

Unpaid labour, Distribution of income and Macroeconomic regimes

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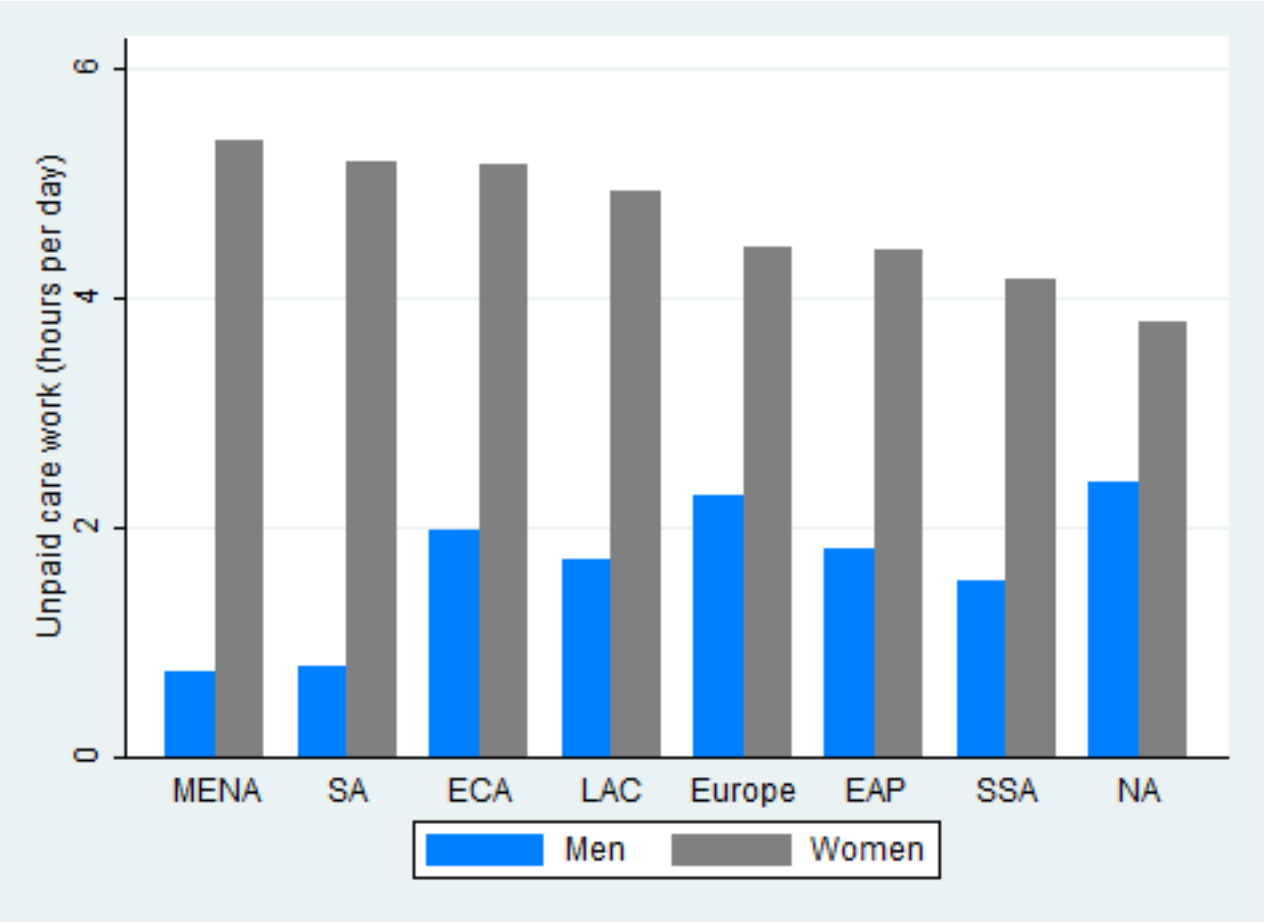
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- A fundamental challenge in economics is the question of incorporating the unpaid care work of women that produces market labour in the circuit of commodity production.
- The day-to-day physical and social reproduction of labour for commodity production remains unrecognized and unaccounted in the circular flow of a market economy.
- Time-use surveys and other data compiled on this issue show that almost universally women carry out the unpaid care work, both domestic and outside their homes, relatively more than men.
- The disproportionate burden of unpaid care work on women has multiple implications for labour market outcomes

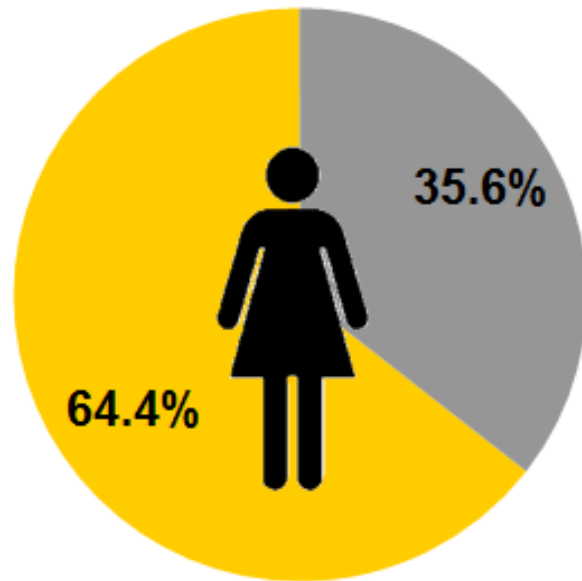
1. Context: Disproportionate burden on unpaid care work on women

Time spent on unpaid care work varies by gender and region

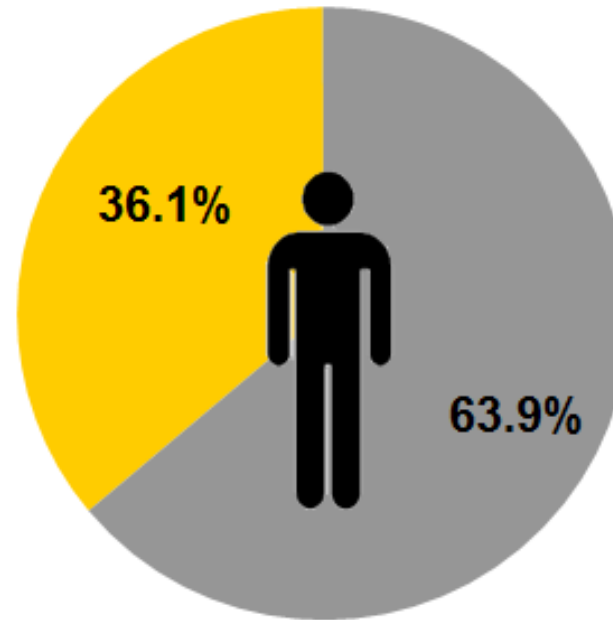


Across all regions of the world, women spend on average between three and six hours on unpaid care activities, while men spend between half an hour and two hours

Paid and unpaid care work in Australia



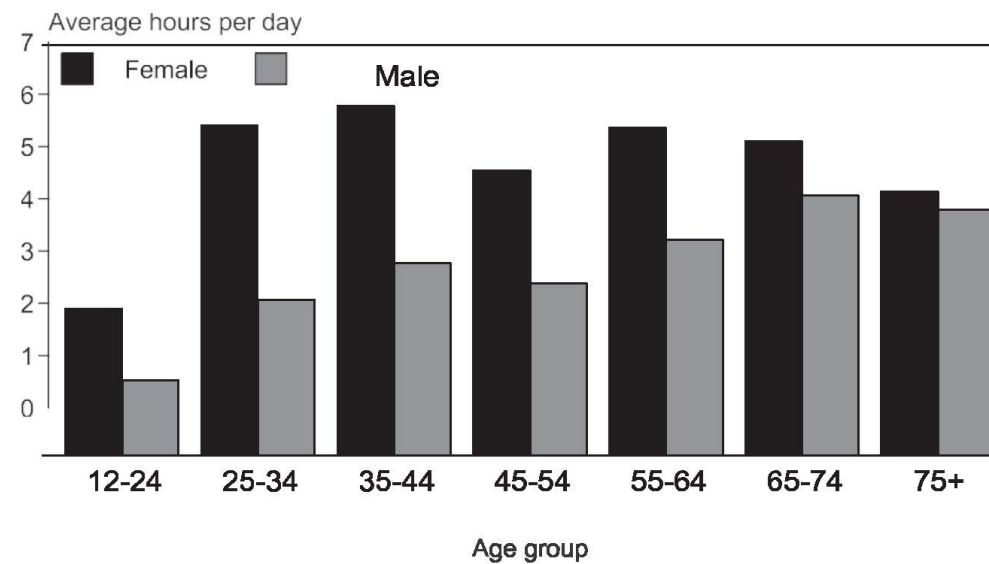
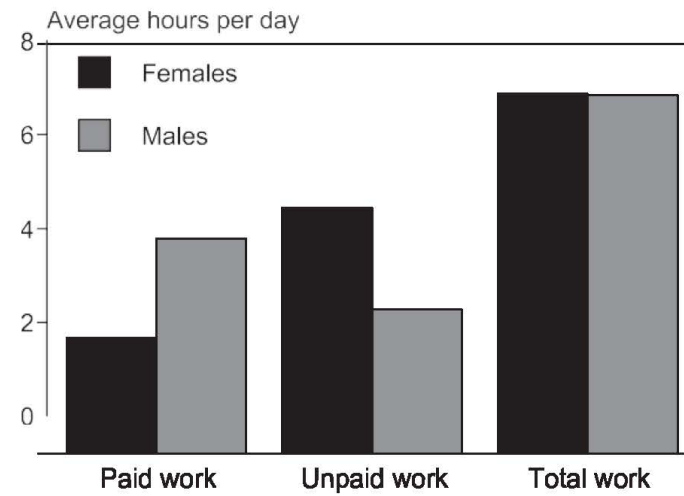
Women's total work hours **56.4**
(weekly average, aged 15-64)



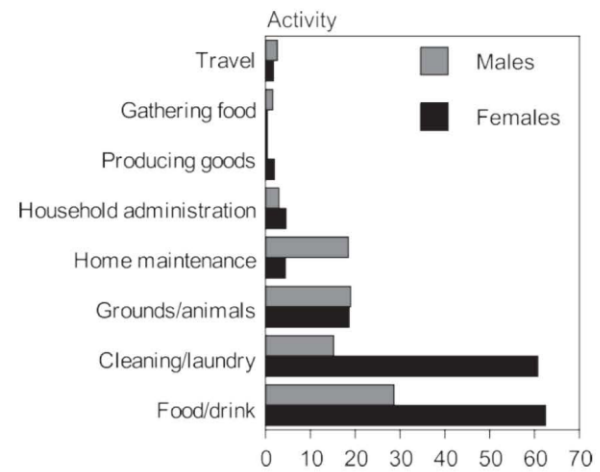
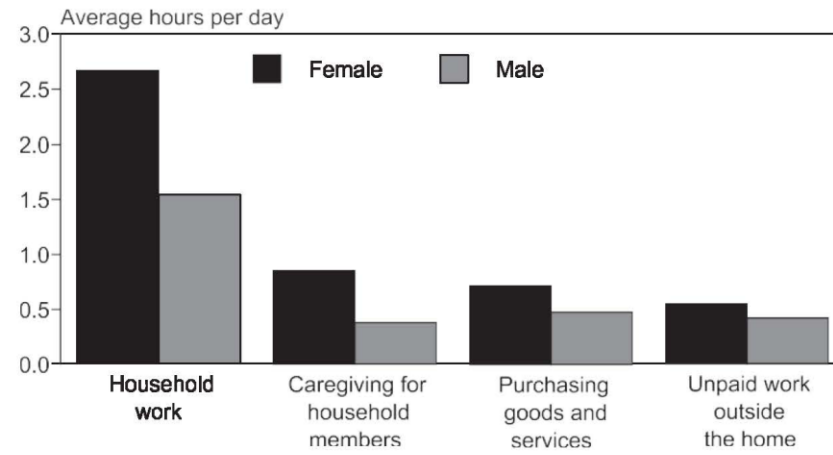
Men's total work hours **55.5**
(weekly average, aged 15-64)

■ unpaid care work
■ productive or paid work

New Zealand (TUS 1998/99)

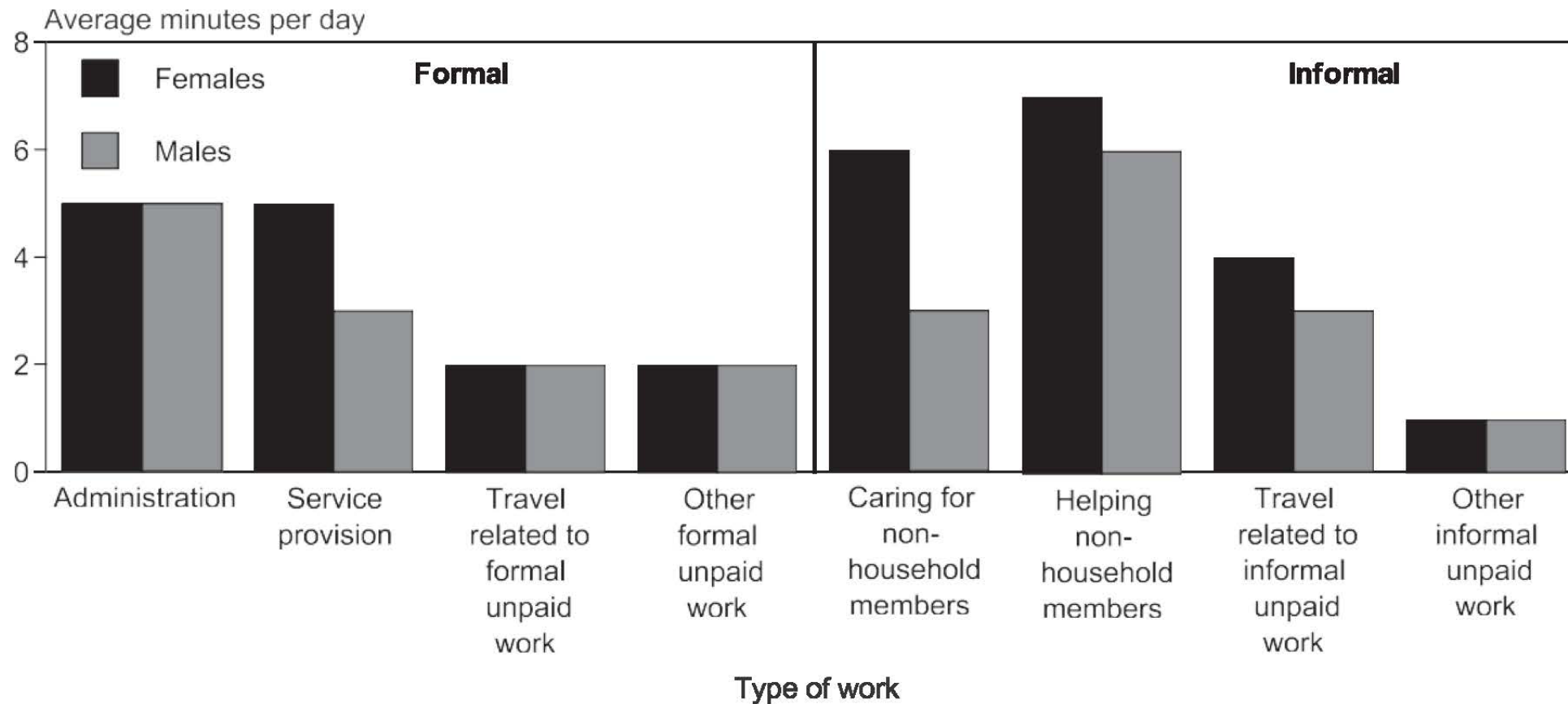


New Zealand (TUS 1998/99)



New Zealand (TUS 1998/99)

Average Minutes per Day Spent on Unpaid Work Outside the Home
by Type of Work and Sex



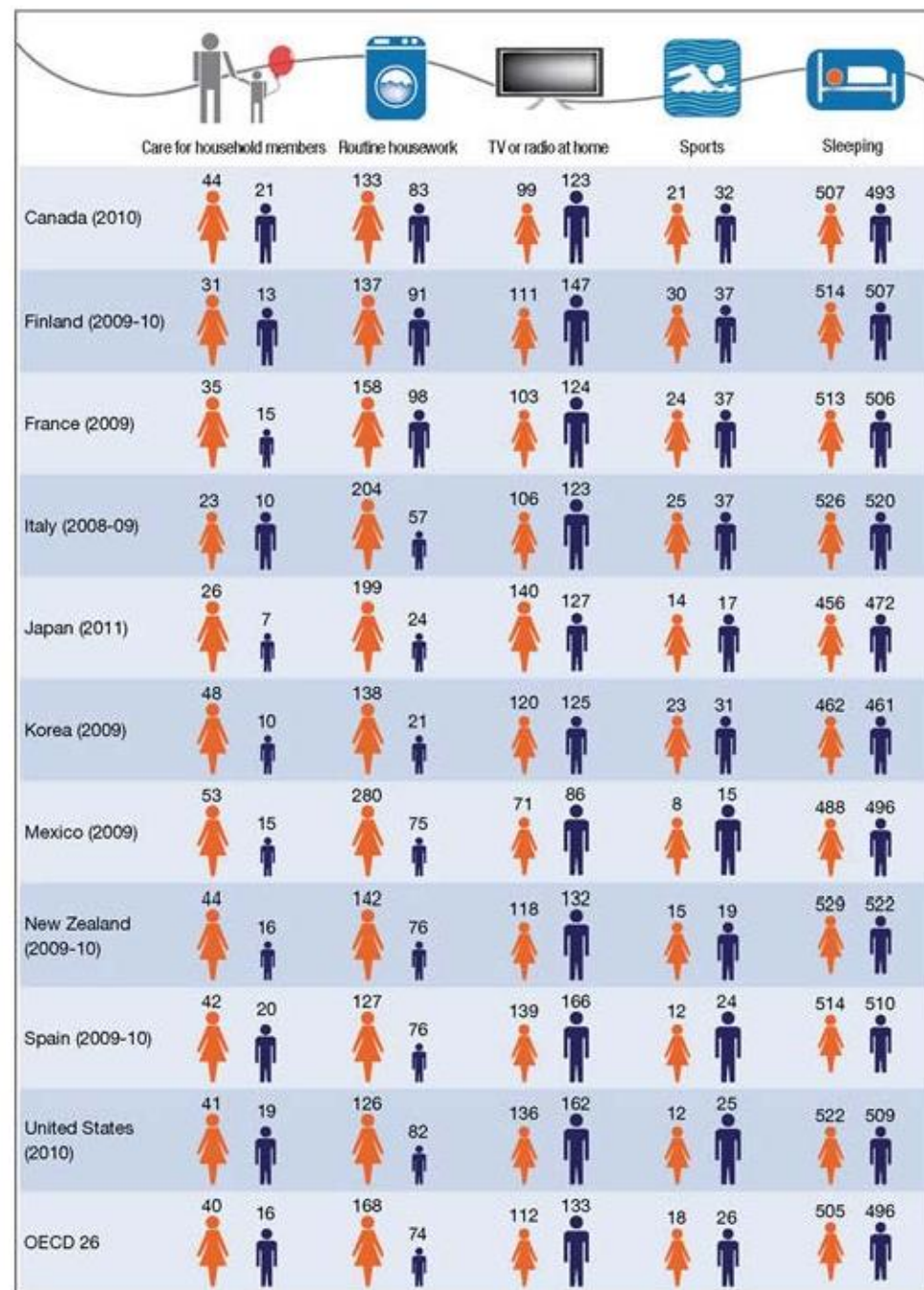
	Care	Emp. and Study	Household Work	Travel	Personal Care & Eating	Leisure, & Vol/Relig Activities	Sleep	Unspec. Time-Use
Employed Full-time								
Male	0.40	7.43	0.46	1.28	1.37	3.59	7.30	0.17
Female	1.49	5.34	1.33	1.24	1.41	3.56	7.46	0.17
Total	1.01	7.04	1.01	1.26	1.39	3.58	7.35	0.17
Part-time								
Male	(0.38)	(5.36)	(0.51)	(1.33)	(2.17)	(4.47)	(8.01)	(0.16)
Female	3.21	3.34	2.44	1.16	1.27	3.27	7.53	0.19
Total	2.51	3.56	2.24	1.19	1.36	3.41	7.55	0.18

The substantial gender differences in the time spent on unpaid work and caring time in Ireland are quantified here for the first time. On weekdays women spend an average of just over 5 hours on these activities compared to 1 hour 40 minutes for men.

	Care	Emp. and Study	Household Work	Travel	Personal Care and Eating	Leisure, and Vol/Relig. Act.	Sleep	Unspec. Time-Use	Total
All	1:33	4:14	1:53	1:07	1:47	4:58	8:05	0:22	24:00
Male	0:34	5:46	1:08	1:18	1:49	5:09	7:57	0:19	24:00
Female	2:31	2:44	2:36	0:57	1:45	4:48	8:13	0:25	24:00
18-24 years	0:46	5:32	0:38	1:20	1:51	5:27	8:12	0:13	24:00
25-44 years	2:41	5:12	1:30	1:16	1:30	3:52	7:38	0:20	24:00
45-64 years	0:59	3:51	2:37	1:05	1:50	5:08	8:07	0:23	24:00
65+ years	0:32	0:43	2:57	0:31	2:25	7:09	9:08	0:34	24:00
Primary	0:57	2:22	2:41	0:35	2:02	6:07	8:51	0:25	24:00
Junior Certificate or equivalent	1:16	4:23	2:10	0:58	1:49	4:47	8:12	0:24	24:00
Leaving Certificate	1:54	4:20	1:31	1:21	1:45	4:54	7:53	0:22	24:00
Post-secondary	1:51	5:07	1:29	1:22	1:40	4:31	7:43	0:18	24:00
Employed	1:33	6:03	1:21	1:23	1:36	4:03	7:43	0:18	24:00
Self-employed	1:23	7:08	1:01	1:20	1:41	3:40	7:27	0:20	24:00
Student	0:45	5:11	0:37	1:23	2:03	5:21	8:27	0:14	24:00
Unemployed	(0:40)	(0:13)	(1:47)	(0:19)	(2:01)	(9:06)	(9:12)	(0:43)	24:00
Sick/Disabled	(0:58)	(1:07)	(2:39)	(1:01)	(2:11)	(7:37)	(8:05)	(0:23)	24:00
Home Duties	3:26	0:10	4:02	0:39	1:46	5:02	8:24	0:31	24:00
Retired	0:26	0:25	3:01	0:36	2:23	7:35	9:09	0:25	24:00
Other	1:32	3:43	1:41	0:44	1:27	5:58	8:21	0:34	24:00
No Child <18 years	0:30	4:05	1:51	1:05	1:58	5:49	8:20	0:21	24:00
Children <18 years	3:26	4:39	1:58	1:15	1:27	3:25	7:30	0:20	24:00

In contrast, men spend substantially more time than women on travel and employment.

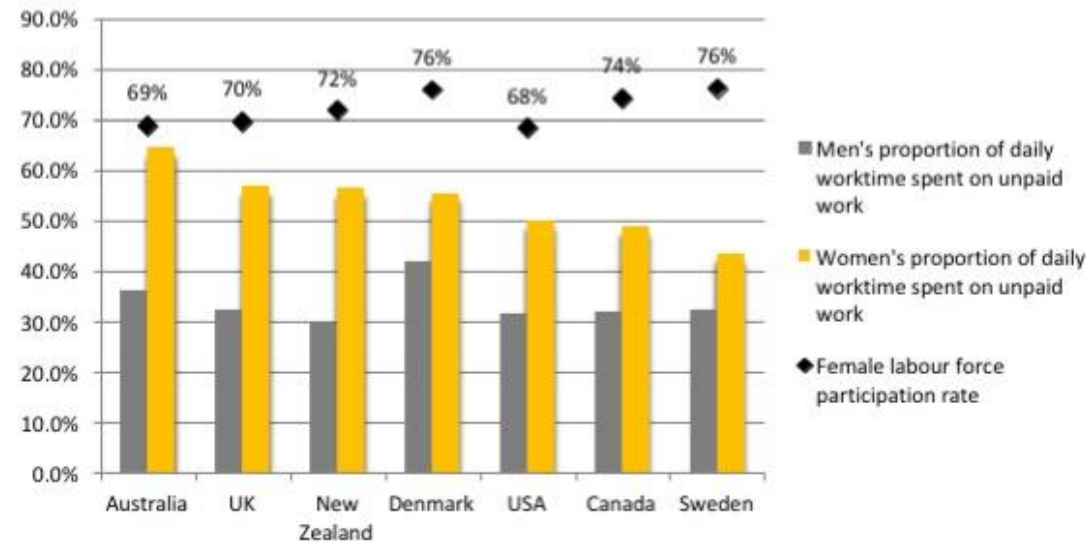
We have also shown that women, carers and those with children spend a greater proportion of the day doing multiple activities at once. Those with children are also more likely to feel rushed and stressed during the day.



Source: OECD (2014) based on data from National Time Use Surveys.

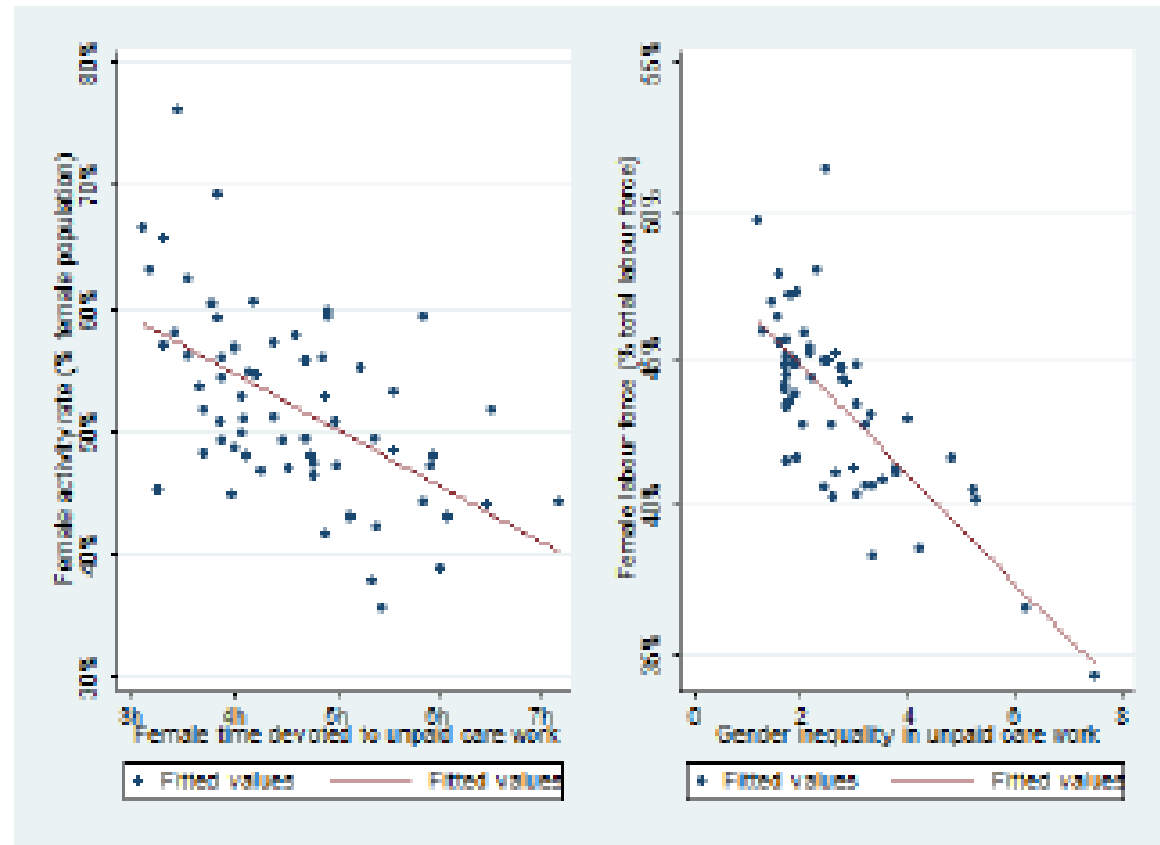
Unpaid care is seen as the missing link in the analysis of gender gap in labour market outcomes

- Unpaid care work and labour force participation
- Unpaid care and quality of employment
- Unpaid care work and gender wage gaps
- Social norms and institutions in explaining gender inequalities in unpaid care work



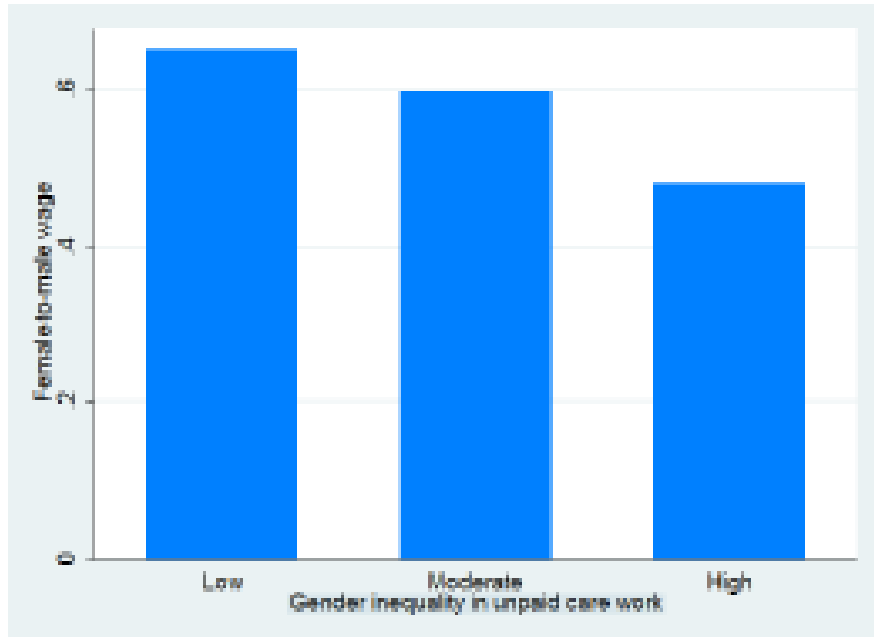
OECD (2015): www.oecd.org/gender/data/balancingpaidworkunpaidworkandleisure.htm

Higher inequalities in unpaid work, higher inequalities in labour force participations



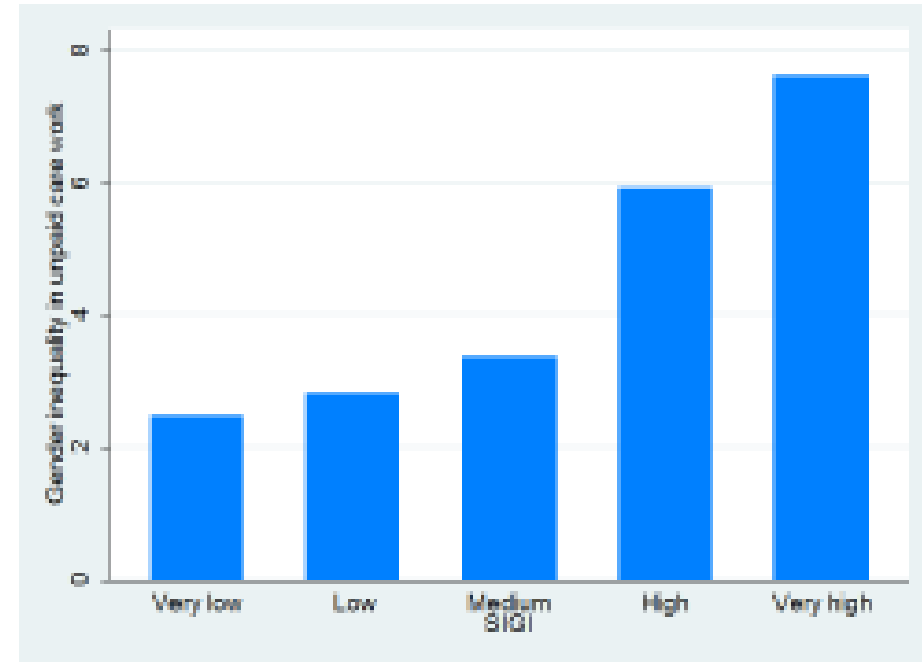
Source: World Bank (2014) and OECD (2014)

Unpaid care work and the female-to-male wage



Female-to-male wage versus female-to male ratio of time devoted to unpaid care activities

Social institutions and gender index (SIGI)



Female-to male ratio of time devoted to unpaid care activities by SIGI terciles.

Source: OECD (2014)

It is quite well established in the literature that the unpaid work, baked by social norms and social institutions, Restrict performance of women in labour market in multiple ways

- women's participation in labour market
- unpaid work and social norms tend to affect human capital formation among women adversely
- unpaid work impacts on the quality of women's employment; most often temporary and vulnerable jobs

Calls to make all SDGs gender sensitive in the context of the unequal distribution of unpaid care work between men and women (Rania Anatopoulous and Indira Hirway (2016))

UN High Level Panel on Women's Empowerment – 2017



Recognize, Reduce and Redistribute advocated by Diane Elson has been the framework through which policy interventions are sought in terms of bringing equality in unpaid care work, and in general.

- Although unpaid care work is recognized as an important aspect of economic activity and an indispensable factor contributing to the well-being of individuals, their families and societies (Stiglitz, Sen and Fitoussi, 2007), it is only recognized as a factor that lie outside the economic circuit of production.
- Policy inferences based on the gender-blind macroeconomic models lead to incorrect and ineffective prescriptions, aggravate gender inequalities and create an adverse cycle between economic growth and inequality. The current incarnation of the erstwhile GE models, i.e the DSGE models, are the most notorious examples of such gender-blind policy models.
- Since the 1960s, Feminist economists have been pushing the frontiers in theory to advance gender-aware analysis in integrating the role of households in the market economy.
- Furthermore feminist scholarship has pushed the boundaries of the measurement and classification of economic activities in the System of National Accounts (UN-SNA1993) and expanded the availability of time-use data (TUS).

- Gender-sensitive macroeconomic models are quite rare in literature, with notable exceptions of (Folbre 1994, Ertürk and Çağatay 1995, Blecker and Segunio 2000, Segunio 2010, Fontana 2007, Braunstein 2000)
- Moreover, in terms of integrating the care economy within a macroeconomic framework there are even lesser number of studies in the literature, for example, Folbre 2006, Fontana 2007, Braustein et al 2011.
- Following the Beckerian framework of intra-household bargaining, there are a handful of models like Agenor and Cavuto (2012), provide another way to integrate the care economy for policy analysis. These models consider unpaid care work as a constraint in the household optimization and integrate household production as another production sector in the economy.

- The argument that unpaid care work imposes a “constraint” in the household optimization is quite problematic in many fronts - in particular, the neglect of the role of unpaid care in sustaining and creating “human capacities” for the market production, both in the short and the long run.
- The aim of this paper is to seek an economic argument for “redistribution” of unpaid care work by providing an analytical framework to analyse the link between unpaid labour and the macroeconomy.
- Among the Classical economists, Marx, subsequently Engels, recognized the role of production of labour in the process of surplus generation and commodity production, but somehow did not further develop this insight

2. Unpaid labour and distribution of income

Consider Kalecki's price equation in the context of manufacturing goods.

$$p = (1 + m) \frac{wL}{Y} \quad (1)$$

where m is the industry specific mark-up, w is the industry specific wage rate, L is labour employed, and Y is the output. The ratio $\left(\frac{L}{Y}\right)$ is labour per unit of output, which is the inverse of labour productivity.

The output Y can be expressed as $Y = L \cdot \frac{Y}{L}$, and further decomposed to capture unpaid domestic work of women (U_L) as,

$$Y = (L/U_L) \frac{Y}{(L/U_L)} \quad (2).$$

Substituting (2) in (1) modifies the mark-up price equation as,

$$p = (1 + m) \left[w \left(\frac{L/U_L}{Y/U_L} \right) \right] \quad (3)$$

where U_L represents the unpaid domestic work of women and in essence the unit variable cost $\left(\frac{wL}{Y} \right)$ in (1) is decomposed into

$$\left(\frac{wL}{Y} \right) = w \left[\frac{L}{U_L} \frac{U_L}{Y} \right] \quad (4)$$

where the ratio $\left(\frac{L}{U_L} \right)$ is wage labour per unit of unpaid domestic work of women, measures the unpaid day-to-day reproductive care work that includes personal care and self-maintenance of women and the second ratio, $\left(\frac{U_L}{Y} \right)$, measures the unpaid work of women (and men) in general that includes community level volunteer work per unit of output.

The unpaid work of women, which is in the Non-SNA domain outside the production boundary, encompasses the categories of household maintenance, care work, volunteer work and personal care and self-maintenance.

From (3), the aggregate profit share yields,

$$h = 1 - \frac{1}{p} \left(\frac{wL}{U_L} \frac{U_L}{Y} \right) \quad (5)$$

From (5), it is easy to see that profit share (wage share) is an increasing (decreasing) function of mark-up and thus, the original formulation of Kalecki holds in this case of expressing the unit variable cost in terms of per unit of unpaid labour, i.e. $h = 1 - \frac{1}{(1+m)}$; $\frac{dh}{dm} = \frac{m}{(1+m)^2} > 0$

However, the rate of change in profit share (or rate of exploitation) is related to unpaid domestic work of women in an interesting way.

For convenience, let us denote $c = \left(\frac{L}{U_L} \right)$ and $d = \left(\frac{U_L}{Y} \right)$.

Assuming a constant mark-up (m), the percentage change in profit share, given in (5), yields,

$$\frac{\dot{h}}{h} = \left\{ \frac{\dot{p}}{p} - \left[\frac{\dot{w}}{w} - \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right) \right] \right\} \quad (6)$$

$$\frac{\dot{h}}{h} = \left\{ \frac{\dot{p}}{p} - \left[\frac{\dot{w}}{w} - \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right) \right] \right\} \quad (6)$$

Equation (6) reveals an interesting relation between aggregate profit share and the unpaid labour, which is represented by the term $\left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right)$. This term indicates the residual amount of the share of unpaid work in total output after netting the proportion that goes into directly producing market labour.

When this difference is positive, i.e. $\left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right) > 0$, it represents a net increase in the *unpaid work of women* in the economy, and may be called as the *unpaid care residual*.

Let us now analyse how the unpaid care residual relate to the aggregate share of profits.

For the percentage change in share of profits to be positive, (i.e. $\frac{\dot{h}}{h} > 0$),

$$\frac{\dot{h}}{h} > 0 \implies \left\{ \frac{\dot{p}}{p} - \left[\frac{\dot{w}}{w} - \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right) \right] \right\} > 0 \quad (7)$$

When price change is not feasible ($\dot{p}/p = 0$), the increase in profits can be achieved by reducing costs, which in this case, implies

$$\left[\frac{\dot{w}}{w} - \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right) \right] < 0 \quad (8)$$

meaning that the percentage change in wages must be less than the percentage change in the unpaid care residual, i.e.

$$\frac{\dot{w}}{w} < \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right) \quad (9)$$

The inequality (9) provides the necessary condition for the share of profits to increase, i.e. the percentage change in the unpaid work of women is greater than the percentage change in wages.

Suppose, in addition both $\frac{\dot{p}}{p} = 0$ and $\frac{\dot{w}}{w} = 0$. Then the relation between the percentage change in share of profits and the unpaid labour becomes,

$$\frac{\dot{h}}{h} = \left\{ 0 - \left[0 - \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right) \right] \right\}$$

Or

$$\frac{\dot{h}}{h} = \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right) \quad (10)$$

Equation (10) is quite revealing that it shows that the fundamental source of surplus in the commodity production in a capitalist market economy seems to be the unpaid care residual that is generated by the unpaid work of women in the economy.

3. unpaid work, distribution, and aggregate demand

Using the system (6),

$$\frac{\dot{h}}{h} = \left\{ \frac{\dot{p}}{p} - \left[\frac{\dot{w}}{w} - \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right) \right] \right\}$$

we can study the implication of the relation between distribution of income unpaid work, and aggregate demand.

For simplicity, let us look at the relationship in the scenario where there is no price change ($\dot{p}/p = 0$).

when the wages are rising and when the wages are falling, and discern the implications for the relationship between rate of change in profit share and unpaid paid work of women qualitatively in Table1.

Table 1: Distribution of income and unpaid care residual

$\frac{\dot{w}}{w} > 0$	$\frac{\dot{w}}{w} < 0$
For $\frac{\dot{h}}{h} > 0$ $\frac{\dot{p}}{p} = 0 > \frac{\dot{w}}{w} - \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right)$ $\Rightarrow \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right) > \frac{\dot{w}}{w}$	For $\frac{\dot{h}}{h} > 0$ $\frac{\dot{p}}{p} = 0 > \frac{\dot{w}}{w} - \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right)$ $\Rightarrow \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right) > \frac{\dot{w}}{w}$
For $\frac{\dot{h}}{h} < 0$ $\Rightarrow \frac{\dot{w}}{w} > \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right)$	For $\frac{\dot{h}}{h} < 0$ $\Rightarrow \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right) < \frac{\dot{w}}{w} < 0$

In the case where wages increase, due to demand growth, the necessary condition for profit share to increase in the absence of price change is $\left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c}\right) > \frac{\dot{w}}{w}$, i.e. the percentage growth in the unpaid care residual should be greater than the growth in wages.

This is clear from (7), as the cost of production (wages) rise, due to increased aggregate demand in the economy, the source of growth in profit share is the unpaid care residual.

When viewed in the context of increased labour force participation of women, this entails reduced time for women in the household production in so far as women take part in both market production of goods and production of labour at home.

The assumption here is that men's unpaid work, on an average, is less responsive than women to a change in their labour force status

So, although incomes at the household level rise, the reduced time for women in the household production, can potentially create conflict at home.

On the other hand, when the wages are declining the necessary condition for increase in profit share is $\left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c}\right) > \frac{\dot{w}}{w}$, which is the same as in the previous case.

However, in the case where the wage income is declining, not only the aggregate income distribution deteriorates for the wage earners, the intra-household distribution deteriorates as the unpaid domestic work of women must increase to maintain the *real wage or real income* at the same level.

Thus, when nominal wages are falling it is the increase in the unpaid women's work at home, or increase in the unpaid care residual, that dampens the fall in the household real income.

It is interesting to note the dual support provided by the unpaid women's work; while it is the fundamental source of surplus, it also stabilizes the fall in the household real income.

Assuming the growth in the unpaid labour (U_L) to vary inversely with output (z), which in turn being determined by the level of investment and saving in the economy, yields the following system

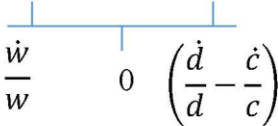
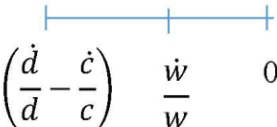
$$\begin{aligned} \dot{z} &= [I(h, z) - S(h, z)] \\ \frac{\dot{h}}{h} &= \left\{ \frac{\dot{p}}{p} - \left[\frac{\dot{w}}{w} - \left(\frac{\dot{d}}{d}(z) - \frac{\dot{c}}{c}(z) \right) \right] \right\}. \end{aligned} \tag{11}$$

In (11), although the investment and saving functions are being determined by the determinants of profitability (profit share (h)) and output (z), the saving function can be specified slightly differently to consider the gender wage gap in the wage income category by considering the share of wage income of male and female workers as $(1 - h)_m$ and $(1 - h)_f$ respectively.

As before we analyse the system (11) assuming the scenario of no price change ($\dot{p}/p = 0$).

Further using the relative responsiveness of investment and saving to profit share, i.e. whether $(I_h - S_h) \geq 0$, we get four regimes in Table 2 yielding strong and weak profit led $((I_h - S_h) > 0)$ regime with $(\dot{h} > 0, \dot{z} > 0)$ and $(\dot{h} > 0, \dot{z} < 0)$, and strong and weak wage led $((I_h - S_h) < 0)$ regime with $(\dot{h} < 0, \dot{z} > 0)$ and $(\dot{h} < 0, \dot{z} < 0)$.

Table 2: Unpaid labour,
distribution and aggregate
demand

	$\dot{z} > 0$	$\dot{z} < 0$
$\frac{\dot{h}}{h} > 0$	$0 > \frac{\dot{w}}{w} > \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c}\right)$ $\Rightarrow \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c}\right) > \frac{\dot{w}}{w}$	In the case when wages fall $\left(\frac{\dot{w}}{w} < 0\right)$ $0 > \frac{\dot{w}}{w} > \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c}\right)$ $\Rightarrow \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c}\right) > \frac{\dot{w}}{w}$ 
$\frac{\dot{h}}{h} < 0$	$\frac{\dot{w}}{w} > \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c}\right)$	In the case when wages fall $\left(\frac{\dot{w}}{w} < 0\right)$ $0 < \frac{\dot{w}}{w} < \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c}\right)$  fall in the unpaid care residual should be lesser than wages

Wage led regime

Profit led regime

Stagnationist
conflict

Exhilarationist
cooperation

$$\frac{\dot{w}}{w} > \left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right)$$

$$\left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right) > \frac{\dot{w}}{w}$$

i.e.

i.e.

$$g_{wage} > g_{care}$$

$$g_{care} > g_{wage}$$

$$\left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right) < \frac{\dot{w}}{w}$$

$$\left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c} \right) > \frac{\dot{w}}{w}$$

i.e.

i.e.

$$g_{care} < g_{wage}$$

$$g_{care} > g_{wage}$$

Stagnationist
cooperation

Exhilarationist
conflict

$\dot{z}/z$

$\dot{h}/h$

In the strong profit led regime, growth of profit share and output is contingent on the relatively dominant growth in the unpaid care residual vis-à-vis wages.

This seems to be the condition in the weak case in this regime, i.e. when output fall and consequently wages fall, and thus the higher unpaid care residual compensates the fall in wages in this regime.

In both cases, the unpaid care residual enhances the *real incomes* of the household.

In the wage led regime, the strong regime yields only when the wage growth outweigh the growth in the unpaid care residual.

However, in the weak wage led case, where increased share of wages leading to a fall in the growth in output, a relatively lesser fall in the unpaid care residual compensates the fall in the growth of wages, i.e. $\left(\frac{\dot{d}}{d} - \frac{\dot{c}}{c}\right) < \frac{\dot{w}}{w} < 0$ and implies $\frac{\dot{c}}{c} > \frac{\dot{d}}{d}$.

Therefore in this case, the relatively lesser fall in the unpaid care residual is driven by the increased rate of growth of reproductive care labour $\left(\frac{\dot{c}}{c}\right)$ than the unpaid labour in the economy $\left(\frac{\dot{d}}{d}\right)$.

Thus, in the recessionary phases of the profit and wage led regimes, the unpaid care residual, either by growing more than wages, or by falling less than wages, provides the support by maintaining the *real wage* or *real income*.

Even in the expansionary phase, particularly, in the strong profit led case, it is the relatively dominant growth of the unpaid care residual than wages, enhances the real incomes of the household.

In other words, the limits to cooperation between capital and labour in various aggregate demand regimes seems to fundamentally depend on the unpaid care residual.

4. Conclusion

The main aim of the paper is to provide an economic theoretic framework to integrate the unpaid work of women in the macroeconomic model and understand the relationship distribution of income and aggregate demand from that standpoint.

- One of the central conclusions that emerge from our analysis is that, in the context of capitalist economy the unpaid care residual seems to be the fundamental source of surplus (10).
- Therefore, there is an economic case for redistribution for the contribution made by the unpaid care work
- Since in both the cooperative phase (boom) and the stagnationist phase (recession), it is the unpaid care residual that provides an anchor for both profits and “real wage”, there is a case for redistribution of profits in the form of “*care dividend*”, particularly during recessions.
- Universal basic income schemes can also be used as incentive schemes for reducing and redistributing the unpaid care work at the household level

- The analysis shows that both during the times of economic expansion and stagnation, the cooperation between capital and labour is contingent on the rate of growth in the unpaid care residual.
- Cooperation during the growth phase seems to be guaranteed as long as the growth in the unpaid care residual is greater than the wage growth.
- While during the recession or slowdown in the activity, cooperation between labour and capital is contingent, again, on the rate of growth in the unpaid care residual.
- In this case, the rate of decline in the unpaid care residual should be less than the rate of decline in wages, which dampens the fall in the *real wage* or *real income* of the workers.

- The analysis points to a broader conclusion on the nature of the relation between the quest for economic profits and patriarchal gender norms in the contemporary capitalist society.
- Since the quest for profits is what drives the growth of the capitalist system, our analysis suggest that the capitalist system would require the preservation of patriarchal gender norms that produces the unpaid labour, in so far as the unpaid care residual being the fundamental source of surplus (10).
- Extensions: The long run
 - Open economy - Export led growth and unpaid labour relation
 - Migratory flows of care workers and demographic implications in the global south