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**CALCULATING AUSTRALIA'S GROSS
HOUSEHOLD PRODUCT: MEASURING
THE ECONOMIC VALUE OF THE
HOUSEHOLD ECONOMY 1970-2000**

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Calculating Australia's Gross Household Product: Measuring the Economic Value of the Household Economy 1970-2000

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ABSTRACT

Although the Australian Bureau of Statistics publish quarterly national accounts, these accounts provide measures only for the market component of the valuable economic activities of Australians. Just about all the unpaid economic activities undertaken by Australians in households are excluded from these quarterly national accounts. The stark omission of unpaid work in these official statistics has resulted in the invisibility of non-market work done in the household economy. The development of nation-wide time use surveys has enabled economic statisticians to put an economic value on the time spent in all forms of unpaid work, including unpaid household and caring activities.

This paper presents estimates for a thirty year period of Australia's Gross Household Product (GHP), the economic value added by unpaid labour and the households own capital. In 2000 GHP was estimated to be worth \$471 billion. Gross Market Product (GDP minus the imputed value of owner-occupied housing) was worth \$604 billion in 2000. The household economy was nearly 80 per cent of the size of the market economy in 2000. More importantly, the GHP is nearly half (44%) of total economic activity (Gross Economic Product). The household economy absorbs more labour time than the market economy. In 2000 Australians spent about 15 per cent more time on non-market activities than market ones. The failure of statistical organisations to provide official estimates of the household economy (GHP) means that almost half of the total valuable economic activities undertaken by Australians are ignored by economists and policy makers.

Official Statistics of Work - What is "work"?

Developed in the latter half of last century, the System of National Accounts (SNA) claim to provide comprehensive summary measures of a country's economic performance. Millions of dollars are now allocated to the collection of regular quarterly statistics of Gross Domestic Product (GDP) and of the numbers employed in this production. GDP and employment statistics are now considered by governments and economists as the major variables in economic and social policy analysis. Like most other national statistical agencies, the Australian Bureau of Statistics (ABS) now calculates and publishes continuous quarterly national accounts of the market economy.

With the exception of the imputed value of owner-occupied housing, these official accounts of work narrowly focus on the productive activities that are paid for through the market economy. These official statistics classify people as 'economically active' only in terms of their contribution to the market economy. These statistics ignore the

involvement of people in the household economy. A person is defined as 'not economically active' if engaged only in "household duties" - that is unpaid domestic work in the household economy. Nearly all the valuable but unpaid economic activities undertaken by Australian households for themselves and for others are excluded from the quarterly national accounts. Unpaid household work and volunteering are thus invisible and are often considered economically worthless.

The national accounts are still based on the antiquated view that unpaid work is somehow not 'work' - work is something that is done only in the monetised market sector. Consequently the unpaid work done by households tends to be ignored from our national aims and from assessments of our national economic performance (Goldschmidt-Clermont, 1982; Chadeau, 1985).

Unpaid Non-Market Work is "Women's Work"

Unpaid non-market work is predominately "women's work". It is often argued that the omission of non-market work from official statistics of work is due to the fact that unpaid work is perceived to be women's work. Throughout the world, most of the unpaid labour required to support household and subsistence production is supplied by women. Conversely, in spite of the increasing participation of women in paid jobs, most paid work is still done by men. Perhaps the most strongly advanced reason for measuring unpaid work is to make women's work more visible (Waring, 1988; Waring, 1996). On the whole, the national statistics of work continue to exclude the unpaid labour and economic output contributed by women and men through household production. At least two-thirds of the work and economic production of women, half of the world's adult population, is still omitted from official estimates of economic activity (Ironmonger, 2001).

Estimating the Volume & Value of Unpaid Non-Market Work - Time Use Surveys

The omission of official measures of unpaid non-market work from the national accounts has resulted in attempts by researchers and some official statistical organisations to estimate the value of unpaid economic activities. To highlight to economists and policy makers the full range of valuable (but unpaid) economic activities that Australian women and men undertake it is often necessary to put a value on this work (Ironmonger, 1997). The estimates of the economic value of unpaid work are predominately based on findings from surveys on how people spend their time (Vanek 1975). The development of nationwide time use survey methodology has allowed researchers to calculate estimates of the time spent in all forms of work, including unpaid household work and other volunteering and caring activities.

The cross-national time budget study in 12 countries conducted in the 1960s inspired many countries, like Australia, to conduct their own national time use studies (Szalai 1972). In the past forty years national statistical offices in many countries have followed the Szalai methodology collecting diary-based national surveys of time use from representative samples of households. The findings from such time use surveys expose the deficiency of present statistics of employment which substantially underestimate the volume of economic work undertaken. For example, time use surveys across 12 OECD countries covering various years from 1985 to 1992 found that the average time spent in paid work was about 24 hours per adult per week. In direct contrast, the average unpaid

work undertaken in the household economy was 26 hours per adult per week (Goldschmidt-Clermont and Pagnossin-Aligisakis, 1995; Ironmonger, 1995).

The main impetus for the Australian Bureau of Statistics (ABS) conducting time use surveys was to measure the amount of time Australians devote to unpaid household work and to volunteer and community activities. The first publicly sponsored time use survey was conducted by the Cities Commission in 1974 and was based on households in Albury/Wodonga and Melbourne. This largely regional study sampled 1,491 one-day diary days from respondents, aged between 18 and 69. The sample was distributed fairly evenly between Melbourne and Albury/Wodonga. The ABS conducted the first pilot time use survey in Sydney in 1987. The ABS has subsequently held two nation-wide time use surveys in 1992 and 1997. The methodology of the Australian time use surveys, like similar surveys conducted in recent years in many developed countries, involve selecting a representative sample of several thousand households and then obtaining a written diary from each household member of all activities undertaken during a 24-hour period. For both the 1992 and 1997 surveys, diaries were collected for a 48-hour period from all household members aged 15 years and over. In comparison, the 2000 and 2001 European time use surveys have collected diaries from all household members aged 10 years and over for one week day and one weekend day. The episodes of time use reported in the diaries are then coded according to standard detailed classifications of activities.

Projections of time use in Australia for 1970-2000

The average time Australian men and women spent on market work from 1970 to 2000 was obtained from published data from the ABS Labour Force Surveys¹. Time use data from 1974, 1987, 1992 and 1997 was used to estimate the average amount of time men and women in Australia spent on non-market work over the last 30 years. Non-market work included all unpaid household work (meal preparation, laundry, household chores and domestic tasks), shopping, child and adult care activities and voluntary and community work². The average time men and women spent on total work was projected using non-market work data from the four time use surveys and market work data from the corresponding Labour Force Surveys

The average hours per week men and women devoted to total economic activity over the period 1970 to 2000 were projected using the below regression equations.

¹ Estimates of the average time spent on market work for the period 1970 to 2000 were based on quarterly data from Australian Bureau of Statistics (2001) *Labour Force Hours Worked and Average Hours Worked, Australia* - Table 18: Labour Force - Hours Worked by Industry, Australia.

² Time use estimates of non market work used in this paper were based on average time spent on primary activities only. Although the ABS time use surveys collected data about the simultaneous use of time, limited research has been done on secondary or concurrent time use. Ironmonger (1994) showed that the majority of this secondary time is devoted to the care of children. If we were to take into account the time spent on simultaneous activities an additional 15 hpw for women and 5 hpw for men would need be added to the average hours per week spent on non-market work used in this paper (Ironmonger, 1994, see Table 5). Consequently, the projections of time spent on non market work used in this paper are significantly underestimated.

$$TotalWork_{Men} = 44.988 + .04779 * time$$

$$r^2 = .39$$

$$TotalWork_{Women} = 52.280 - .09624 * time$$

$$r^2 = .38$$

where $time = 1$ in 1966

The average time spent on non-market work by men and women could then be calculated by subtracting market work from total work. Weighted means of the time spent by men and women on total work, market and non-market work were calculated to obtain data for Australian adults. This model of work assumes that total work remains relatively constant and that there is 100 per cent trade-off between time spent on market and non-market work. This trade-off is illustrated clearly in *Figures 1* and *2* where when market work increases there is a corresponding decrease in non-market work and vice versa.

**Figure 1: Average Hours of Work
Australian Women, 1970-2000**
Hours per week

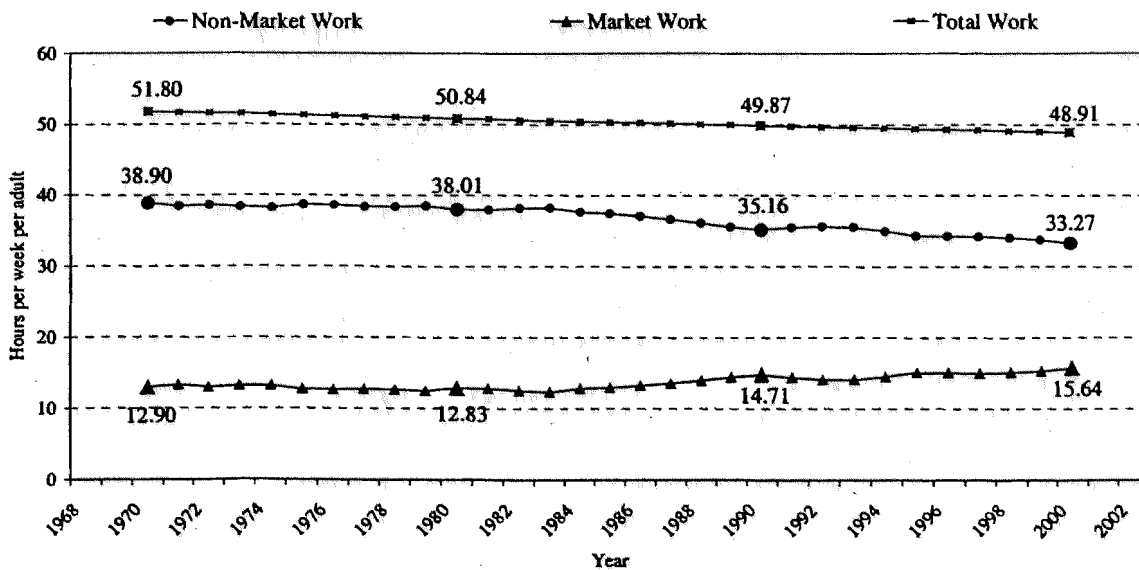
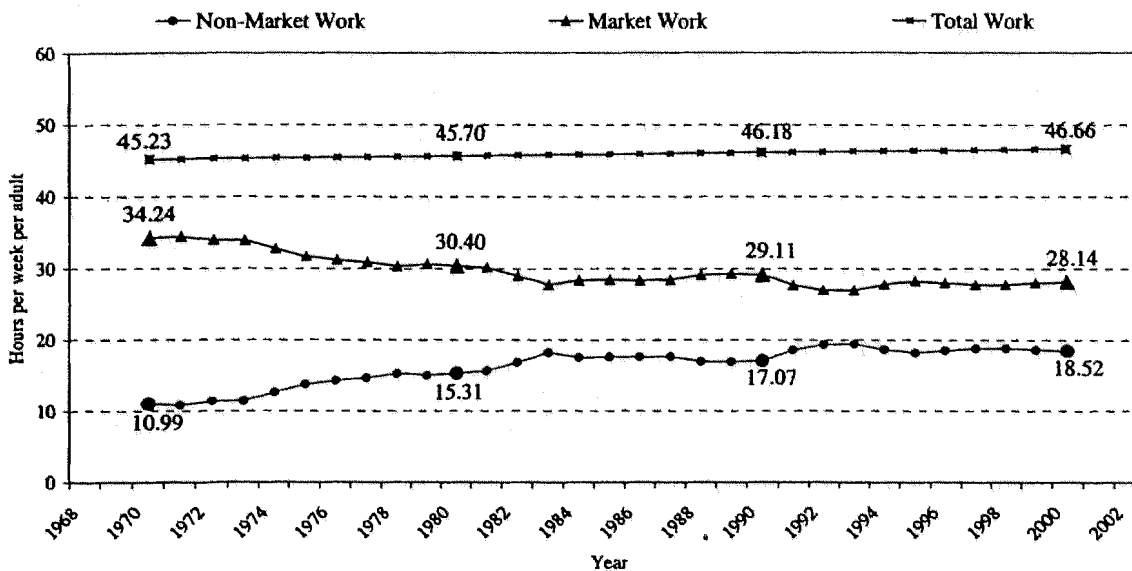


Figure 2: Average Hours of Work
 Australian Men, 1970-2000
 Hours per week



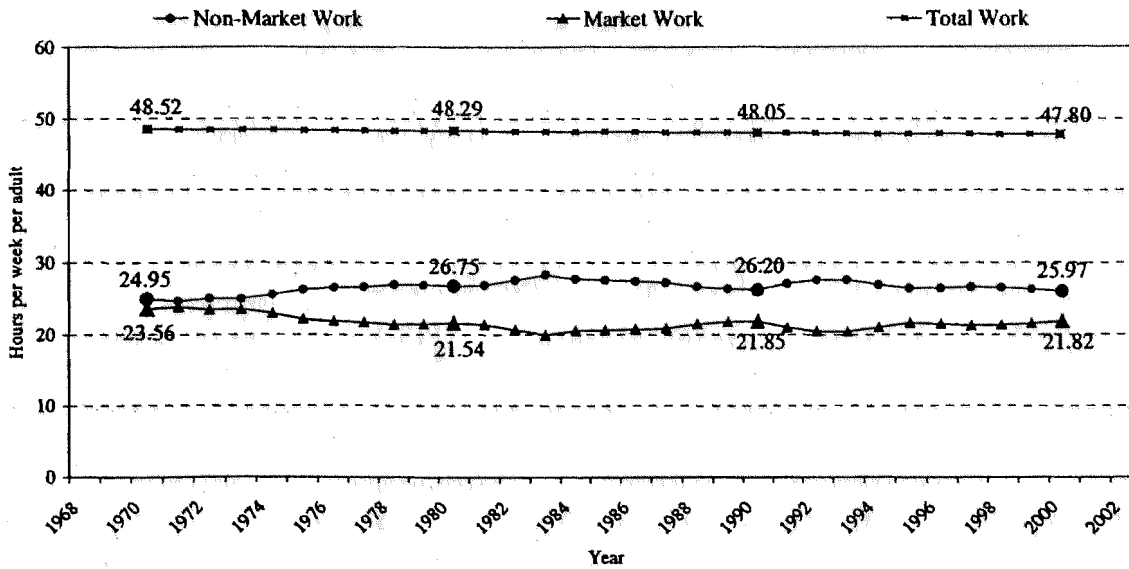
It is evident from *Figures 1 and 2*, that Australian women still do more overall work than men. It has been projected that in 2000, women spent over two hours (2.25) more per week working than men. Over the last thirty years men and women's overall work times seem to have converged. In 1970 on average women spent 51.80 hpw and men 45.23 hpw on work related activities. Thirty years later in 2000, women spent 48.91 hpw and men 46.66 hpw on work.

Although over the last thirty years the situation has improved, women still do substantially more non-market work than men (nearly 15 hours per week more in 2000 compared to over 27 hpw more in 1970).

Over the period 1970 to 2000 men's market work has come down by nearly 6 hpw - from 34.24 hours per week (hpw) in 1970 to a projected 28.14 hpw. Alternatively, Australian men's non-market work has increased steadily (10.99 hpw in 1970 to 18.52 hpw in 2000). Australian men in 2000 did about seven hours more non-market work per week than their 1970 counterparts. The total amount of time Australian men devote to all types of work has remained fairly constant over the 30 year period increasing by just under a hour and a half per week from 1970 to 2000.

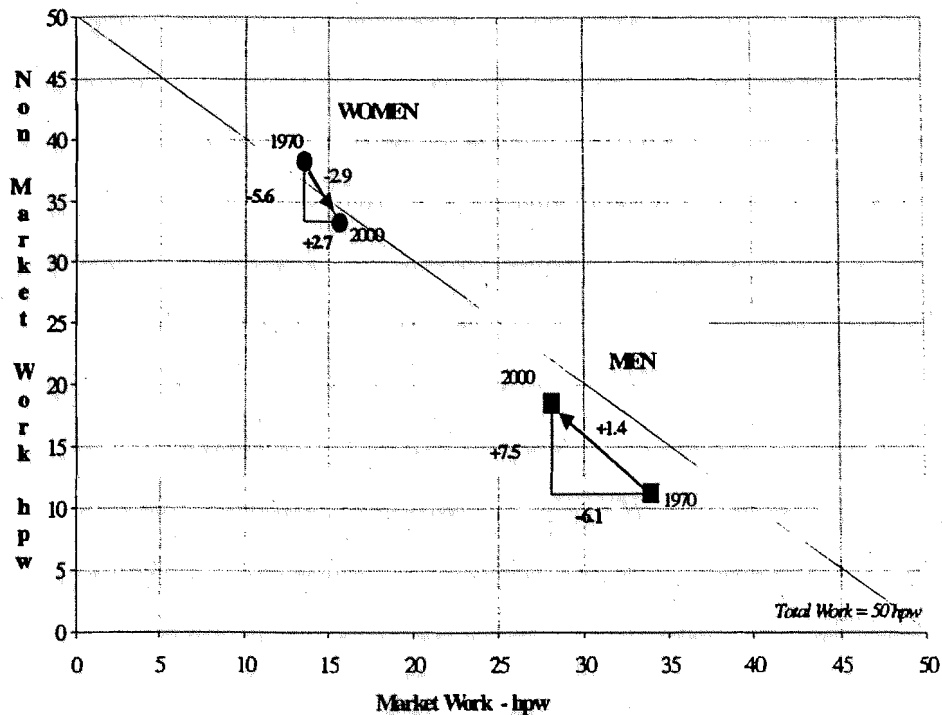
In contrast, since 1970 women's total workload seems to have fallen by just under three hours per week. The past thirty years has seen women continue to reduce the time they spend on non-market work (38.90 hpw in 1970 and 33.37 hpw in 2000). This in part can be attributable to the increase in time spent in market work (12.90 hpw in 1970 and 15.64 hpw in 2000). Although women have, on average, reduced the time they spend in non-market work by about five hours, their market work has only increased by just over two and a half hours.

**Figure 3: Average Hours of Work
Australian Adults, 1970-2000**
Hours per week



Overall, Australians on average were undertaking about one and half hours less per week of market work in 2000 than in 1970. Conversely adults in Australian households in 2000 were doing just over one hour per week more of non-market work than they did in 1970.

Figure 4: Changes in Market and Non-Market Work, Australia 1970-2000
Hours per week



The yearly averages were multiplied by the estimated Australian adult population in households to give aggregate macro measures of time spent per week on market and non-market work activities. The resident adult population (15+ year olds) in households was based on the latest ABS Estimated Resident Population figures for 1970 to 2000.³

The Volume of Non-Market Work Time

Australians devote more labour time to the non-market than they do to the market sector. In 2000, together adults in Australia spent per week 382 million hours on non-market work in the household, while only 321 millions was spent on market work.

Table 1 : Time Spent on Non-Market, Market and Total Work, Australia 1970-2000

	1970	1980	1990	2000
Estimated Adult Population in Households	8,815,365	10,606,795	12,852,623	14,712,073
Women	4,410,874	5,346,352	6,485,756	7,434,542
Men	4,404,491	5,260,481	6,366,893	7,277,533
		<i>Hours per week</i>		
Non-Market Work	24.95	26.75	26.20	25.97
Women	38.90	38.01	35.16	33.27
Men	10.99	15.31	17.07	18.52
Market Work	23.56	21.54	21.85	21.82
Women	12.90	12.83	14.71	15.64
Men	34.24	30.40	29.11	28.14
TOTAL WORK	48.52	48.29	48.05	47.80
Women	51.80	50.84	49.87	48.91
Men	45.23	45.70	46.18	46.66
		<i>Millions of hours per week (mhw)</i>		
Non-Market Work	219.98	283.71	336.74	382.11
Women	171.58	203.19	228.06	247.35
Men	48.40	80.53	108.68	134.77
Market Work	207.70	228.50	280.77	321.09
Women	56.90	68.60	95.41	116.29
Men	150.80	159.90	185.36	204.80
TOTAL WORK	427.68	512.21	617.51	703.20
Women	228.48	271.79	323.47	363.64
Men	199.20	240.43	294.03	339.57
		<i>Millions of hours per year (mhy)</i>		
Non-Market Work	11,439	14,753	17,510	19,870
Women	8,992	10,566	11,859	12,862
Men	2,517	4,187	5,651	7,008
Market Work	10,800	11,882	14,600	16,697
Women	2,959	3,567	4,961	6,047
Men	7,842	8,315	9,639	10,650
TOTAL WORK	22,239	26,635	32,110	36,567
Women	11,881	14,133	16,821	18,909
Men	10,358	12,502	15,290	17,657

³ Refer to Australian Bureau of Statistics (2000c) *Population By Age and Sex, Australian States and Territories* - Table 9, Estimated Resident Population by Single Year of Age, Australia, June estimates

As a result the picture of work provided by official statistics of employment is at odds with the findings from time use surveys about the amount of time people actually spend on unpaid non-market work. Time use surveys help researchers draw attention to the macroeconomic size of the unpaid work done in the household economy (Boulding, 1972; Morgan and Baerwaldt, 1971; Ironmonger, 1989).

In the late 1970s, Scott Burns predicted that "the hours of work done outside the money economy rival those done inside and will soon surpass them" (1977:8). According to our latest time use estimates this seems to be the case in Australia. In 2000, Australians were estimated to have spent nearly 20 billion hours in unpaid non-market industries such as meal preparation, laundry, household work, child and adult care and volunteering. For the same period Australians spent 3 billion less hours on market work (16.6 billion hours per year). This may be attributable to the burgeoning self service industry that is shifting work back from the market onto the household (Toffler, 1980). The continuing pressure to transfer paid labour costs from the market to the unpaid household sector has led to the expansion of self-service petrol stations, automatic bank tellers and internet shopping. Governments have also encouraged household-based care of the sick, disabled and elderly as an alternative to professional hospital and nursing home care.

Table 2: Changes in Work Activities, Australia 1970-2000
Millions of Hours per year (mhy)

	1970 mhy	1980 mhy	1990 mhy	2000 mhy
Non-Market Work	11,439	14,753	17,510	19,870
Women	8,992	10,566	11,859	12,862
Men	2,517	4,187	5,651	7,008
Market Work	10,800	11,882	14,600	16,697
Women	2,959	3,567	4,961	6,047
Men	7,842	8,315	9,639	10,650
TOTAL WORK	22,239	26,635	32,110	36,567
Women	11,881	14,133	16,821	18,909
Men	10,358	12,502	15,290	17,657
Non-Market Work time as per cent of Total Work	51.68	55.39	54.53	54.34
	Change 1970-1980	Change 1980-1990	Change 1990-2000	Change 1970-2000
	pa % change	pa % change	pa % change	pa % change
Non-Market Work	2.6	1.7	1.3	1.9
Women	1.7	1.2	0.8	1.2
Men	5.2	3.0	2.2	3.5
Market Work	1.0	2.1	1.4	1.5
Women	1.9	3.4	2.0	2.4
Men	0.6	1.5	1.0	1.0
TOTAL WORK	1.8	1.9	1.3	1.7
Women	1.8	1.8	1.2	1.6
Men	1.9	2.0	1.5	1.8

Over the last thirty years the average amount of time Australian adults spend on non-market work has increased while market work has decreased (see Figure 3). The majority of total work time still is still devoted to unpaid non-market activities. Long term changes in time use show that, as a proportion of total work, unpaid non-market work has increased. Total hours of unpaid work in Australia in 1970 were equivalent to 52 per cent of the hours spent in total work. Thirty years later unpaid work hours were equivalent to about 54 per cent of total work.

From 1970 to 2000 non-market work increased by 1.9 per cent per annum while market work grew by 1.5 per cent. The time Australian men spend on non-market work grew by 3.5 per cent per year. Australian women's paid market work time increased by 2.4 per cent per year over the last three decades. The biggest growth of women's market work time occurred between 1980 to 1990 where it grew at an annual rate of 3.4 per cent. The biggest change in men's unpaid non-market work time occurred in the 1970s where it increased by 5.2 per cent per annum.

The Dollar Value of Non-Market Work Time - Time is Money

The next question is what is all this non-market time worth to the total economy?

There are various ways to estimate the monetary value of the nearly 20 billion of hours that Australian women and men invest in the unpaid household sector annually.

Historically, some of the earliest estimates of the value of household services were calculated by simply multiplying the total number of households in rural and urban areas by the corresponding annual cost of hiring a domestic servant or by valuing the unpaid work of married women on average wage income for unmarried women and widows in various age groups (Hawrylyshyn 1976; Aslaksen and Koren 1996).

In more recent times, several methods have been formulated to put a monetary value of the output benefits from the time spent in unpaid work⁴. According to many researchers the most sensible method involves counting the specific outputs and pricing these outputs at market prices of comparable goods or services produced and sold in the market (Ironmonger, 2001). For instance the meals provided at home can be counted and valued at market prices for comparable restaurant or take-away meals. By deducting the costs of the purchased intermediate inputs of food, energy and other materials and the cost of the household capital used in the meal preparation the "value added" by the unpaid labour can then be calculated. The value of unpaid work obtained by this method gives a true reflection of the labour productivity of the household.

Valuing the time spent in an unpaid activity at a "comparable" market wage is an alternative way of calculating the value of unpaid work. Many have argued that this method is less satisfactory because it does not reflect the productivity or efficiency of household technology (Ironmonger, 2001). There are three methods of estimating the value of unpaid work in the household by using a wage per hour from the market economy. The wage selected is either (1) the "opportunity cost" of the time the persons involved in unpaid work could have obtained if they had spent the time in paid work; (2) the "specialist wage" that would be needed to pay a specialist from the market to do the activity (ie: cook or cleaner); or (3) the "generalist wage" that a general housekeeper would be paid to do the unpaid work.

⁴ "Output" and "process" benefits are two benefits that emerge from most human activities. The difference between these two types of benefits is best outlined by the following example. The activity of meal preparation has both output and process benefits. The positive output benefits are the meals themselves or the "transferable" outputs of the meal preparation which are given to the person eating the meals. The process benefits of meal preparation, which may be positive or negative, are the pleasure or displeasure the chef obtains from the time spent in meal preparation and cooking. These process benefits are non-transferable to another person.

Firstly, the "opportunity cost" means that the cost of an hour of household work is the forgone opportunity to earn in the market. This procedure for estimating unpaid work is usually rejected since many different values can be calculated depending on who performed the work. The second method uses the wages of specialist paid workers (ie: a cook, a nanny or a gardener) to value the same tasks undertaken by household members. Many have criticised this "specialist replacement cost" method because these specialist workers take less time to perform the same task. Finally, "generalist replacement cost" method of valuation uses the wage rate for a generalist worker or housekeeper. This method is often regarded as more appropriate since the range of skills of a housekeeper are similar to those of household members.

The Australian Bureau of Statistics used all three market wage methods to produce estimates of the value of unpaid household work and the value of volunteer and community work in 1992 and 1997 (ABS, 1994; ABS, 2000b). In addition, the ABS produced both a "gross" and "net" opportunity cost estimates of unpaid work. The net estimate used was the after tax wage rate less work-related expenses plus income by way of employer cost of superannuation and fringe benefits.

Estimates calculated for this paper are based on a gross opportunity cost wage rate. This wage rate was the same for women and men. A hourly wage rate series was constructed using estimates for 1992 (\$14.34) and 1997 (\$17.47) published in the two ABS reports on the value of unpaid work (ABS, 1994; ABS, 2000). In the absence of a continuous ABS wage rate series, the wage rate values for 1992 and 1997 were used as benchmarks in the calculation of wage rates for 1970 to 2000.

Available since 1985, the ABS national account estimates for "average compensation per employee" (ACPE) were used to calculate increases in wage rates. Prior to 1985, wage rates were calculated by dividing the value of "compensation of employees" in the ABS national accounts by the ABS estimates of millions of hours spent per year on market work.

Using the 1992 figure (\$14.34) as a base, the ACPE values were used to estimate wage rates from 1985 to 1991. The 1997 ABS wage rate figure (\$17.47) was the basis of projections for 1998 to 2000. Wage rates for the years between 1992 and 1997 were weighted estimates of the above 1992 and 1997 series.

Based on a rates of \$1.66, \$5.94, \$12.75 and \$19.26 per hour, this paper estimates that the labour time spent on unpaid non-market work was worth some \$19 billion, \$88 billion, \$223 billion and \$383 billion in 1970, 1980, 1990 and 2000 respectively. In contrast, the labour purchased by the market was worth somewhat less - \$18 billion in 1970, \$71 billion in 1980, \$186 billion and \$321 billion in 2000.

New Estimates for Gross Household Product

In addition to contributions of time, households often contribute the use of their capital equipment in undertaking unpaid work. Many estimates of Gross Household Product (GHP) have ignored the contribution of household capital. This omission has been rectified by including the contribution of both labour and capital in estimates of GHP (Ironmonger, 1996:48). To estimate GHP "we need first to estimate the contribution of each household's own unpaid labour and second to estimate the value of each household's own capital" (Ironmonger, 1996:48).

The additional cost for housing and land, capital equipment and vehicles used by households must therefore be added to the cost of labour to produce accurate and realistic estimates of GHP. The estimates of the value of owner-occupied housing for 1970 to 2000 were based on "dwellings owned by persons" data from the Gross Domestic Product Account⁵. The value of household equipment and vehicles over the thirty year period were based on the ABS national accounts data on household final consumption expenditure.⁶ The contribution of capital - the services obtained from the use of equipment, vehicles, land and dwellings owned and used by households - was estimated to be \$88 billion in 2000. Owner occupied housing and land was worth \$52 billion, while equipment and vehicles was worth about \$36 billion.

In 2000, GHP, in current prices, was worth \$471 billion. GHP was valued at \$279 billion in 1990, \$105 billion in 1980 and \$23 billion in 1970 (in current prices). GHP has grown faster than GMP from 1970 to 2000. Over the last three decades GHP has grown at a rate of 10.6 per annum. In contrast GMP grew at 10.1 per year.

⁵ Refer to Australian Bureau of Statistics (2000a) *National Income, Expenditure and Product, Australian National Accounts* - Table 37: Gross Domestic Product Account, Current Prices.

⁶ Refer to Australian Bureau of Statistics (2000a) *National Income, Expenditure and Product, Australian National Accounts* - Table 54: Household Final Consumption Expenditure, Current Prices, Original.

Table 3: Gross Household Product, Gross Market Product and Gross Economic Product, Australia, 1970-2000
Current prices (\$ billion)

	1970	1980	1990	2000
Estimated Adult Population in Households	8,815,365	10,606,795	12,852,623	14,712,073
Wage rate \$ per hour	\$1.66	\$5.94	\$12.75	\$19.26
Gross Household Product	23	105	279	471
Own labour:	19	88	223	383
Women	15	63	151	248
Men	4	25	72	135
Own capital:	4	17	55	88
Equipment and vehicles	2	9	24	36
Housing	2	9	32	52
Gross Market Product	34	128	362	604
Purchased labour:	18	71	186	321
Women	5	21	63	116
Men	13	49	123	205
Purchased capital:	16	58	176	283
All capital	17	66	207	334
Less Owner-Occupied housing	2	9	32	52
Gross Economic Product	57	233	640	1075
Gross Domestic Product	35	137	393	656
GHP as per cent of GMP	68%	82%	77%	78%
GHP as per cent of GEP	41%	45%	44%	44%
	Change 1970-1980	Change 1980-1990	Change 1990-2000	Change 1970-2000
	% p.a	% p.a	% p.a	% p.a
Estimated Adult Population in Households	1.9	1.9	1.4	1.7
Wage rate \$ per hour	13.6	7.9	4.2	8.5
Gross Household Product	16.3	10.2	5.4	10.6
Own labour:	16.4	9.8	5.5	10.5
Women	15.7	9.2	5.1	9.9
Men	19.2	11.2	6.5	12.2
Own capital:	15.8	12.2	4.7	10.8
Equipment and vehicles	13.4	10.4	4.4	9.3
Housing	19.0	13.8	5.0	12.5
Gross Market Product	14.2	10.9	5.3	10.1
Purchased labour:	14.7	10.2	5.6	10.1
Women	15.2	11.6	6.3	11.0
Men	14.3	9.6	5.3	9.6
Purchased capital:	13.7	11.8	4.9	10.1
All capital	14.3	12.1	4.9	10.3
Less Owner-Occupied housing	19.0	13.8	5.0	12.5
Gross Economic Product	15.1	10.6	5.3	10.3
Gross Domestic Product	14.5	11.1	5.2	10.2

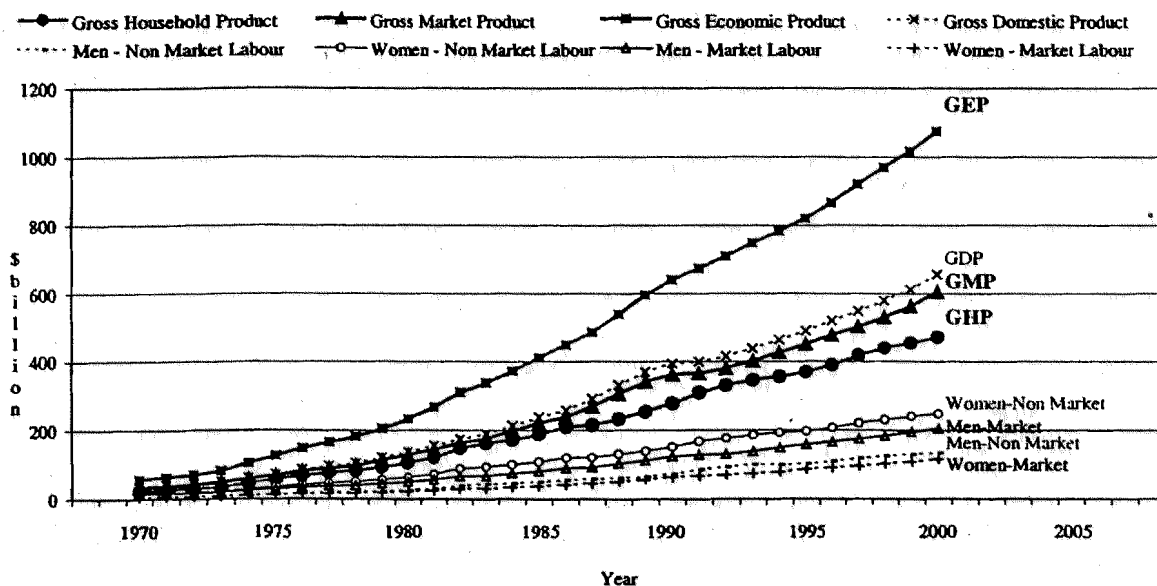
To obtain the purely "market" component of the economy, the \$52 billion for owner-occupied housing needs to be subtracted from Gross Domestic Product (GDP). GDP data for the last thirty years was based on ABS national accounts data⁷. By deducting the value of owner-occupied housing from GDP a new estimate of the value added in the

⁷ Refer to Australian Bureau of Statistics (2000a) *National Income, Expenditure and Product, Australian National Accounts - Table 37: Gross Domestic Product Account, Current Prices*

market sector, Gross Market Product (GMP), can be calculated. GMP in 2000 was worth about \$604 billion.

The value produced by the household economy, GHP, was over three quarters of the value added by market production, GMP. Gross Economic Product (GEP), which is the combined value added by the household and market economies, was estimated at \$1075 billion in 2000! Nearly half of all economic production comes from the household or non-market sector.

**Figure 5: Gross Household Product, Gross Market Product and Gross Economic Product
Australia 1970-2000**
Current Prices (\$ billions)



Conclusion

The major development in the recognition of unpaid work has been the estimation of the volume and value of this work through surveys of the uses of time. The unpaid work done in the household economy indeed rivals the paid work undertaken in the market economy. In 2000, the Australian household economy absorbed more labour than the market economy. Australian households also use a substantial amount of physical capital.

However, the estimates of GHP presented in this paper are only a small step in the measurement of the unpaid non-market component of our economic activities. Although regular time use surveys provide crucial information about household production, they omit the contribution from non-human capital (the land, dwellings and equipment owned by households). Information from time use surveys conducted on a regular basis and other surveys of non-human capital and household output are required to calculate official estimates of household economy.

The estimates calculated for this paper of the value of the household economy seek to highlight that the major sets of statistics currently used to measure work and valuable production are incomplete and thus very misleading. This means that public policy and business decisions are often based on economic statistics of work that are incomplete. At the moment debates about public issues such as gender equality, labour market policies, wages and income policies, for example, are statistically misguided. It is often

argued that the increase in women's participation in paid work leads to overstatement of the increase in measured economic activity. The increase in economic activity is overstated because official statistics of work fail to include the corresponding reduction in unpaid household work (Ironmonger, 2001). Under the current definition and measurement of "work" policy decisions easily can be misguided.

The household economy is best considered as a separate economy that produces goods and services that complement and compete with the market economy.

New measures of economic activity are required to produce a more accurate statistical picture of work in Australia. Although the market-based approach to GDP estimates persists, many researchers continue to expose the statistical deficiencies of this approach. So that economists and policy makers can have a picture of economic production that better reflects reality separate quarterly estimates of the value of household production, Gross Household Product (GHP) should be calculated (Ironmonger, 2001).

A more complete national accounting approach to measuring and modeling the unpaid work done for the household economy is urgently required. The national accounting approach covers all factors of household production - all intermediate inputs and all the principal outputs. Within this framework, information about inputs and outputs can be obtained from a wide range of surveys.

The world statistical agencies need to establish standardised methods of regularly estimating Gross Household Product (Ironmonger, 2001). GHP should be based on household input-output tables⁸ which contain data on outputs of household production (accommodation, meals, clean clothes and the care of children and adults) as well as data on inputs of unpaid labour and the use of household capital. Therefore regular surveys of time use and data on the outputs of household production are crucial to the calculation of GHP.

Amongst other things, the publication of regular and continuous national household accounts will enable greater research on the total economic activity done by Australians, especially the interaction between the household and market economies. Most importantly these quarterly national household accounts will help develop better informed social and economic debate and policy analysis on the total economic activities of both women and men.

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⁸ The input-output tables show the uses of labour, capital, energy and materials in each of the principal and ancillary industries of household economy. This input-output approach to modeling the market economy's industries has been applied to modeling the industries of the household economy (Ironmonger, 1989). Input-output tables have now been prepared for Australia, Canada, Finland, Norway and the United States.

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Appendix 1 : Time Australians Spent on Non-Market, Market and Total

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Adult Population in Households (a)	8,815,365	8,999,631	9,184,014	9,358,641	9,558,075	9,727,118	9,893,802	10,070,126	10,251,277	10,426,157	10,606,795	10,812,820	11,046,058	11,242,265	11,436,485
Women	4,410,874	4,504,232	4,597,589	4,688,359	4,791,449	4,882,184	4,970,860	5,063,458	5,159,000	5,250,928	5,346,352	5,452,536	5,568,230	5,666,906	5,765,263
Men	4,404,491	4,495,516	4,586,540	4,670,392	4,766,729	4,845,023	4,923,019	5,006,736	5,092,334	5,175,278	5,260,481	5,360,315	5,477,865	5,575,397	5,671,261
<i>Hours per week</i>															
Non-Market Work*	24.95	24.66	25.03	24.93	25.48	26.26	26.52	26.62	26.93	26.86	26.75	26.88	27.59	28.29	27.70
Women	38.90	38.47	38.64	38.37	38.24	38.66	38.61	38.45	38.43	38.52	38.01	37.94	38.18	38.27	37.69
Men	10.99	10.82	11.37	11.43	12.65	13.76	14.31	14.66	15.29	15.03	15.31	15.62	16.83	18.15	17.54
Market Work (b)	23.56	23.83	23.44	23.52	22.94	22.14	21.86	21.74	21.40	21.46	21.54	21.39	20.65	19.92	20.49
Women	12.90	13.23	12.96	13.14	13.17	12.66	12.61	12.68	12.60	12.42	12.83	12.80	12.46	12.28	12.76
Men	34.24	34.46	33.95	33.94	32.77	31.70	31.20	30.90	30.32	30.63	30.40	30.13	28.97	27.69	28.35
TOTAL WORK*	48.52	48.49	48.47	48.45	48.42	48.40	48.38	48.36	48.34	48.31	48.29	48.27	48.24	48.22	48.19
Women	51.80	51.70	51.61	51.51	51.41	51.32	51.22	51.13	51.03	50.93	50.84	50.74	50.64	50.55	50.45
Men	45.23	45.27	45.32	45.37	45.42	45.47	45.51	45.56	45.61	45.66	45.70	45.75	45.80	45.85	45.90
<i>Millions of hours per week (mhw)</i>															
Non-Market Work*	219.98	221.91	229.83	233.29	243.54	255.42	262.37	268.08	276.11	280.03	283.71	290.61	304.78	318.07	316.80
Women	171.58	173.28	177.67	179.90	183.25	188.74	191.92	194.67	198.26	202.25	203.19	206.86	212.60	216.85	217.31
Men	48.40	48.63	52.17	53.39	60.29	66.68	70.46	73.41	77.85	77.78	80.53	83.74	92.18	101.22	99.50
Market Work (b)	207.70	214.50	215.30	220.10	219.30	215.40	216.30	218.90	219.40	223.70	228.50	231.30	228.10	224.00	234.35
Women	56.90	59.60	59.60	61.60	63.10	61.80	62.70	64.20	65.00	65.20	68.60	69.80	69.40	69.60	73.56
Men	150.80	154.90	155.70	158.50	156.20	153.60	153.60	154.70	154.40	158.50	159.90	161.50	158.70	154.40	160.79
TOTAL WORK*	427.68	436.41	445.13	453.39	462.84	470.82	478.67	486.98	495.51	503.73	512.21	521.91	532.88	542.07	551.15
Women	228.48	232.88	237.27	241.50	246.35	250.54	254.62	258.87	263.26	267.45	271.79	276.66	282.00	286.45	290.87
Men	199.20	203.53	207.87	211.89	216.49	220.28	224.06	228.11	232.25	236.28	240.43	245.24	250.88	255.62	260.28
<i>Millions of hours per year (mhy)</i>															
Non-Market Work*	11,439	11,539	11,951	12,131	12,664	13,282	13,643	13,940	14,358	14,561	14,753	15,112	15,849	16,539	16,474
Women	8,992	9,011	9,239	9,355	9,529	9,815	9,980	10,123	10,310	10,517	10,566	10,757	11,055	11,276	11,300
Men	2,517	2,529	2,713	2,776	3,135	3,467	3,664	3,817	4,048	4,045	4,187	4,355	4,794	5,263	5,174
Market Work (b)	10,800	11,154	11,196	11,445	11,404	11,201	11,248	11,383	11,409	11,632	11,882	12,028	11,861	11,648	12,186
Women	2,959	3,099	3,099	3,203	3,281	3,214	3,260	3,338	3,380	3,390	3,567	3,630	3,609	3,619	3,825
Men	7,842	8,055	8,096	8,242	8,122	7,987	7,987	8,044	8,029	8,242	8,315	8,398	8,252	8,029	8,361
TOTAL WORK*	22,239	22,693	23,147	23,576	24,067	24,483	24,891	25,323	25,767	26,194	26,635	27,139	27,710	28,187	28,660
Women	11,881	12,110	12,338	12,558	12,810	13,028	13,240	13,461	13,690	13,907	14,133	14,387	14,664	14,895	15,125
Men	10,358	10,584	10,809	11,018	11,258	11,455	11,651	11,862	12,077	12,287	12,502	12,753	13,046	13,292	13,535

Source:

*Households Research Unit, Department of Economics, University of Melbourne

(a) Australian Bureau of Statistics (2000c) Population By Age and Sex, Australian States and Territories - Table 9, Estimated Resident Population by Single Year of Age, Australia.

(b) Australian Bureau of Statistics (2001) Labour Force Hours Worked and Average Hours Worked, Australia - Table 18: Labour Force - Hours Worked by Industry, Australia.

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Adult Population(a)	11,648,136	11,895,395	12,144,236	12,392,018	12,639,571	12,852,623	13,034,520	13,208,160	13,354,202	13,513,660	13,696,104	13,904,447	14,102,604	14,301,500	14,500,787	14,712,073
Women	5,871,005	5,993,289	6,122,537	6,250,220	6,376,647	6,485,756	6,582,886	6,673,648	6,750,612	6,833,652	6,927,447	7,036,432	7,136,104	7,233,013	7,330,671	7,434,542
Men	5,777,173	5,902,155	6,021,738	6,141,831	6,262,954	6,366,893	6,451,646	6,534,517	6,603,586	6,679,996	6,768,642	6,867,989	6,966,477	7,068,473	7,170,110	7,277,533
<i>Hours per week</i>																
Non-Market Work*	27.59	27.43	27.24	26.63	26.31	26.20	27.08	27.56	27.57	26.93	26.35	26.48	26.61	26.52	26.28	25.97
Women	37.47	37.07	36.69	36.14	35.58	35.16	35.45	35.63	35.57	35.04	34.34	34.26	34.26	34.06	33.78	33.27
Men	17.55	17.65	17.63	16.96	16.88	17.07	18.54	19.32	19.39	18.63	18.18	18.50	18.77	18.82	18.60	18.52
Market Work (b)	20.58	20.71	20.88	21.46	21.75	21.85	20.94	20.44	20.41	21.02	21.57	21.42	21.27	21.32	21.55	21.82
Women	12.88	13.19	13.48	13.93	14.39	14.71	14.33	14.05	14.02	14.45	15.05	15.04	14.94	15.05	15.23	15.64
Men	28.40	28.34	28.41	29.12	29.25	29.11	27.69	26.96	26.93	27.74	28.24	27.97	27.74	27.75	28.01	28.14
TOTAL WORK*	48.17	48.14	48.12	48.09	48.07	48.05	48.02	48.00	47.97	47.95	47.92	47.90	47.87	47.85	47.82	47.80
Women	50.36	50.26	50.16	50.07	49.97	49.87	49.78	49.68	49.59	49.49	49.39	49.30	49.20	49.10	49.01	48.91
Men	45.94	45.99	46.04	46.09	46.13	46.18	46.23	46.28	46.33	46.37	46.42	46.47	46.52	46.56	46.61	46.66
<i>Millions of hours per week (mhw)</i>																
Non-Market Work*	321.37	326.32	330.77	330.03	332.61	336.74	352.96	364.01	368.14	363.94	360.93	368.13	375.26	379.34	381.02	382.11
Women	220.00	222.15	224.62	225.85	226.87	228.06	233.37	237.78	240.09	239.47	237.90	241.08	244.47	246.32	247.62	247.35
Men	101.37	104.17	106.16	104.18	105.73	108.68	119.59	126.23	128.05	124.46	123.03	127.05	130.79	133.02	133.39	134.77
Market Work (b)	239.69	246.34	253.58	265.96	274.97	280.77	272.98	269.95	272.50	284.03	295.44	297.89	299.89	304.97	312.46	321.09
Women	75.64	79.07	82.51	87.08	91.77	95.41	94.31	93.78	94.64	98.72	104.27	105.79	106.63	108.85	111.64	116.29
Men	164.05	167.27	171.07	178.88	183.20	185.36	178.66	176.17	177.86	185.31	191.17	192.09	193.27	196.12	200.82	204.80
TOTAL WORK*	561.06	572.66	584.36	595.98	607.58	617.51	625.94	633.96	640.65	647.97	656.37	666.02	675.16	684.31	693.48	703.20
Women	295.64	301.22	307.13	312.93	318.64	323.47	327.68	331.56	334.73	338.19	342.17	346.87	351.10	355.17	359.26	363.64
Men	265.42	271.44	277.23	283.05	288.94	294.03	298.26	302.40	305.91	309.77	314.21	319.15	324.05	329.14	334.21	339.57
<i>Millions of hours per year (mhy)</i>																
Non-Market Work*	16,711	16,969	17,200	17,161	17,296	17,510	18,354	18,929	19,143	18,925	18,768	19,143	19,514	19,726	19,813	19,870
Women	11,440	11,552	11,680	11,744	11,797	11,859	12,135	12,364	12,485	12,453	12,371	12,536	12,713	12,809	12,876	12,862
Men	5,271	5,417	5,520	5,417	5,498	5,651	6,219	6,564	6,659	6,472	6,398	6,607	6,801	6,917	6,936	7,008
Market Work (b)	12,464	12,810	13,186	13,830	14,299	14,600	14,195	14,037	14,170	14,769	15,363	15,490	15,594	15,858	16,248	16,697
Women	3,933	4,112	4,290	4,528	4,772	4,961	4,904	4,877	4,922	5,133	5,422	5,501	5,545	5,660	5,805	6,047
Men	8,530	8,698	8,896	9,302	9,526	9,639	9,291	9,161	9,249	9,636	9,941	9,989	10,050	10,198	10,443	10,650
TOTAL WORK*	29,175	29,778	30,386	30,991	31,594	32,110	32,549	32,966	33,314	33,694	34,131	34,633	35,108	35,584	36,061	36,567
Women	15,373	15,663	15,971	16,272	16,570	16,821	17,040	17,241	17,406	17,586	17,793	18,037	18,257	18,469	18,682	18,909
Men	13,802	14,115	14,416	14,719	15,025	15,290	15,509	15,725	15,907	16,108	16,339	16,596	16,851	17,115	17,379	17,657

Source:

*Households Research Unit, Department of Economics, University of Melbourne

(a) Australian Bureau of Statistics (2000c) Population By Age and Sex, Australian States and Territories - Table 9, Estimated Resident Population by Single Year of Age, Australia.

(b) Australian Bureau of Statistics (2001) Labour Force Hours Worked and Average Hours Worked, Australia - Table 18: Labour Force - Hours Worked by Industry, Australia.

Appendix 2: Gross Household Product, Gross Market Product and Gross Economic Product, Australia, 1970-2000

Current prices (\$billion)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984
Adult population in Households - Millions (a)	8.82	9.00	9.18	9.36	9.56	9.73	9.89	10.07	10.25	10.43	10.61	10.81	11.05	11.24	11.44
Wage rate \$ per hour (b)	1.66	1.84	2.02	2.31	2.99	3.65	4.20	4.55	4.90	5.28	5.94	6.70	7.89	8.29	8.85
Gross Household Product*	23	26	29	34	45	57	68	75	84	92	105	121	148	162	173
Own labour:*	19	21	24	28	38	48	57	63	70	77	88	101	125	137	146
Women	15	17	19	22	28	36	42	46	51	56	63	72	87	93	100
Men	4	5	5	6	9	13	15	17	20	21	25	29	38	44	46
Own capital:*	4	5	5	6	7	9	10	12	13	15	17	20	23	25	27
Equipment and vehicles (c)	2	3	3	4	4	5	6	6	7	8	9	10	11	11	13
Owner-Occupied Housing (b)	2	2	2	2	3	4	4	5	6	8	9	10	12	13	14
Gross Market Product*	34	38	41	49	59	69	81	90	99	114	128	145	162	175	200
Purchased labour:(d)	18	21	23	26	34	41	47	52	56	61	71	81	94	97	108
Women	5	6	6	7	10	12	14	15	17	18	21	24	28	30	34
Men	13	15	16	19	24	29	34	37	39	44	49	56	65	67	74
Purchased capital:*	16	17	19	22	24	28	34	38	43	52	58	65	69	79	92
All capital	17	19	21	25	27	32	38	43	49	60	66	75	80	92	106
Less Owner-Occupied housing (b)	2	2	2	2	3	4	4	5	6	8	9	10	12	13	14
Gross Economic Product*	57	63	71	83	104	126	149	165	182	206	233	267	310	337	372
Gross Domestic Product (b)	35	39	43	51	61	73	85	95	105	121	137	156	174	189	214
GHP as per cent of GMP	68%	69%	71%	70%	77%	83%	83%	84%	85%	81%	82%	84%	91%	92%	87%
GHP as per cent of GEP	41%	41%	41%	41%	44%	45%	45%	46%	46%	45%	45%	46%	48%	48%	46%

Source:

* Households Research Unit, Department of Economics, University of Melbourne

(a) Australian Bureau of Statistics (2000c) Population By Age and Sex, Australian States and Territories - Table 9, Estimated Resident Population by Single Year of Age, Australia.

(b) Australian Bureau of Statistics (2000a) National Income, Expenditure and Product, Australian National Accounts - Table 37: Gross Domestic Product Account, Current Prices.

(c) Australian Bureau of Statistics (2000a) National Income, Expenditure and Product, Australian National Accounts - Table 54: Household Final Consumption Expenditure, Current Prices.

(d) Australian Bureau of Statistics (2001) Labour Force Hours Worked and Average Hours Worked, Australia - Table 18: Labour Force - Hours Worked by Industry, Australia.

Current prices (\$billion)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
Adult population in Households - Millions (a)	11.65	11.90	12.14	12.39	12.64	12.85	13.03	13.21	13.35	13.51	13.70	13.90	14.10	14.30	14.50	14.71
Wage rate \$ per hour (b)	9.41	10.35	10.40	11.04	11.80	12.75	13.78	14.34	14.90	15.47	16.00	16.57	17.47	18.11	18.63	19.26
Gross Household Product*	188	210	216	233	254	279	309	330	346	356	369	390	418	440	454	471
Own labour:*	157	176	179	190	204	223	253	271	285	293	300	317	341	357	369	383
Women	108	120	121	130	139	151	167	177	186	193	198	208	222	232	240	248
Men	50	56	57	60	65	72	86	94	99	100	102	109	119	125	129	135
Own capital:*	31	34	37	44	50	55	56	59	61	64	69	72	78	83	85	88
Equipment and vehicles (c)	15	16	16	19	22	24	23	24	25	27	30	30	32	34	35	36
Owner-Occupied Housing (b)	16	19	21	25	29	32	33	34	35	36	39	42	45	48	50	52
Gross Market Product*	222	239	270	306	341	362	366	381	402	426	451	478	503	531	563	604
Purchased labour:(d)	117	133	137	153	169	186	196	201	211	228	246	257	272	287	303	321
Women	37	43	45	50	56	63	68	70	73	79	87	91	97	103	108	116
Men	80	90	93	103	112	123	128	131	138	149	159	166	176	185	194	205
Purchased capital:*	104	107	133	154	172	176	170	179	191	198	206	221	230	244	260	283
All capital	120	125	154	178	201	207	203	214	226	234	245	263	276	292	310	334
Less Owner-Occupied housing (b)	16	19	21	25	29	32	33	34	35	36	39	42	45	48	50	52
Gross Economic Product*	410	449	486	539	596	640	675	711	748	783	821	868	921	971	1016	1075
Gross Dometic Product (b)	238	258	291	331	370	393	399	415	437	463	491	520	548	579	612	656
GHP as per cent of GMP	85%	88%	80%	76%	75%	77%	85%	87%	86%	84%	82%	82%	83%	83%	81%	78%
GHP as per cent of GEP	46%	47%	44%	43%	43%	44%	46%	46%	46%	46%	45%	45%	45%	45%	45%	44%

Source:

* Households Research Unit, Department of Economics, University of Melbourne

(a) Australian Bureau of Statistics (2000c) Population By Age and Sex, Australian States and Territories - Table 9, Estimated Resident Population by Single Year of Age, Australia.

(b) Australian Bureau of Statistics (2000a) National Income, Expenditure and Product, Australian National Accounts - Table 37: Gross Domestic Product Account, Current Prices.

(c) Australian Bureau of Statistics (2000a) National Income, Expenditure and Product, Australian National Accounts - Table 54: Household Final Consumption Expenditure, Current Prices, Original.

(d) Australian Bureau of Statistics (2001) Labour Force Hours Worked and Average Hours Worked, Australia - Table 18: Labour Force - Hours Worked by Industry, Australia.

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