicks, John R. 1932. *The Theory of Wages* New York: St. Martin's Press.

Hook, Jennifer L. 2010. "Gender Inequality in the Welfare State: Sex Segregation in Housework, 1965–2003." *American Journal of Sociology* 115(5): 1480–1523. 10.1086/651384

Jahoda, Marie, Paul F. Lazarsfeld, and Hans Zeisel. 1972. *Marienthal: The Sociography of an Unemployed Community* London: Tavistock Publications Limited.

Jahoda, Marie, and Howard Rush. 1980. *Work, Employment and Unemployment: An Overview of Ideas and Research Results in the Social Science Literature* Departmental Paper Number 12. Science Policy Research Unit, University of Sussex.

Kan, Man Yee, Jonathan Gershuny, and Oriel Sullivan. 2011. "Gender Convergence in Domestic Work: Discerning the Effects of Interactional and Institutional Barriers from Large-Scale Data." *Sociology* 45(2): 234-251. 10.1177/0038038510394014

Kennan, John. 1986. "The Economics of Strikes." in Orley C. Ashenfelter, and Richard Layard (eds.) *Handbook of Labour Economics, Volume II* Amsterdam: Elsevier Publishers: 1091-1138.

Keynes, John Maynard. 1963 (originally published 1930). "The Economic Prospects for Our Grandchildren." in John Maynard Keynes. *Essays in Persuasion* New York: W. W. Norton & Co: 358-373.

Kneeland, Hildegarde. 1929a. "Woman's Economic Contribution in the Home." *Annals of the American Academy for Political and Social Science* 143: 33-40.

Kneeland, Hildegarde. 1929b. "Women on Farms Average 63 Hours' Work Weekly in Survey of 700 Homes." In Milton S. Eisenhower (ed). *Yearbook of Agriculture 1928* Washington D.C.: United States Department of Agriculture: 620-622.

Laurie, Alison J. 2009 "A Transnational Conference Romance: Elsie Andrews, Hildegarde Kneeland, and the Pan-Pacific Women's Association" *Journal of Lesbian Studies* 13(4): 395-414.

Linder, Staffan Burenstam. 1970. *The Harried Leisure Class* New York: Columbia University Press.

Lundberg, George A., Mirra Keonavouski, and Mary Alice Mclnery. 1934. *Leisure: A Suburban Study* New York, New York USA: Colombia University Press.

Marx, Karl. 1872. *Das Kapital: Kritik der Politischen Oekonomie* Hamburg: Meissner.

Mauss, Marcel. 1969. *The Gift: Forms and Functions of Exchange in Archaic Societies* London: Cohen and West.

Mill, John Stuart. 1900. *Principles of Political Economy: With Some of Their Applications to Social Philosophy* London: Longmans, Green, Reader, and Dyer.

Minga Klevana, Wanda. 1980. "Does Labor Time Decrease With Industrialization?" *Current Anthropology* 21(3): 279-298.

Pacholok, Shelley, and Anne H Gauthier. 2004. "A Tale of Dual-Earner Families in Four Countries." In Michael Bittman and Nancy Folbre (eds). *Family Time: The Social Organization of Care* New York: Routledge: 197-223.

Pember-Reeves, Maud. 1913. *Round About a Pound a Week - 2008 reprint* London: Persephone Books.

Polanyi, Karl. 1944. *The Great Transformation: The Political and Economic Origins of Our Time* Boston, MA: Beacon Press.

Ramey, Valerie A. 2009. "Time Spent in Home Production in the Twentieth-Century United States: New Estimates from Old Data." *Journal of Economic History* 69(1): 1-47. 10.1017/S0022050709000333

Ramey, Valerie A., and Neville Francis. 2009. "A Century of Work and Leisure." *American Economic Journal: Macroeconomics* 1(2): 189–224. 10.1257/mac.1.2.189

Reid, Margaret Gilpin. 1934. *Economics of Household Production* London, UK: Chapman and Hall.

Rice, James Mahmud, Robert E. Goodin, and Antti Parpo. 2006. "The Temporal Welfare State: A Cross-national Comparison." *Journal of Public Policy* 26(3): 195-228. 10.1017/S0143814X06000523

Robinson, John P., Vladimir G. Andreyenkov, and Vasily D. Patrushev. 1989. *The Rhythm of Everyday Life: How Soviet and American Citizens Use Time* Boulder, CO: Westview Press.

Sacks, Michael Paul. 1977. "Unchanging Times: A Comparison of the Everyday Life of Soviet Working Men and Women Between 1923 and 1966." *Journal of Marriage and Family* 39(4): 793-805.

Schor, Juliet B. 1993. *The Overworked American: The Unexpected Decline of Leisure* New York: Basic Books.

Smith, Adam. 1776. *The Wealth of Nations* London: W. Strahan and T. Cadell.

Skolka, Jiri V. 1977. "Unbalanced Productivity Growth and the Growth of Public Services." *Journal of Public Economics* 7(2): 271–280. 10.1016/0047-2727(77)90049-4

Sorokin, Pitirim A., and Clarence Q. Berger. 1939. *Time Budgets of Human Behaviors* Cambridge, MA: Harvard University Press.

Sullivan, Oriel. 1996. "Time Co-Ordination, the Domestic Division of Labour and Affective Relations: Time Use and the Enjoyment of Activities Within Couples." *Sociology* 30(1): 79-100. 10.1177/0038038596030001006

Sullivan, Oriel, and Jonathan Gershuny. 2003. "Time Use, Gender and Public Policy Regimes." *International Studies in Gender, State & Society* 10(2): 205-228.

Szalai, Alexander (ed). 1972. *The Use of Time: Daily Activities of Urban and Suburban Populations in Twelve Countries* Den Haag: Mouton.

Thompson, Edward Palmer. (1967) "Time, Work-Discipline, and Industrial Capitalism" Past and Present 38: 56-97.

United Nations Statistics Division. 2014. *Handbook of National Accounting: Financial Production, Flows and Stocks in the System of National Accounts - White-cover version* New York: United Nations.

Vanek, Joann. 1978. "Household Technology and Social Status: Rising Living Standards and Status and Residence Differences in Housework." *Technology and Culture* 19(3): 361-375.

Veblen, Thorstein Bunde. 1899 (reprinted 1994). *The Theory of the Leisure Class* London: Routledge.

Warr, Peter. 1987. *Work, Unemployment, and Mental Health* Oxford: Clarendon Press.

Weber, Max 1968. *Economy and Society* Guenther Roth, and Claus Wittich Berkeley (translators). Berkeley, CA: University of California Press.

Young, Michael, and Peter Willmott. 1974. *The Symmetrical Family: Study of Work and Leisure in the London Region* London: RKP.

Zerubavel, Eviatar. 1981. *Hidden Rhythms: Schedules and Calendars in Social Life* Chicago, USA: University of Chicago Press.

Zuzanek, Jiri. 1980. *Work and Leisure in the Soviet Union: A Time-Budget Analysis* New York: Praeger Publishers.