

Towards a Framework for Time Use, Welfare and Household-centric Economic Measurement

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What shall I buy
today?

What shall I do
today?



“The real price of every thing, what every thing really costs to the man who wants to acquire it, is the toil and trouble of acquiring it.” Adam Smith

Suddenly a lot of work on time use

- Diewert & Fox 2018
 - Alpman et al 2018
 - Cassar & Meier, and Kaplan & Schulhofer-Wohl, Journal of Economic Perspectives 2018
 - Hulten & Nakamura 2018
 - Jones & Klenow, AER 2016
 - Dotsey et al, Int Economic Review 2014
 - Gershuny & Fisher 2014
- +
- Goolsbee & Klenow, AER 2009
 - Brynjolfsson et al 2018
 - Coyle, Economica 2018
 - Coyle & Rogers in progress

Time vs Money

- All face same budget constraint
- Save more, more to spend
- Unequal budget constraints
- Save more, less to spend

But they are inter-related: spend time to earn more money, spend money to gain more time

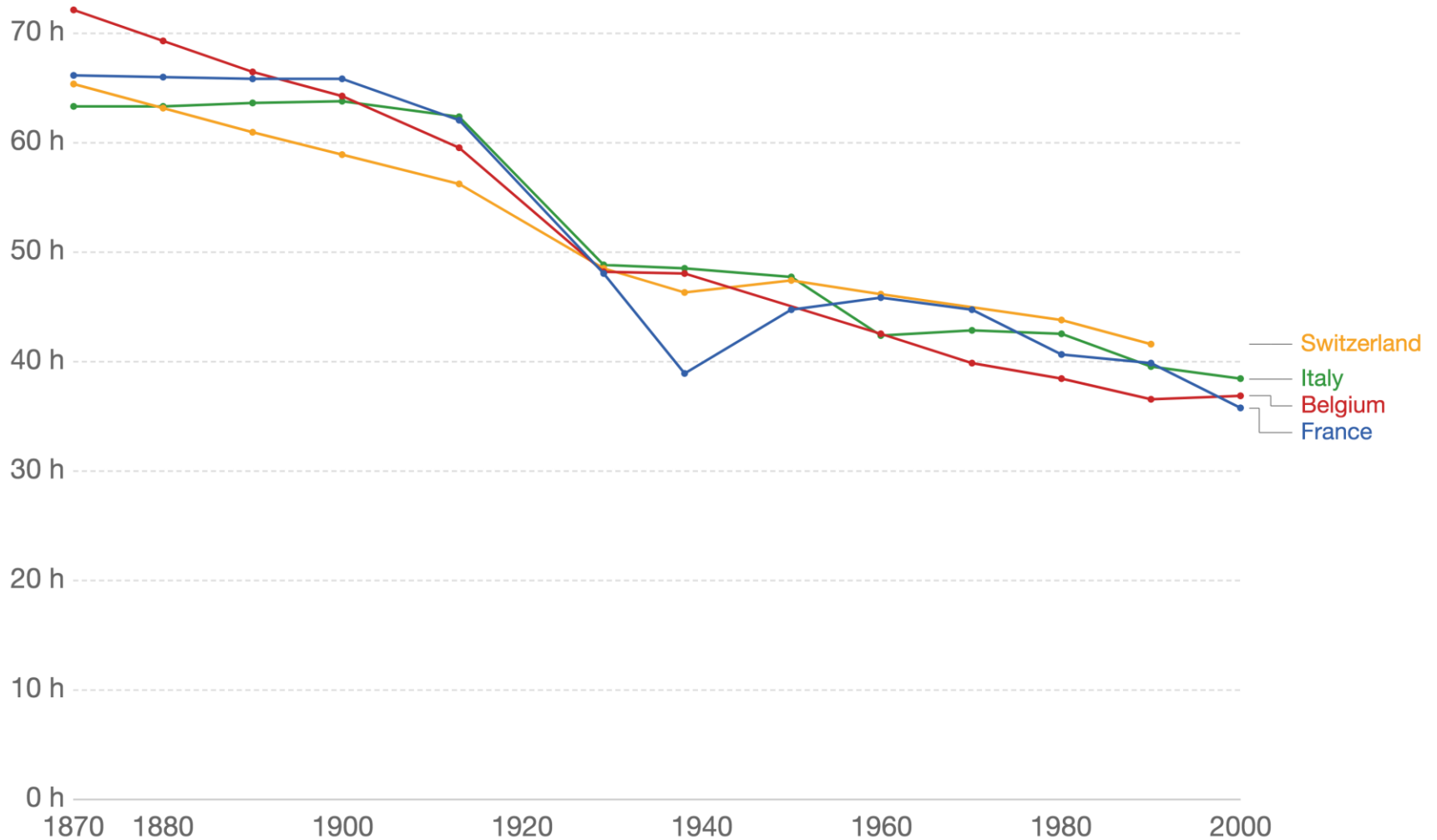
Time use pattern in UK

	All	Employed hours/week	30-49	Caring for family/homemaker
Minutes per day				
Employment	176		305	8
Commuting	21		37	1
Job search	0		0	0
School/study	15		5	4
Volunteering	11		8	15
Eating & personal	134		119	133
Childcare	20		17	95
Housework/shopping	173		128	286
Socialising/entertain	63		58	62
Exercise/sport	14		14	10
Hobbies & games	21		18	14
Mass media	184		150	169
Sleep	508		499	526
Other	100		83	117
Total	1440		1440	1440

Extracted from Table 1, Labour Market Trends, February 2004, based on 2000 time use survey

Weekly Work Hours

Work hours of full-time production workers (male and female) in non-agricultural activities.



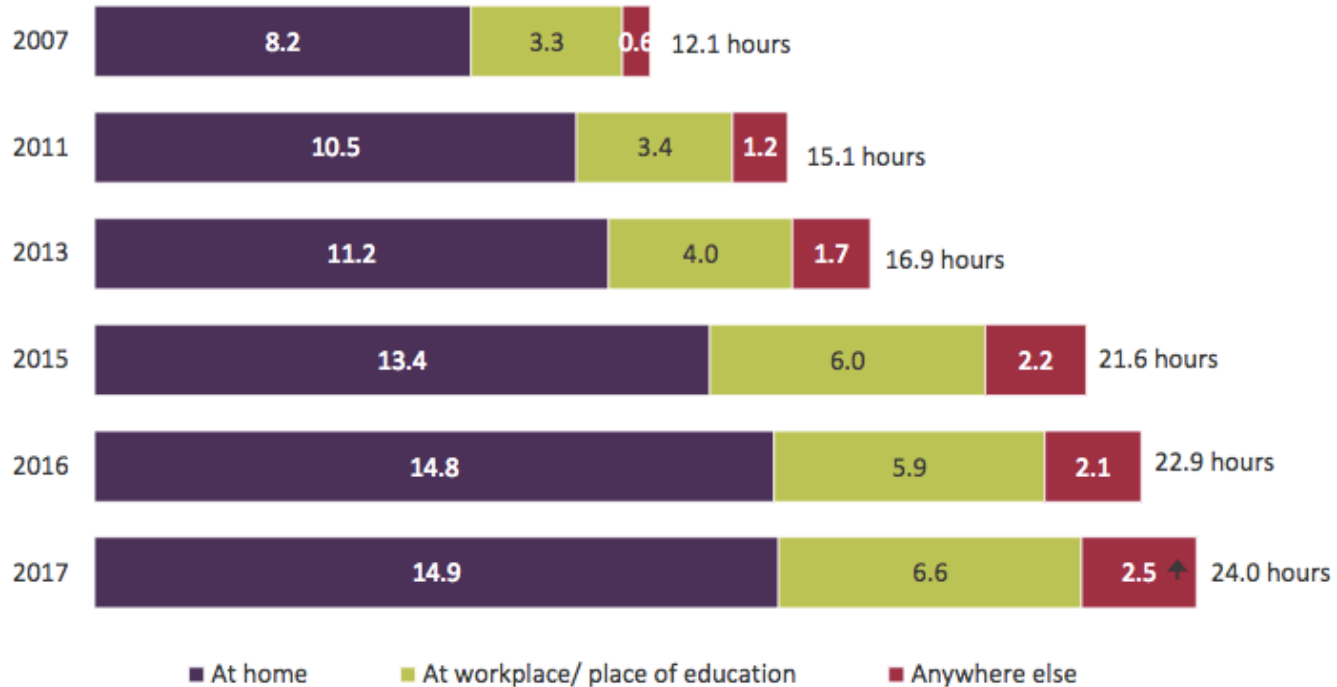
Source: Huberman & Minns (2007)

OurWorldInData.org/working-hours/ • CC BY-SA

Digital is changing the way we spend our time

- Some digital goods/services are time saving: eg online shopping, banking etc (Coyle 2018)
- Some are new ways of spending production/consumption time (big data analysis, watching cat videos, writing software etc)
- Some are enabling new exchanges of money for time (cooking vs buying ready meal vs ordering from Deliveroo)

Hours online



Source: Ofcom Adults' Media Literacy Tracker 2017

IN5A-C. How many hours in a typical week would you say you spend online at home /at your workplace or place of education/ anywhere else? (unprompted responses, single coded)

Base: All adults aged 16+ who go online (1553 in 2016, 1570 in 2017)

Arrows show significant changes (95% level) between 2016 and 2017

Online activities (by age)



	Market production	Home production	Consumption/leisure
Routine activities Productivity increase equivalent to time saving	Routine manufacturing tasks Routine service tasks eg payroll processing, retail checkout, payments	Cleaning Driving May be automated in future – domestic robots, self-driving cars (cf washing machines, microwaves)	Daily run Eating Personal care Largely non-automatable because inalienable although routine (but cf safety razor)
Non-routine activities 'Productivity' increase equivalent to better quality, more customisation etc	Medicine Consultancy Legal services Elements of these being automated by digitalisation of routine tasks within them Travel agency Banking services Moving online and into home production – time saved in not going to high street Non-routine manufacturing Car repair, plumbing, decorating	Cooking Gardening Caring May also be purchased in the market Creating – vlogs, open source resources, craft activity, writing Car repair, plumbing, decorating Often purchased in the market	Cooking Gardening Inherently enjoyable for some people Cinema Sport Socialising, eating out Creating – vlogs, open source resources, craft activity, writing New online activities – digital enabling some of these to transform into home production or market production

Approaches to time-centric welfare

- Becker (1965): include home production in utility function (disutility of time not spent at leisure, money not earned, utility of services consumed)
 - Production boundary shifts
- Steedman (2001): include consumption time in utility function
 - Non-satiation does not hold
 - Giffen and Veblen goods
 - Discontinuities of choice

Alternative approaches

- Estimate shadow price of time eg hedonic methods
- Ask (WTP/WTA) (Brynjolfsson et al 2017)
- A money metric for well-being assignments (Krueger et al 2009, Alpman et al 2018)
 - Need to hold income constant to assess well-being change

Table 1. Basic Process Benefits (Juster, 1985)

Activity	1975 Score	1981 Score
Talking with children	9.16	8.98
Care of children	8.87	8.74
Trips with children	8.87	8.72
Games with children	8.62	8.24
Talking with friends	8.38	8.27
Going on trips, outings	8.24	8.17
Job	8.02	7.79
Hone entertainment	7.76	7.54
Reading books, magazines	7.60	7.49
Going to church	7.23	7.28
Reading newspapers	7.17	7.10
Making things for house	6.78	6.47
Playing sports	6.76	6.23
Going to movies, plays	6.65	6.38
Gardening	6.55	6.27
Cooking	6.17	6.13
Television	5.93	6.00
Other shopping	5.69	5.30
Housing repairs and alterations	5.11	4.94
Work, school organizations	5.00	5.13
Grocery shopping	4.57	4.55
Cleaning house	4.22	4.18

Many questions...

- Meaning of self-reports, different methodologies?
 - Utility of work?
 - Money metrics?
 - Is one dimension enough?
- ... but we certainly would need time use data