

Household Income Based on a Broad View of Production

34th IARIW General Conference, Dresden

Session 4A: Household Accounts

by Mitsuhiro Iyoda

Momoyama Gakuin University, Japan

Discussant

Kirsten Balling

Statistics Denmark

Motivation behind the paper

- Japan is an aging society with a very low birthrate of 1.43.
- App. 60 percent of married women quit their jobs after having a baby.
- There is a pressure on women in Japan to contribute in the labour market whereas the value of and the extent of the work done by women in households is not fully recognized.

The Focus of the Paper

- Valuation of unpaid production in households
 - Household services that could alternatively have been bought in the market
- Offers an alternative to the SNA concept of household income
 - A macro figure is estimated every five years by the Japanese government
 - This paper estimates the production value across life stages
- Gives a view on gender equality

Methodology – Method (a)

Opportunity Cost Method:

The value of the work done is estimated by the amount of money the person in question could have earned in the market during the time spent producing services in the household. Wage rates used are stratified by age and sex.

Methodology – Method (b)

Replacement Cost Method – specialist approach:

The value of unpaid production in households is estimated by the amount of money it would take to buy the corresponding services in the market using different wage rates for different services

Methodology – Method (c)

Replacement Cost Method – generalized approach:

The value of unpaid production in households is estimated by the amount of money it would take to buy the hours worked from an average household employees

Methodology applied

- Method A: Opportunity cost method
- Couples, 3 different stages in life:
 - I: age 30-34 years, 1.36 children
 - II: age 40-44 years, 1.87 children
 - III: age 50-54 years, 2.01 children
- Labour market work – 3 cases:
 - A: Both work full time
 - B: HOH works full time and spouse part time
 - C: HOH works full time and spouse zero time

Data

- **Wage rates** from Wage Census – estimated by dividing total income by hours worked. Stratified by age and sex
- **Work hours both labour market and unpaid** from Wage Census 2011– by age (stage I-III) and sex
 - Estimation of unpaid hours worked for case A and B for all stages – using the ratio of unpaid work hours between working women and non-working women in a time use study from 1990.
 - HoH's unpaid work hours are assumed the same in all cases A-C

Data

Wage Rate Differences by Sex and Type of Work (2011)

Units: yen/hours or %

Household		Full-time			Part-time			Part/Full-time	
Stage	Age	Hourly wage rate		Ratio(%)	Hourly wage rate		Ratio(%)	Wage Ratio (%)	
		Male	Female	Female/Male	Male	Female	Female/Male	Male	Female
I	30-34	2,055	1,731	84.2	1,137	1,046	92.0	55.3	60.4
II	40-44	2,776	1,912	68.9	1,188	1,018	85.7	42.8	53.2
III	50-54	3,174	1,879	59.2	1,185	993	83.8	37.3	52.8

Data

Work Hours of HOHs and Spouses by Work Type (2011)

Unit: Annual total hours worked

	Stage I			Stage II			Stage III											
	HOH		Spouse	HOH		Spouse	HOH		Spouse									
	<i>Paid</i>	<i>(Unpaid)</i>	Sum	<i>Paid</i>	<i>(Unpaid)</i>	Sum	<i>Paid</i>	<i>(Unpaid)</i>	Sum									
Case A	2,232	(367)	2,599	2,076	(1,511)	3,587	2,184	(246)	2,430	2,054	(1,461)	3,515	2,136	(198)	2,334	2,040	(1,214)	3,254
Case B	2,232	(367)	2,599	1,156	(1,942)	3,098	2,184	(246)	2,430	1,138	(1,946)	3,084	2,136	(198)	2,334	1,178	(1,559)	2,737
Case C	2,232	(367)	2,599	0	(3,035)	3,035	2,184	(246)	2,430	0	(2,772)	2,772	2,136	(198)	2,334	0	(2,362)	2,362

Results

Household income, mio. yen per year

Stages: Cases:	I: Couples Children 1.36 Age 30-34	II: Couples Children 1.87 Age 40-44	III: Couples Children 2.01 Age 50-54																																				
A: HOH : Full time Spouse: Full time	<table border="1"> <tr><td>LMI</td><td>4.40</td><td></td><td></td></tr> <tr><td>HPI</td><td>0.61</td><td></td><td></td></tr> <tr><td></td><td>5.01</td><td></td><td></td></tr> </table>	LMI	4.40			HPI	0.61				5.01			<table border="1"> <tr><td>LMI</td><td>5.79</td><td></td><td></td></tr> <tr><td>HPI</td><td>0.54</td><td></td><td></td></tr> <tr><td></td><td>6.33</td><td></td><td></td></tr> </table>	LMI	5.79			HPI	0.54				6.33			<table border="1"> <tr><td>LMI</td><td>6.48</td><td></td><td></td></tr> <tr><td>HPI</td><td>0.50</td><td></td><td></td></tr> <tr><td></td><td>6.98</td><td></td><td></td></tr> </table>	LMI	6.48			HPI	0.50				6.98		
LMI	4.40																																						
HPI	0.61																																						
	5.01																																						
LMI	5.79																																						
HPI	0.54																																						
	6.33																																						
LMI	6.48																																						
HPI	0.50																																						
	6.98																																						
B: HOH : Full time Spouse: Part time	<table border="1"> <tr><td>LMI</td><td>4.60</td><td></td><td></td></tr> <tr><td>HPI</td><td>0.61</td><td></td><td></td></tr> <tr><td></td><td>5.21</td><td></td><td></td></tr> </table>	LMI	4.60			HPI	0.61				5.21			<table border="1"> <tr><td>LMI</td><td>5.99</td><td></td><td></td></tr> <tr><td>HPI</td><td>0.54</td><td></td><td></td></tr> <tr><td></td><td>6.53</td><td></td><td></td></tr> </table>	LMI	5.99			HPI	0.54				6.53			<table border="1"> <tr><td>LMI</td><td>6.68</td><td></td><td></td></tr> <tr><td>HPI</td><td>0.50</td><td></td><td></td></tr> <tr><td></td><td>7.18</td><td></td><td></td></tr> </table>	LMI	6.68			HPI	0.50				7.18		
LMI	4.60																																						
HPI	0.61																																						
	5.21																																						
LMI	5.99																																						
HPI	0.54																																						
	6.53																																						
LMI	6.68																																						
HPI	0.50																																						
	7.18																																						
C: HOH : Full time Spouse: No time	<table border="1"> <tr><td>LMI</td><td>4.60</td><td></td><td></td></tr> <tr><td>HPI</td><td>0.61</td><td></td><td></td></tr> <tr><td></td><td>5.21</td><td></td><td></td></tr> </table>	LMI	4.60			HPI	0.61				5.21			<table border="1"> <tr><td>LMI</td><td>5.99</td><td></td><td></td></tr> <tr><td>HPI</td><td>0.54</td><td></td><td></td></tr> <tr><td></td><td>6.53</td><td></td><td></td></tr> </table>	LMI	5.99			HPI	0.54				6.53			<table border="1"> <tr><td>LMI</td><td>6.68</td><td></td><td></td></tr> <tr><td>HPI</td><td>0.50</td><td></td><td></td></tr> <tr><td></td><td>7.18</td><td></td><td></td></tr> </table>	LMI	6.68			HPI	0.50				7.18		
LMI	4.60																																						
HPI	0.61																																						
	5.21																																						
LMI	5.99																																						
HPI	0.54																																						
	6.53																																						
LMI	6.68																																						
HPI	0.50																																						
	7.18																																						

LMI : Yearly labour market income, incl. allowance to compensate for low income of spouse (0.2 mio. yen)

HPI: Yearly household production ‘income’

Results

Household income, mio. yen per year

Stages: Cases:	I: Couples Children 1.36 Age 30-34	II: Couples Children 1.87 Age 40-44	III: Couples Children 2.01 Age 50-54																											
A: HOH : Full time Spouse: Full time	<table border="1"> <tr><td>LMI</td><td>3.63</td><td></td></tr> <tr><td>HPI</td><td>2.16</td><td></td></tr> <tr><td></td><td>5.79</td><td></td></tr> </table>	LMI	3.63		HPI	2.16			5.79		<table border="1"> <tr><td>LMI</td><td>3.95</td><td></td></tr> <tr><td>HPI</td><td>2.28</td><td></td></tr> <tr><td></td><td>6.23</td><td></td></tr> </table>	LMI	3.95		HPI	2.28			6.23		<table border="1"> <tr><td>LMI</td><td>3.87</td><td></td></tr> <tr><td>HPI</td><td>1.87</td><td></td></tr> <tr><td></td><td>5.74</td><td></td></tr> </table>	LMI	3.87		HPI	1.87			5.74	
LMI	3.63																													
HPI	2.16																													
	5.79																													
LMI	3.95																													
HPI	2.28																													
	6.23																													
LMI	3.87																													
HPI	1.87																													
	5.74																													
B: HOH : Full time Spouse: Part time	<table border="1"> <tr><td>LMI</td><td>1.03</td><td></td></tr> <tr><td>HPI</td><td>2.78</td><td></td></tr> <tr><td></td><td>3.81</td><td></td></tr> </table>	LMI	1.03		HPI	2.78			3.81		<table border="1"> <tr><td>LMI</td><td>1.03</td><td></td></tr> <tr><td>HPI</td><td>3.03</td><td></td></tr> <tr><td></td><td>4.06</td><td></td></tr> </table>	LMI	1.03		HPI	3.03			4.06		<table border="1"> <tr><td>LMI</td><td>1.03</td><td></td></tr> <tr><td>HPI</td><td>2.40</td><td></td></tr> <tr><td></td><td>3.43</td><td></td></tr> </table>	LMI	1.03		HPI	2.40			3.43	
LMI	1.03																													
HPI	2.78																													
	3.81																													
LMI	1.03																													
HPI	3.03																													
	4.06																													
LMI	1.03																													
HPI	2.40																													
	3.43																													
C: HOH : Full time Spouse: No time	<table border="1"> <tr><td>LMI</td><td>0</td><td></td></tr> <tr><td>HPI</td><td>4.34</td><td></td></tr> <tr><td></td><td>4.34</td><td></td></tr> </table>	LMI	0		HPI	4.34			4.34		<table border="1"> <tr><td>LMI</td><td>0</td><td></td></tr> <tr><td>HPI</td><td>4.32</td><td></td></tr> <tr><td></td><td>4.32</td><td></td></tr> </table>	LMI	0		HPI	4.32			4.32		<table border="1"> <tr><td>LMI</td><td>0</td><td></td></tr> <tr><td>HPI</td><td>3.63</td><td></td></tr> <tr><td></td><td>3.63</td><td></td></tr> </table>	LMI	0		HPI	3.63			3.63	
LMI	0																													
HPI	4.34																													
	4.34																													
LMI	0																													
HPI	4.32																													
	4.32																													
LMI	0																													
HPI	3.63																													
	3.63																													

LMI : Yearly labour market income, incl. allowance to compensate for low income of spouse (0.2 mio. yen)

HPI: Yearly household production ‘income’

Results

Household income, mio. yen per year

Stages: Cases:	I: Couples Children 1.36 Age 30-34	II: Couples Children 1.87 Age 40-44	III: Couples Children 2.01 Age 50-54																																				
A: HOH : Full time Spouse: Full time	<table border="1"> <tr><td>LMI</td><td>4.40</td><td>3.63</td><td>8.03</td></tr> <tr><td>HPI</td><td>0.61</td><td>2.16</td><td>2.77</td></tr> <tr><td></td><td>5.01</td><td>5.79</td><td>10.80</td></tr> </table>	LMI	4.40	3.63	8.03	HPI	0.61	2.16	2.77		5.01	5.79	10.80	<table border="1"> <tr><td>LMI</td><td>5.79</td><td>3.95</td><td>9.74</td></tr> <tr><td>HPI</td><td>0.54</td><td>2.28</td><td>2.82</td></tr> <tr><td></td><td>6.33</td><td>6.23</td><td>12.56</td></tr> </table>	LMI	5.79	3.95	9.74	HPI	0.54	2.28	2.82		6.33	6.23	12.56	<table border="1"> <tr><td>LMI</td><td>6.48</td><td>3.87</td><td>10.35</td></tr> <tr><td>HPI</td><td>0.50</td><td>1.87</td><td>2.37</td></tr> <tr><td></td><td>6.98</td><td>5.74</td><td>12.72</td></tr> </table>	LMI	6.48	3.87	10.35	HPI	0.50	1.87	2.37		6.98	5.74	12.72
LMI	4.40	3.63	8.03																																				
HPI	0.61	2.16	2.77																																				
	5.01	5.79	10.80																																				
LMI	5.79	3.95	9.74																																				
HPI	0.54	2.28	2.82																																				
	6.33	6.23	12.56																																				
LMI	6.48	3.87	10.35																																				
HPI	0.50	1.87	2.37																																				
	6.98	5.74	12.72																																				
B: HOH : Full time Spouse: Part time	<table border="1"> <tr><td>LMI</td><td>4.60</td><td>1.03</td><td>5.63</td></tr> <tr><td>HPI</td><td>0.61</td><td>2.78</td><td>3.39</td></tr> <tr><td></td><td>5.21</td><td>3.81</td><td>9.02</td></tr> </table>	LMI	4.60	1.03	5.63	HPI	0.61	2.78	3.39		5.21	3.81	9.02	<table border="1"> <tr><td>LMI</td><td>5.99</td><td>1.03</td><td>7.02</td></tr> <tr><td>HPI</td><td>0.54</td><td>3.03</td><td>3.57</td></tr> <tr><td></td><td>6.53</td><td>4.06</td><td>10.59</td></tr> </table>	LMI	5.99	1.03	7.02	HPI	0.54	3.03	3.57		6.53	4.06	10.59	<table border="1"> <tr><td>LMI</td><td>6.68</td><td>1.03</td><td>7.71</td></tr> <tr><td>HPI</td><td>0.50</td><td>2.40</td><td>2.90</td></tr> <tr><td></td><td>7.18</td><td>3.43</td><td>10.61</td></tr> </table>	LMI	6.68	1.03	7.71	HPI	0.50	2.40	2.90		7.18	3.43	10.61
LMI	4.60	1.03	5.63																																				
HPI	0.61	2.78	3.39																																				
	5.21	3.81	9.02																																				
LMI	5.99	1.03	7.02																																				
HPI	0.54	3.03	3.57																																				
	6.53	4.06	10.59																																				
LMI	6.68	1.03	7.71																																				
HPI	0.50	2.40	2.90																																				
	7.18	3.43	10.61																																				
C: HOH : Full time Spouse: No time	<table border="1"> <tr><td>LMI</td><td>4.60</td><td>0</td><td>4.60</td></tr> <tr><td>HPI</td><td>0.61</td><td>4.34</td><td>4.95</td></tr> <tr><td></td><td>5.21</td><td>4.34</td><td>9.55</td></tr> </table>	LMI	4.60	0	4.60	HPI	0.61	4.34	4.95		5.21	4.34	9.55	<table border="1"> <tr><td>LMI</td><td>5.99</td><td>0</td><td>5.99</td></tr> <tr><td>HPI</td><td>0.54</td><td>4.32</td><td>4.86</td></tr> <tr><td></td><td>6.53</td><td>4.32</td><td>10.85</td></tr> </table>	LMI	5.99	0	5.99	HPI	0.54	4.32	4.86		6.53	4.32	10.85	<table border="1"> <tr><td>LMI</td><td>6.68</td><td>0</td><td>6.68</td></tr> <tr><td>HPI</td><td>0.50</td><td>3.63</td><td>4.13</td></tr> <tr><td></td><td>7.18</td><td>3.63</td><td>10.81</td></tr> </table>	LMI	6.68	0	6.68	HPI	0.50	3.63	4.13		7.18	3.63	10.81
LMI	4.60	0	4.60																																				
HPI	0.61	4.34	4.95																																				
	5.21	4.34	9.55																																				
LMI	5.99	0	5.99																																				
HPI	0.54	4.32	4.86																																				
	6.53	4.32	10.85																																				
LMI	6.68	0	6.68																																				
HPI	0.50	3.63	4.13																																				
	7.18	3.63	10.81																																				

LMI : Yearly labour market income, incl. allowance to compensate for low income of spouse (0.2 mio. yen)

HPI: Yearly household production 'income'

Results

- Imputing income from unpaid production in households gives a more equal income distribution and higher income levels
- The significant differences in wage rates between men and women dominate the results
- A view on gender equality
Women are overburdened

Results

- Imputing income from unpaid production in households gives a different view on income distribution and income levels
- The significant differences in wage rates between men and women are dominating the results
- A view on gender equality

Women are overburdened

Observations and questions

1. You have chosen to use the opportunity cost method. Could you comment on your choice of method and the interpretation of your results alternative to the results if the replacement method had been used?
2. You here give a background for womens low labour market participation but do you give the cause? Do you know of similar studies in other countries that can shed some light on causality?
3. There is a well known problem with estimating time used on household production because work and leisure activities are mixed in many cases. How do you view the conceptual comparability of the imputed income from household work with the income from labour market work in the lighth of this?
4. Following your motivation for writing this paper could you elaborate on the way this kind of work is playing a part in the discussion in Japan on womens labour market participation.

Thank you!