

# **Home Production and Ageing Population's Impacts on Australian Public Finance and Economy Growth**

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## **Abstract**

This discussion paper is a direct response to the recent Tax Reform Discussion Paper published by the Department of Treasury in March 2015. The aim is to present a formal analysis on two subjects, which are closely intertwined with the economy and the Australian tax system. The first part concentrates on the topic of home production, where I attempt to best provide a thorough overview of this topic, which includes the background of home production along with its effect on the Australian economy and finally any possible remedies that the government may employ to better deal with its problems. The second part of the paper probes at saving and labour force participation rate in Australia, specifically, based on the government's projection of increasing ageing population in the next 40 years, this paper hopes to disseminate across the need to change its policies in the areas of savings tax and minimum wage law to better encourage young people to save more money as well as participate in the labour force.

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# Section 1: Home Production

## 1. Introduction and Literature Review

In this paper, I attempt to approach the discussion of tax reform from a different perspective. More specifically, I would like to take this opportunity to offer my view primarily on the problem of home production in the economy and its relation to public finance. While the phenomenon of home production and its relation to labour economics and macroeconomics are not new, as they have already been widely explored in the academia. However, its impact on public finance and taxation are still in its infancy.

By definition, home productions are goods or services that are supplied and consumed in a non-market environment. These products normally possess the characteristics of being cheaper than the market price while still sharing similar quality. Because of this, home productions are often treated as similar substitutes for the store bought equivalents. Examples of such goods are vast with typical example like home cooking or homegrown vegetables, and services such as mowing the lawn, fixing a leaky tap and many more.

Based on the limited researches done on home production and public finance, it has already been established that due to reasons such as information asymmetry (Ramsey 1927) and its non-monetary or non-market trading characteristic (Bonke 1992), it is almost impossible for the government to tax individuals on everything, particularly on their leisure (such as watching TV or taking a walk) as well as goods and services that are produced at home. Because of this, home production are seen by many families or individuals as a very attractive alternative to satisfy their own consumption or utility, for it is an excellent way of saving money at the only cost of reducing time their own leisure time. This claim has been further supported by many econometric publications

on this matter, for example, it has been estimated that home productions in most western countries contribute to 40%-50% of GNP (Bonke 1992), or 30%-40% of GDP (OECD 2006). Based on these figures, it is fair to claim that home production contributes to a major portion of the total consumption and production in our society. However, it is also important to note that most of these studies so far have been focusing on the US or European economy (Walley & Zhao 2013). Therefore, it is rather difficult to speak confidently the magnitude of its impact in Australia.

But among a few researchers who have delved into this area have shown that by including the values of home production, drastic improvements on the measurements of income inequality (or poverty) and tax redistribution can be made, thereby providing the government with a much more accurate gauge of the true household financial or social status. For example, Walley & Zhao (2013) have established that if one is to modify the standard model in labour economics (where an individual's daily choice is only between working and taking leisure) into a new form where home production takes the place of leisure, then the welfare loss of an income tax will be significantly lower. In their paper, Walley & Zhao have investigated this modification in the case of U.S, where they discovered that the usual welfare lost with an average income tax rate of 30% (the average income tax rate in America) in the standard model will only induce a welfare loss of only one-eighth in the newly home-production model.

Inspired by the work of Walley & Zhao and few other economists who have worked in this field, this paper is an attempt to further investigate the nature of home production in the specific case of Australia. However, given the limited amount of time and money available that I have to devise a survey and then collect data, this paper shall be presented in theoretical and analytical format, where bulk of the

discussions will be investigated using economics theories and intuitions with minimal mathematics.

The paper shall be presented as follow: section 2 concentrates the economic and social cause of home production, even though in this case, home production should be explored primarily from the perspective of economics, but I believe given its complexity, it is almost impossible to ignore the social or psychological motivations behind it. Section 3 offers insights into the problems that may rise due to large-scale home production, this is then immediately followed with the examination of the current Australian economy in section 4, where it describes the current tax system or government policies that may lead to further unwanted home production. Section 5 is about possible remedies to the government in which it can deploy to discourage home production and promote higher market transactions. Section 6 and 7 switch to the discussion of ageing population along with the problem of national savings and labour force participation rate. Finally, section 8 is the conclusion.

As a final note, whilst I have spent a good number of years studying and writing economics paper at university. However, I am no professional economist, in fact I am currently still a Master student at Monash University, Melbourne. Thus, if it appears the contents in this paper are rather single-minded. That is because I have concentrated solely on the problem of home-production and ageing population, whilst completely ignoring the impacts that my analyses may have on other areas.

## 2. Economic and Social Implications of Home Production

As mentioned above, currently there exists almost no academic work in the case of Australia. However, one can certainly extract many of the theories from other published papers. For example, in the Olovsson (2014)'s work, he estimated that regardless the level of household income, as long as the cost of home production is

cheaper than the market equivalent, household will divert their consumptions to the cheaper alternative. While I do not follow this statement religiously (because one can also argue that as the income of an individual continues to rise, the opportunity cost of home production will also rise, after all, home production takes time away from leisure—a product that everybody enjoys), thus in this report, I will concentrate solely on the poor or low-income ones, where money is perhaps the biggest issue in a typical household.

To understand the cause of home production, I believe it is important to approach the phenomenon from two angles that are inseparable to human nature: the economic and the social implications. First, I will discuss the economic implications: The income that an individual earns acts much like a bound or floor that determines how much money one must earn before he will forgo some of their home productions and replace it with the market equivalents. In other words, it is the income elasticity of home production with a negative sign.

$$e_{p,I} = - \frac{\Delta P_h}{\Delta I} \frac{I}{P_h}$$

Where  $e_{p,I}$  is the income elasticity of home production,  $P_h$  is the home production quantity,  $I$  is the individual income and  $\Delta$  is the change in a particular parameter.

Thus the equation states, for every dollar of income change, the quantity of home production will change by a specific amount. Of course, in reality, a dollar change on income will produce a change in home production that is really negligible.

Nonetheless, the idea is still valid and we can examine this equation with a more dramatic income change. For example, suppose an individual who works full-time at the current minimum wage rate of roughly \$17,00<sup>1</sup>, then he will take home an annual income of roughly \$36,000. Based on his earning power, the individual may cringe at

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<sup>1</sup> Source: [www.fairwork.gov.au/about-us/policies.../minimum.../minimum-wages](http://www.fairwork.gov.au/about-us/policies.../minimum.../minimum-wages)

thought of paying \$8.00 for his daily sandwich at a local café, so instead he chooses to make his own at home with ingredients bought from a supermarket. But assuming, 6 months later, the individual is promoted and now is paid at a rate of \$20.00 an hour, which equates to \$41,600 a year. With the extra \$5,600, he will now perhaps prefer the store-bought sandwich and save the time to enjoy more leisure instead. So in the end, based on elasticity formula, for the households that earn little income, it is natural that home productions are a cheaper form of substitution.

Of course, the topic of home production is a rather complex issue, as Goldschmidt-Clermont (1990) have explained in her paper, often, home production is not only about saving money, there also exists the intangible reasons such as taste, love and passion, all of which are extremely hard to quantify into data for research and analyse. Furthermore, from a social perspective, it is also interesting to note that home production is by large considered a virtue; a tradition that has been carried forward from many centuries in the past. For in the olden days, particularly before the industrial revolution in the 19<sup>th</sup> century, being adept at home productions carries the benefits of not only saving money but also fulfills the stereotypical family, where the family male is a handyman who has the capability of repairing everything and the female is totally adept at smaller duties such as home cooking, sewing cloth. Therefore, the more one can accomplish at home, the more successful the individual is often considered to be.

### 3. General Problems with Home Productions in Economic Growth and Public Finance

However, as society evolves, so do humans, since the works of classical economists like Adam Smith and David Ricardo, economist have long advocated the benefits of a market-based economy where individuals specialises in one set of skills or fields and

then seek to freely trade their products or services on the market in exchange for others' expertise. This is done for the benefits of everyone and consequently the overall growth of the society itself. Based on this unshakable 'gospel', there immediately exist a number of significant problems with home productions, which will be discussed in some details below:

1. First is the direct involvement of tax avoidance, as government cannot accurately observe the type and the amount of goods that are produced at home, thus all home productions are in theory free from tax burdens. Consequently, this will lower government tax collection. Furthermore, from the laws of consumer theory and public finance, this problem is further amplified by any commodity tax that is levied unevenly on market goods will inevitably produce deadweight loss to the society as individuals substitute to the cheaper alternatives.
2. Secondly, from basic economic theories, it is safe to say that there exists some positive relationship between the number of low-income families and the aggregate quantities of home production in our society (the real problem is how strong is the relationship). But by definition, home-produced goods and services do not belong to the category of GDP or GNP. Consequently, this will lower the volumes of market trading and hence the value of annual GDP.
3. Following directly from the second point, it is also crucial to realise that home production can be detrimental to home economy if it is done on a large scale. From the national accounting identity:  $Y = C + I + G + NX$  where  $Y$  is GDP,  $C$  is household consumption,  $I$  is firm investments,  $G$  is government spending and  $NX$  is net trading. Home production will directly affect the annual quantity of consumption and thus lower the volume of aggregate demand and

ultimately leading to the possibility of business cycle according to Keynesian macroeconomic theory (where Keynes posits that the cause of the 1930s depression is the lack of spending or aggregate demand is weak).

4. Finally if we extend the problem to the international scale, where according to the fundamental lesson of David Ricardo, which states that international trading is beneficial to everyone (especially if countries follow the rules of comparative advantage). Yet, if families rely much of their living on home production, then this will undoubtedly violate the basic principle and in the extreme cases, will drive Australia back into a state of autarky.

While, I must admit, such extremity is unlikely going to happen the OECD countries. However, should the scale of home production escalates because of factors such as low income, unstable political or economic conditions, then at least in theory, the possibility of experiencing more recessions or turning the country back into autarky is certainly feasible. Or at least on a lighter scale, halt the progress of economic growth significantly. And to prove such extremity is not mere theory; this is rather common in the poor Asia and Africa countries, where they do not have a strong market-based economy due to various structural or political reasons. For example, in Nepal, a typical male is much more skilled than a typical westerner, where he can not only cook food, sew clothing but also grow agriculture or perform many other dexterous tasks. Thus, bulk of the services and goods are produced at home and families in the country are largely self-sufficient. Yet it is precisely this reason that the country is on average extremely poor with an average of only \$409.43 GDP per capita in 2013<sup>2</sup>, whereby not only does the government receives little tax but also the economic

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<sup>2</sup> Source: <http://www.tradingeconomics.com/nepal/gdp-per-capita>

growth is very slow. Because of this, I believe the government cannot ignore the economic effects of home productions.

#### 4. Current Problems in Australian Tax System that may encourage More Home Production

After careful studies of the treasury's tax reform discussion paper, I believe there are three possible concerns about the current Australia tax system that may induce individuals or families to resort to more home productions.

1. My first concern involves with the GST system, while by comparison with other forms of taxes; GST is considered to be a much more efficient, equal and simple (the three fundamental rules of a tax system) form of taxation. However, its' exemptions on goods and services that are considered as basic necessities, such as bread, rice and sugar unfortunately do encourage more home productions. For example, in the supermarket, most types of muffins or cakes are items that fall in the category of GST-taxable goods. However, most of the ingredients that go into the production of a muffin are tax-free (there is also the factor of labour charge, which will be discussed in the next paragraph). Because this, individual that bake their own cake or muffin at home with the store-bought ingredients is certainly an attractive alternative.
2. My second concern deals with the minimum wage law in Australia, the current minimum wage in Australia is close to \$17.00, about twice as high as the US equivalent. While there exists numerous papers that have already published about the positive and adverse effects of minimum wage on problems like unemployment, equality, efficiency. My concern is about tax evasion and avoidance.

Faced with a higher wage cost or marginal cost, businesses typically have two options about hiring an additional worker: either legally or illegally. As I analyse below, both will have strong adverse effect on Australia's growth and public finance. While, cheating the tax system by hiring illegal workers and paying them low wages will usually happen with small businesses or jobs that are categorised as low skilled that requires little formal education, for example, waitress, cleaner or store-clerk. But in the eyes of a small business owner who puts greater emphasis on profits will find illegal citizens as a much more attractive alternative to local Australians. For these workers who are eager to work in order to make a living will not only provide equal or greater quality of services to the business but also at a much lower cost. Therefore, this will not only lead to the problem of having higher unemployment rate, particularly in young adults, but it is further amplified by the phenomenon of tax evasion, where illegal workers will never pay a single cent of tax and hence this level of underground activity will never be recorded as part of GDP and consequently offers no observable contributions to the country's growth. On the other hand, suppose that businesses do comply with the minimum tax law; then this will inevitably lead to higher marginal cost and total cost. To recuperate the higher expense, businesses will be forced to charge higher price, which are ultimately born by the consumers. Furthermore, as minimum wage law is strongly correlated with the characteristics of low-skill jobs, which are normally present in businesses such as local restaurant, café, grocers and many other similar kinds, where these goods and services can once again be easily substituted for household productions at home if the market prices ever become too costly.

In a slightly different approach, apart from the exceptions of Woolworth, Coles and a few other mega companies, I believe it is fair to categorise these type of businesses as price takers, where their minimal market power or lack of technology and economies of scale will never grant them the power to set their own prices. In fact, in order to compete with their mega-equivalents like Coles, they will have to lower prices in order to attract more customers. So in other words, businesses will not be able to offset their higher production cost that they have occurred in hiring workers at minimum wage by setting higher prices. Therefore, this will once again lead to either higher unemployment or illegal employment much like the situation above, and further encourage home production for unemployed individuals to offset the lack of income.

3. The final culprit is the high marginal tax rate itself in Australia, it has been long established that higher marginal tax rate on labour will induce workers to work less, and instead resort to the tax-free home productions as an alternatives. This claim was also supported by the treasury's discussion paper<sup>3</sup>, where it states that although the individual income tax does not alter his workforce participation decision, but it will induce his/her spouse or low-income workers to keep out of the workforce.

## 5. Possible Remedies

Given these problems caused by home productions, it is quite difficult to devise a solution that can satisfy all three requirements of a tax system. But from the works of Olovsson (2014), where he has showed that unlike home-produced goods, the home-produced services like mowing a lawn or fixing a leaky tap is actually an imperfect substitute to the market equivalent. In other words, even though repairing a broken

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<sup>3</sup> Source: *Re: Think*: <http://bettertax.gov.au/publications/discussion-paper/> page 35

plumbing system is certainly within the reach of a common household male, but it is by no means guaranteed that the quality of his work can be matched by a professional plumber, who has not only received proper training but also possesses more appropriate tools. Because of this, one way for a government to discourage home production is to impose a strictly positive tax on home capitals. While at the same time, levying lower taxes on market services and industrial capital to encourage more market activities (in the US, the tax rate on market services is nearly zero). Together, these two measures will lead to a higher accounting cost and economic cost for home productions thus consequently induce families to participate more in market trading. Following the advice of Olovsson above, I would like to put forth another proposition to combat home production goods. Although the complete elimination of home production is virtually impossible, but I do believe it is important to observe that most non-durable consumption and some durable goods like furniture typically involve lower-skilled jobs and thus can be produced by almost everyone. While, conversely, the production of most durable goods, such as mobile phones, cars, and refrigerators will involve greater skills, education and more importantly the combined efforts of many other workers in the same company to put together a final product. Because of this, it is most definitely outside the capability of a common man, in other words, home production substitute of these durable goods is not possible.

Given these distinctions between low-skill and high-skill services and goods, government can perhaps seek to tax the low-skill jobs goods and services less, as suggested by Olovsson, but recuperate the revenue lost by levying higher tax on high technologies, where consumers have no alternatives but to purchase them on a market.

The final method that the government can employ to reduce home production is to reduce the marginal tax rate on labour income, as the benefit of earning a higher after-tax income will immediately urge more people to join the workforce. The higher disposable income will apply great pressure on the opportunity cost of home production for many individuals and families. In addition, as more people participate in the labour force, this also comes with the benefit of taking more time away from individuals, where they can no longer stay at home to enjoy more leisure or engage in more home productions.

## Section 2: Ageing Population

### 6. Minimum Wage and Labour Supply

Following the discussion of home production, I would now like to extend the analysis to the topic of labour supply in Australia. Here I am making particular reference to the treasury's recent intergenerational report about the significant increase in population of elders in the next 40 years. Because of this unbalance between the percentage of future old and young, there will no doubt exist a significant shortage in the labour force participation population in the near future. Giving rise to a dramatic reduction in government's tax revenue while at the same time increasing government spending to look after the elders. Given this dire warning, perhaps more than ever, Australia will need more young workers to enter the workforce or acquire further education and training. But the current high minimum wage cost is certainly a major blockade, where according to classical economics, the long-run growth of a nation is based on its employment rate (along with technology, capitals), which in turn, depends on factors such as minimum wage rate.

### 7. Tax on Savings

Continuing on from the previous paragraph, I would now like to present my arguments on the topic of savings tax. Based on elementary macroeconomic theory and accounting identity, national savings  $S$  is comprised of private savings  $S_{private}$  and Public Savings  $S_{public}$ , or  $S = S_{private} + S_{public}$ .

Now, according to classical theories and the work by economist Robert Solow (1956), in a closed economy, a major factor to a country's long-term growth depends on the nation's ability to save, for more savings will induce more investments and consequently higher GDP. Furthermore, based on the works of overlapping

generation by prominent economist Paul Samuelson (1958), during any period of the economy, it is only natural for young people to save and elders to dis-save, as they are drawing closer to the end of their life, apart from leaving behind bequests for their younger generations, it is only rational for them to consume everything; superannuation, savings, personal investments and many more. With the drastic change to the Australian demographic over the next 40 years, coupled with the increasing possibility of government borrowing to fund their future expenditure on the elders, this will automatically create a large deficit in both private savings and public savings.

While some may argue that in an open economy, domestic savings is not the sole contributor to higher investment because of foreign investments. Indeed, this point was also raised in the treasury discussion paper<sup>4</sup>. However, I think it is important to note that the problem of ageing population is not just happening in Australia. Due to improved medical treatments, other OECD countries like the US are also experiencing similar problem (PerryMan Report & Texas Letter, 2014). Thus, it too, will be competing for foreign investments into the US to promote higher growth in the future.

So to encourage more savings from the young and less withdraw from the elders, there are essentially two methods that the government can adopt, first is to boost the real interest rate on savings, thereby increasing the opportunity cost of spending for an individual. Secondly it can lower the tax on savings to create higher incentives for people to save. In the end, regardless of the method(s) the government employ, it will ensure that Australia remains as an attractive place for foreigners to invest while simultaneously preventing the locals from investing into other countries.

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<sup>4</sup> Source: *Re: Think*: <http://bettertax.gov.au/publications/discussion-paper/> page 57

## 8. Conclusion

This paper can be divided into two sections, where section 1 offers a thorough analysis of home production along with its negative impact on the economy and any possible remedies. Broadly speaking, the primary inducement of home production for an individual or family comes mainly from their financial situation. While government policies such as minimum wage law or the tax rate on income are certainly major influences, but in the end, it is all about the pay-package that people bring home and consequently how much can people afford to spend to engage in market-based transactions. For example, should the individual who finds that home cooking is a cheaper substitute for restaurant equivalent (ignoring his taste and other factors), and then undoubtedly, he will take up such the more economical endeavor. While home production is beneficial to an individual, but it is rather detrimental to the whole nation, because of the non-market trading and non-monetary nature, it is one of the major culprits for driving down GDP and government tax revenue. Based on the current statistical estimation, home production in western countries on average contribute to 30%-40% of annual GDP, this alarming conclusion should serve as a warning that the government should actively support more market trading by offering families less incentives to resort to home production. Such as the idea of proposing zero tax on market service and industrial capitals while actively impose a positive tax on home capitals like oven.

Section 2 revolves around the future increase in ageing population, where the problem was forecasted and published by the Australian Treasury in the 2015 Intergenerational Report. Following the report, this paper seeks to present two consequent problems that can result from the ageing population. Specifically, it first describes the future shortage of workers in the Australian labour force, and hence the need to modify the

minimum wage law to urge more young people to enter the workforce. Secondly, this paper also provides an analysis on the financial problem that ageing population will bring to this country. Apart from the decrease in private savings that is resulted from more elders withdrawing their savings to enjoy their retirement, there will also exist extra expenditures on the government in order to look after the elders. Therefore not only creating pressure on its budget, but also in the severe cases, the government may even resort to either raise tax or borrow money from private market in order to fund this extra spending. Both of which can bring heavy toll on this countries' future growth. Thus, in order to prevent this from becoming true and to promote greater savings, this author believes in lowering saving tax and boosting higher real interest rate to better encourage savings from the younger generation.

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