Labour Market Responses to the Abolition of Compulsory Superannuation

by

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Abstract: This paper aims to compare the labour market effects of two alternative retirement income polices: the superannuation guarantee; and the higher income taxes that would be required to fund the greater pension expenditure that would be incurred if the superannuation guarantee was removed. The labour market effects of the superannuation guarantee have already been modelled by Freebairn (1998) by undertaking comparative static analysis of a partial equilibrium model. A similar approach is used to examine the labour market effects of higher taxes. The paper sets out both theoretical models, and then considers a numerical example to compare the policy alternatives. It is concluded that the superannuation guarantee is less distortional than an "equivalent" tax increase as long as workers do not completely discount the future value of future income derived from compulsory superannuation contributions.

Keywords: Aging Population, Labour Market, Superannuation, Taxation

1. Introduction

The effects of compulsory superannuation on labour markets have been established by Freebairn (1998). Using a partial equilibrium model, he demonstrated that the long run labour market impact of the Government's compulsory superannuation levy was reductions in wages, effective wages (defined as wages and superannuation benefits) and employment. A limitation of this approach is that removal of the superannuation guarantee would not undo the labour market effects identified by Freebairn, because such an abolition would result in increased pension payments. The increase in taxes required to fund these pension payments would then distort the labour market. From a labour market policy perspective, the central issue is whether the adverse effects resulting from the superannuation guarantee are greater or less than the effects of increased taxes that would result from the abolition of the superannuation guarantee.

This study compares Freebairn's findings on the labour market effects of the superannuation guarantee with the labour market effects of increased taxation

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resulting from the removal of the guarantee. Section 2 outlines the Freebairn model. Section 3 outlines a model of the labour market consequences of increasing income taxes on the current working generation to fund increased pension payments. Section 4 contains a numeric illustration that facilitates ready comparison of the labour market effects of the superannuation guarantee and taxation in the absence of the guarantee. It is concluded, in section 5, that the superannuation guarantee is less distortional than tax increases, as long as workers do not completely discount the future value of superannuation income derived from current compulsory contributions.

2. The Freebairn Model: Labour Market Effects of Compulsory Superannuation

When the Superannuation Guarantee was first introduced in Australia, it was the intention of Parliament that it would not affect employment: "There will be no increase in unemployment as a result of this legislation" (ACCI, 2003, p.14-5, citing Senator Sherry, on the Superannuation Guarantee Act 1992). However, superannuation does have a distortional impact, as it is a labour on-cost for employers, whilst for employees it is a form of future income (Freebairn, 2004, p.191).

Freebairn (1998) models the resulting distortions as a net tax on the labour market. He considers a demand and supply model of the labour market, using a comparative static approach to determine the effects of the superannuation guarantee. He considers both a flexible and rigid wage model, and examines three situations, where the employer, the employee or the Government pays the contribution. The situation in which the employer pays is most appropriate to Australia. This paper only considers the long run, flexible case, as this is the most relevant from a policy perspective. The formal specification is shown in Appendix A.

When the employer is responsible for the contributions, superannuation is a direct addition to labour costs, and thus the demand curve shifts down by the amount of the levy (Freebairn, 1998, p.61). As the superannuation payment is an additional benefit to workers, the labour supply curve also shifts down, by the present value of superannuation contributions (labelled $R(S)$[2]) (Freebairn, 1998, p.61). This is shown in Figure 1. Due to compulsion, liquidity constraints, and interactions with eligibility for the age pension, the employees' valuation of the contribution may be less than the levy itself (Freebairn, 2004, p.194). In this situation the labour supply curve will fall by less than the demand curve (Freebairn, 2004, p.194)

In the flexible wage situation shown in Figure 1, the introduction of the superannuation guarantee results in both a drop in wages, from W to W_1, and a fall in employment, from E to E_1. Employer labour costs increase from W to C, which is less than the full cost of the levy. Effective employee income (the market wage plus the present value of the superannuation levy) falls from W to Y (Freebairn, 1998, p.67).

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[2] See Appendix A for full specifications.

Figure 1: Employer Pays Compulsory Levy: Flexible Wage
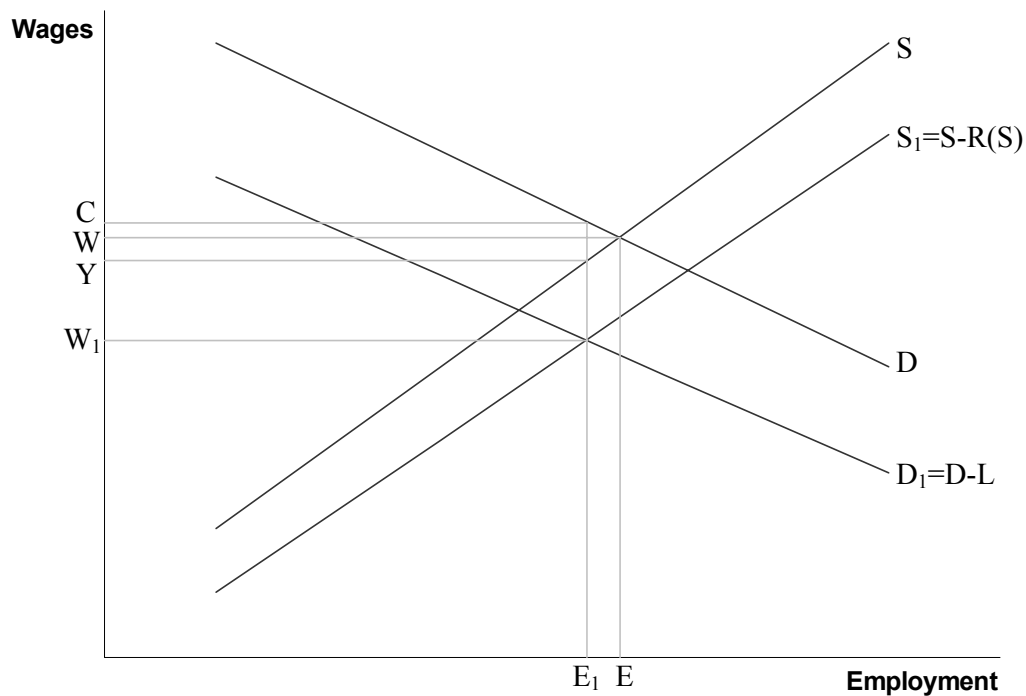
Freebairn, J., 1998, "Compulsory Superannuation and Labour Market Responses", *Australian Economic Papers,* Vol.37, No.1, p.62.

3. Labour Market Effects of Increased Taxation Following the Abolition of Compulsory Superannuation

Freebairn's analysis is confined to the current labour market effects of the superannuation guarantee. The intergenerational transfer of resources from the working generation to the retired generation through the fiscal system is implicitly assumed to be constant. However, one policy relevant feature of an ageing population is that the intergenerational fiscal transfer increases with time. The superannuation guarantee is, to some extent, the policy instrument designed to reduce such (ongoing and increasing) transfers. Consequently, the insight of Freebairn's model can be usefully complemented by a comparative static analysis of an alternative policy regime where there is no superannuation guarantee, but higher taxes to fund the higher cost of pensions because of the aging population.

In carrying out this exercise, two issues need to be considered. First, as ageing is a "once only phenomenon" (McDonald & Kippen, 1999, p.54), to calculate the appropriate tax increase we need to consider when the population and the economy will reach their new equilibria. This is clearly dependent on the mortality assumptions used. Under the ABS assumption that life expectations at birth will increase by 10 years over the next century, the majority of adjustments to the population structure should be completed by around 2040 (McDonald & Kippen, 1999, p.54). This coincides with 2041/41 end point of the forecasting period of *The Intergenerational*

Report (Commonwealth of Australia, 2002), and hence is best for the purposes of this analysis.

Second, we should consider only the social expenditures that will be avoided by the creation of the superannuation guarantee – that is, expenditure on pensions. It is appropriate to put aside the changes in expenditure on health and aged care, as well as those on all social security payments except the age pension, as they will occur regardless of whether the superannuation guarantee is in place or not. It should also be recognised that the superannuation guarantee would not remove all increases in age pension expenditure. Expenditure on the age pension is still predicted to increase from 2.9% of GDP in 2001-02 to 4.6% of GDP by 2041-42 (Commonwealth of Australia, 2002, p.44).

Superannuation was first introduced in 1986 as award superannuation. In 1985 1,334,300 people, or 67.2% of people of pension age, received the age pension (Winter, 2000). In the same year expenditure on the pension was 2.7% of GDP (Whiteford & Bond, 1999, p.188). In order to estimate age pension expenditure in 2041-42 in a situation without the superannuation guarantee, it is assumed that both the pension rate (an individual pension as a share of GDP) and the share of the aged population receiving the pension would remain constant, at their 1985 levels. It is estimated that there will be 6.2 million people over 65 in Australia by 2041-42 (Commonwealth of Australia, 2002, p.22). Under the above assumptions, without the superannuation guarantee roughly 4,166,400 people would receive the pension. Age pension expenditure in 2041-42 would therefore be expected to reach 8.43% of GDP, 3.83% of GDP above that predicted by *The Intergenerational Report*. It is this amount that needs to be considered in a comparison with the superannuation guarantee.

In order to cover this increase in pension expenditure, Commonwealth revenue would need to rise by 3.83% of GDP. In 2001-02, revenue from income taxation was 11.23% of GDP (ABS, 2004). Assuming the entire fiscal adjustment was to come from an increase in income taxes, tax revenue would need to rise to 15.06% of GDP by 2041-42, an increase of 34.10%. This would bring the average tax rate of 23.43% in 2001-02 up to 31.42%[3].

To illustrate the effects of this increase on taxes on the labour market, a demand and supply model similar to that in Freebairn (1998) can be used, which has been formally specified in Appendix B1. The outcome can be seen in Figure 2. Because it had been assumed that the entire tax increase would come from personal income tax, the labour demand curve is unaffected. However, the labour supply curve shifts up by the amount of the additional tax. As a result, wages increase to W1 and employment falls to E1. Effective employee income falls to Y.

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[3] In 2001-02, net income tax collected was 23.43% of total taxable income (ATO, 2004, p.15).

Figure 2: Increase in Income Taxes
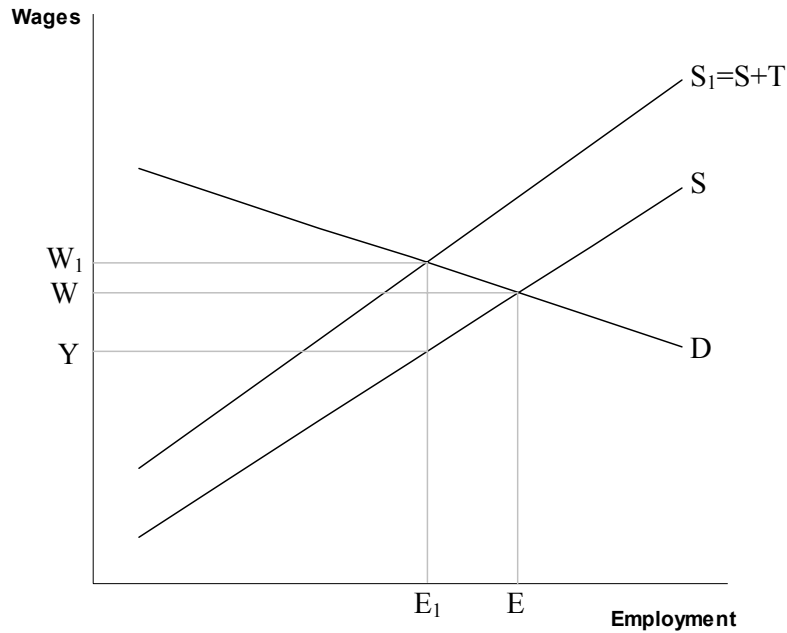
4. Numeric Illustration of Labour Market Effects for the two options

The previous sections lay the theoretical framework to analyse the effects of both the superannuation guarantee, and an "equivalent" tax increase, on the labour market. The purpose of this section of the paper is to carry out a quantitative analysis to allow a comparison of these policy alternatives.

In his paper, Freebairn (1998) constructs a numerical example of the labour market effects of the superannuation guarantee using the demand and supply model discussed in Section 2. The formulae used by Freebairn for this example are available in appendix B.2. He assumes labour demand has an elasticity of -0.7, and labour supply has an elasticity of 0.2 (Freebairn, 1998, p.64). The more elastic either curve, the greater the fall in employment resulting from the superannuation guarantee (Freebairn, 1998, p.64). He considers four situations, in which the present value of the superannuation contributions to the employee are 0%, 33%, 67% or 100% of the levy. A valuation of 100% means compulsory superannuation is a perfect substitute for wages, whilst a valuation of 0% implies superannuation has no present value (Freebairn, 1998, p.64). The results for each valuation are shown in Table 1[4].

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[4] In Freebairn's paper, the employee effective income figure for a present value of 33% was incorrectly inserted in the original table as -4.3.

Table 1: Labour Market Effects of 9% Employer Contributions

Present value of superannuation as a percentage of levy	Percentage change of:			
	Market wage	Employer labour cost	Employee effective income	Employment
0	-7.0	2.0	-7.0	-1.4
33	-7.7	1.3	-4.7	-0.9
67	-8.3	0.7	-2.3	-0.5
100	-9.0	0.0	0.0	0.0

Freebairn, J., 1998, "Compulsory Superannuation and Labour Market Responses", *Australian Economic Papers*, Vol.37, No.1, p.65.

The effects of the superannuation guarantee on the labour market depend largely on how employees value the superannuation payment (Freebairn 1998 & 2004). In the situation where compulsory superannuation is a perfect substitute for wages, the labour supply curve shifts down by the same amount as the demand curve. As a result wages fall by 9%, but employment, effective employee income and employer labour costs are not affected (Freebairn, 2004, p.193). Alternatively, when, as expected, employees value superannuation at less than 100% of the levy, the distortions to the labour market are more obvious. As demand is more elastic than supply, the cost of these distortions is bourn mainly by the employee (Freebairn, 2004, p.194).

Similarly, the demand and supply model set out in section 3 has been used to estimate the labour market impact of an increase in taxes. An increase in taxes by the amount estimated in section 3 will lead to wages increasing by approximately 1.78% and employment dropping by 1.24%. Effective employee income[5] falls by roughly 6.20%. The formulae used to calculate these changes are available in Appendix B.1.

The effects of the superannuation guarantee and the "equivalent" increase in taxes are compared in Table 2. Whilst the superannuation guarantee and the tax change have opposing effects on the market wage, their effect on both employment and effective employee income is in the same direction[6]. The distortional effect on employment from the tax change is between that from the superannuation guarantee when its present value is between 0% and 33%.

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[5] The change in wages of 1.78% is inclusive of the additional taxes. The effective income figure of – 6.20% shows the percentage change in wages net of the new tax.

[6] The superannuation guarantee will reduce the market wage because it increases labour supply. It will also reduce effective employee income (when the present value of the levy is less than 100%) because the benefit of the levy is less than the reduction in market wages. However, when taxes are increased, labour supply falls and therefore the market wage rises. In this situation, effective employee will income fall, because the increase in the market wage is less than the cost of the additional taxes.

Table 2: Labour Market Distortions from Superannuation vs a Tax Change

Percentage Change in:	Superannuation Levy of 9%					No Superannuation
	Percentage Present Value of the Levy					
	100	67	50	33	0	
Employment	0.0	-0.5	-0.7	-0.9	-1.4	-1.24
Market Wage	-9.0	-8.3	-8.0	-7.7	-7.0	1.78
Effective Income	0.0	-2.3	-3.5	-4.7	-7.0	-6.20

Freebairn (1998, p.60) argues that for those on high incomes with large voluntary private savings, compulsory superannuation is non-binding, as they are able to substitute some of their private savings for the compulsory superannuation payments. For these people the present value of the superannuation levy is close to 100% (Freebairn, 1998, p.64). On the other hand, for those with low incomes or broken careers, the present value of the levy is likely to be closer to 0% (Freebairn, 1998, p.64). These people are likely to find the lack of liquidity of superannuation constraining, and may lose part of the means-tested age pension due to their superannuation savings (Freebairn, 1998, p.60). Guest and McDonald (2002, p.30) assume that the average present value of superannuation is 50% of the levy. Whilst this is not an empirical estimate, they argue that it seems to be a "ball-park" figure (Guest & McDonald, 2002, p.30).

The are two obvious policy options for dealing with increased pressure from growing intergenerational fiscal transfers resulting from the aging of the population: maintain the current superannuation guarantee; or abolish the superannuation guarantee and increase taxes to fund future pension increases. If the present value of compulsory superannuation payments to the employee is as low as 33% of the levy, it appears that the superannuation guarantee has a less distortional effect on employment than increasing taxes. Therefore, from a labour market perspective, the decision to introduce the superannuation guarantee appears to have been appropriate.

However, this comparison only applies in the new equilibrium that applies from 2041-42. It does not consider the transitional period before this equilibrium is reached. The increase in taxes would occur gradually over this period, and as such, at the start of the transition, the distortional effect of the tax change would be less than that from the superannuation guarantee. However, as the taxes continued to rise over the period, their distortional impact would become more significant. A discounted analysis is not considered in this paper because, among other things, information on the elasticities of labour supply and demand for different wages and labour quantities is not available.

5. Conclusion, Policy Considerations & Further Research

Freebairn (1998) demonstrates the distortional impact of the superannuation guarantee on the labour market. However, as shown in this study, these labour market distortions need to be compared to the longer-term distortions in the absence of the superannuation guarantee. That is, the labour market effects of the superannuation guarantee should be compared to those from an "equivalent" change in taxes that would be required to cover the extra expenditure on the age pension, had the

superannuation guarantee not been introduced. Although the result does depend on what valuation employees place on their superannuation payments, it is clear that superannuation will generally have a less distortional effect on employment than the alternative of an "equivalent" tax increase. Therefore from a labour market perspective, it is provisionally concluded that the decision to introduce the superannuation guarantee should be maintained as government policy.

However, in fully evaluating the suitability of a policy, other issues must also be considered. When evaluating the retirement income system, one of those issues is the impact of the system on the savings rates. There is still some debate in the literature regarding the impact of the superannuation guarantee on household savings. The vertical and horizontal equity of the system must also be taken into account.

Appendix A: Full Specification of Freebairn's Partial Equilibrium Model

In considering the compulsory superannuation guarantee as a tax, Freebairn (1998) defines the after-tax values of wages used for current consumption, the after-tax value of wages used for saving and the after-tax value of superannuation. His full specifications are as follows[7]:

i) the after tax value of wages used for current consumption:

$$R(W,C) = W(1 - t_y)$$

ii) the after tax value of wages used for saving and then spent for pre-retirement purposes:

$$R(W,S) = W(1 - t_y)(1+r(1-t_i))^m/(1 + d)^m$$

iii) the after tax present value of voluntary and compulsory superannuation:

$$R(S) = W(1 - t_e)(1 + r(1 - 0.15))^n(1 - t_x)(1 - t_r)/(1 + d)^n$$

where:
W = wages allocated to either consumption, saving or superannuation
t_y = income tax rate
r = pre-tax return on savings
t_i = effective tax rate on savings
d = time preference rate
m = number of saving periods
t_e = tax rate on funds entering superannuation
t_x = tax rate on fund withdrawals
t_r = effective tax rate associated with withdrawal of aged pension benefits
n = number of periods to retirement
0.15 = the flat 15% tax rate on fund earnings

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[7] These specifications are from Freebairn (1998), pp.59-60

Appendix B: Formulae and Calculations

B.1 Labour Market Effects of a Tax Change to Fund Increased Pensions
      The formulae used to calculate the labour market effects of the tax change that may be necessary had the superannuation guarantee not been introduced are similar to those used above. The required increase in taxes necessary to cover the reduction in pension expenditure from the superannuation guarantee is 34.10%, as calculated in section 3.4.2. The elasticity values used were 0.2 for labour supply and -0.7 for labour demand, as in Freebairn (1998).

Before the tax change:
Employer labour demand: $Q = a - bW$
Employee labour supply: $Q = c + d(W-T)$
Where:

                    T = the original tax paid
                    t = the original tax rate (23.43%)

After the tax change:
Employer labour demand: $Q = a - bW$
Employee labour supply: $Q = c + d(W- 1.341T)$

Using these formulas, the change in wages due to the tax change is:

$$(W' - W) = 0.341dt/(b + d)$$

and the change in employment is:

$$(Q' - Q) = -0.341bdt/(b + d)$$

B.2 Labour Market Effects of the Superannuation Guarantee
The effects of the 9% employer superannuation contribution on employment and wages were calculated by Freebairn using the following formulae.[8]

Employer labour demand: $Q = a - bC$
Employee labour supply: $Q = c + dR$

                    Where:
                        C = cost of labour to the employer
                        R = effective return to the employee
                        b = absolute value of elasticity of labour demand
                        d = elasticity of labour supply.
                 W = wages
                   L = the superannuation levy
                 g = the value employees put on future income
                         provided by superannuation (0, 0.33 etc)

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[8] The formulae in section B.1 were provided by Professor Freebairn in personal correspondence.

Without superannuation: $C = W$
                            $R = W$

Therefore: $W = (a - c)/(b + d)$

When superannuation is introduced:
                            $C = W + L$
                            $R = W + gL$

Therefore: $W' = (a - c)/(b + d) – ((b + dg)L)/(b + d)$

The change in wages is due to the introduction of the superannuation guarantee is:

$$(W' – W) = -((b + dg)L)/(b + d)$$

The change in employment can be calculated using the same formulae:

$$(Q' – Q) = -bdL(1 – g)/(b + d)$$

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