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Efficiency of the Tax System: a marginal excess burden analysis

preliminary and not for quotation

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Outline

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- The economic modelling approach
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Introduction

Tax Efficiency and Excess Burdens

- The tax system generates disincentives to work, save, invest etc.

- The economic costs to consumers of these tax-based disincentives are measured by deadweight losses or excess burdens (EBs). EBs represent the losses to consumers over and above the revenue that is raised from them.

- Different taxes have different consumer costs per dollar of revenue they raise. Average EBs (AEBs) differ.

- More importantly, different taxes also have different consumer costs for the last dollar of revenue that they raise. Marginal EBs (MEBs) differ.

- To maximise consumer welfare, taxes with high MEBs would be reduced and taxes with low MEBs would be raised, until MEBs converge.

- This paper uses CGE modelling to estimate MEBs for many taxes.

- Caution: higher MEBs may be justified for taxes that are redistributive.

Simplified MEB formulas

Introduction to EBs in the Labour Market: open economy in the long run
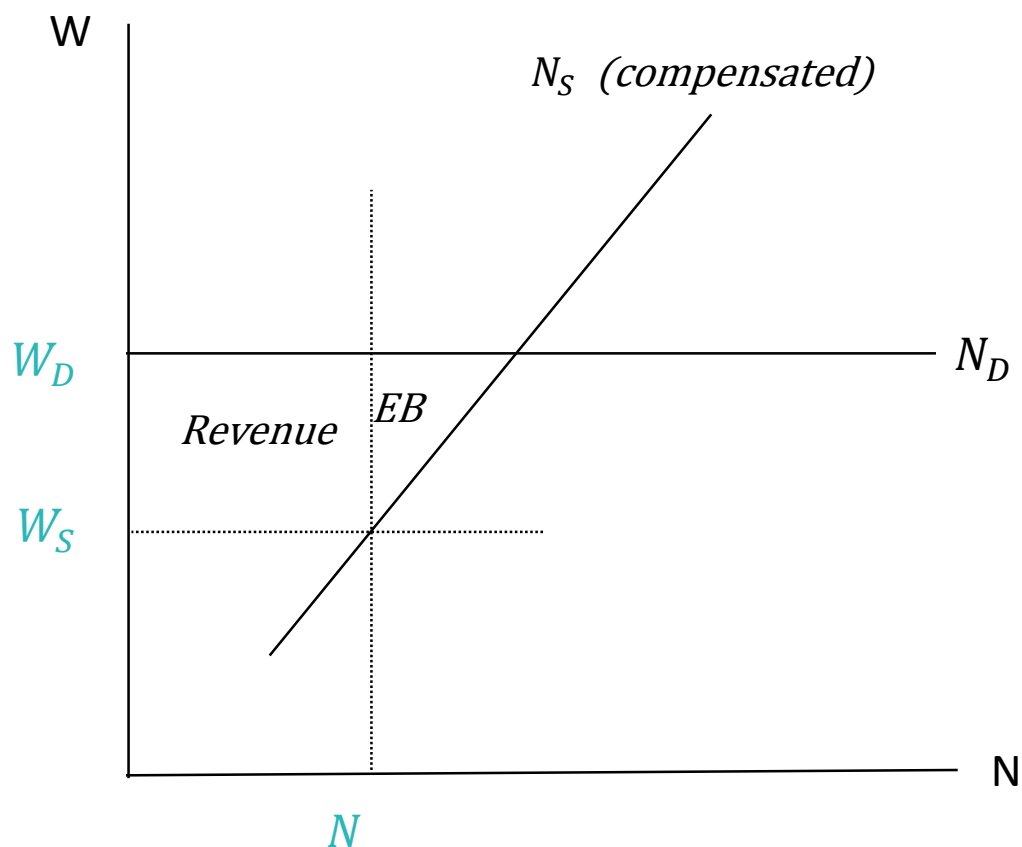
- N_S : compensated (constant utility) labour supply

- W_D : wage where the rate of return on capital equals the post-company tax rate required on the world market

- $W_S = W_D$ - tax wedge

- Average Excess Burden: AEB = EB/Revenue

- Marginal Excess Burden: MEB = ΔEB/ΔRevenue for a small tax change

- AEB and MEB both depend on tax wedge and N_S elasticity

MEB for taxes on labour

- Labour taxes include payroll tax & personal income tax on labour income
- Their excess burdens arise from their disincentive to supply labour.
- MEB = x/(1-x), where x = η*tlab
- η = compensated labour supply elasticity wrt the after-tax wage
- tlab = tax revenue from labour relative to after-tax labour income
- Tax revenue from labour = labour taxes + company tax to the extent it is collected from normal returns to capital + consumption tax (e.g. GST) to the extent that consumption is funded from labour incomes.
- So the MEB for labour taxes depends on both the labour supply elasticity and the overall tax burden on labour.
- Progressive income tax lifts marginal tax rates above average tax rates, leading to higher MEBs while also contributing to equity.

MEB for consumption tax

- GST is the main consumption tax.

- Its excess burden also arises from its disincentive to supply labour.

- However, the MEB is lower than for labour taxes to the extent that consumption is funded from non-labour income rather than labour income.

- MEB = x/(1-x), where x = η*tlab*slab

- slab = share of consumption funded from labour income

- However, to the extent GST does not apply comprehensively to consumption, a further excess burden arises from the disincentive to consume taxed goods relative to untaxed goods.

MEB for company tax

- Company tax applies to normal returns to capital and economic rents.

- In an open economy, international mobile labour escapes local company tax on normal returns to capital so it falls on labour.

- Hence, as a tax on normal returns to capital, the excess burden from company tax arises from disincentives to both investment and labour supply, resulting in a higher MEB than for labour tax.

- MEB = $x/(1-x)$, where $x = \eta * tlab + (\sigma/\alpha).tke$

- σ = elasticity of substitution between capital and labour

- α = labour share of (non-rent) factor income

- tke = effective capital tax rate (taking into account that depreciation is deductible)

- However, any company tax on economic rents makes it less inefficient.

MEB for asset income tax

- Asset tax includes both personal income tax and superannuation income tax on asset incomes.
- Asset taxes are a disincentive to save, resulting in less welfare-enhancing consumption smoothing over life cycles.
- MEB = $x/(1-x)$, where $x \approx (\sigma t * t_a)/s_{asset}$
- σt = elasticity of intertemporal substitution
- t_a = tax rate on asset incomes
- s_{asset} = share of full consumption funded from asset incomes
- The MEB for tax on asset income is independent of the MEBs for the other three taxes.
- The overall tax rate on asset income is low, principally because of the tax treatments of owner-occupied housing, rented housing and superannuation, as well as the system of franking credits.

Economic modelling approach

Previous Studies using CGE models for MEBs

- Charles L. Ballard, John B. Shoven and John Whalley (1985), "General Equilibrium Computations of the Marginal Welfare Costs of Taxes in the United States", *The American Economic Review.*

- KPMG Econtech (2010), "CGE Analysis of the Current Australian Tax System".
  - disincentives to work, investment and consumption choices

- Cao L., Hosking A., Kouparitsas M., Mullaly D., Rimmer X., Shi Q., Stark W., and Wende S. (2015), "Understanding the Efficiency and Incidence of Major Australian Taxes", Treasury WP 2015-01.
  - disincentives to work and investment

- Murphy, C. (2016), "Efficiency of the Tax System: a marginal excess burden analysis", ANU TTPI Working Paper, 4/2016.
  - disincentives to work, investment, saving and consumption choices; oligopoly power

- Tran, C. and Wende, S. (2017), "On the excess burden of taxation in an overlapping generations model", ANU, mimeo.
  - disincentives to work, investment and saving; dynamic

Overview of CGETAX

Purpose:

- Tax policy analysis

Behaviour:

- Long run equilibrium
- Profit maximising industries (some competitive, some oligopolies)
- Utility maximising consumers
- Allowance for negative externalities (for modelling sin taxes)

Dimensions:

- Industries   278
- Labour types   8
- Capital types   9
- Rent types (land, minerals, oligopoly)   3

Key Elasticities in CGETAX

Households (fully optimise):

- Elasticity of intertemporal substitution   0.25
- Labour supply elasticity (compensated)   0.4
- Elasticity of substitution between broad consumption categories   0.6
- Elasticity of substitution within broad consumption categories   0.6-2.4

Businesses (fully optimise):

- Elasticity of substitution between capital and labour   0.7-0.9
- Elasticity of substitution between types of capital   0.3
- Elasticity of substitution between taxed and untaxed labour   3
- Elasticity of substitution between 8 occupational types of labour   3
- Elasticity of substitution between land and structures   0.5
- Elasticity of substitution between structures-land and mobility   0.3
- Elasticity of substitution between value added and intermediates   0.2
- Semi-elasticity of company income tax base wrt rate   -0.73

Measurement of consumer welfare

- Welfare costs measured by intertemporal version of equivalent variation
  - Maximum amount consumers would be prepared to pay to avoid a policy change
- Advantages compared to using GDP:
  - Takes into account that some income from domestic production goes to foreigners
  - Values consumer preferences over consumption mix
  - Values leisure time
  - Values consumption smoothing over time

MEBs for major taxes

MEBs and AEBs

	MEB	AEB
Personal Income Tax		23%
tax surcharge	47%	
income levy	33%	
bracket creep	28%	
reduce franking credits	16%	
Corporate Income Tax	81%	22%
25% to 30% (if US rate is cut to 25% or less)	90%	
25% to 30%	66%	
20% to 25%	44%	
15% to 20%	28%	
GST		22%
raise rate	26%	
broaden base to fresh food	12%	
remove financial services concession	13%	

Overview

MEBs show the expected ordering of the three major taxes i.e. from an efficiency perspective, company income tax worst, GST best.

- Company income tax MEB higher than labour income tax MEB. Like labour income tax, company income tax acts as a disincentive to labour supply, but company income tax also acts as a disincentive to demand capital.

- GST MEB lower than labour income tax MEB. GST partly taxes future consumption funded out of future labour income, and in that regard is similar to labour income tax. However, GST also taxes future consumption funded out of wealth that has already been accumulated, which is an efficient tax base.

Personal Income Tax MEBs

- More redistributive changes in the tax scale have higher MEBs because, by definition, they lift marginal tax rates relative to average tax rates.
  - tax surcharge > income levy > bracket creep
- However, more redistributive changes have an equity objective that should also be taken into account.
- Changes to tax on labour income have higher MEBs than changes to tax on asset income because taxes on asset income are very low for the reasons noted earlier.
  - Income levy > reduced franking credits
- However, it is optimal for taxes on asset income to be lower than taxes on labour income, just not to such as large extent as they currently are.

Corporate Income Tax MEBs

Adding to the MEB:

- labour supply disincentive from taxing normal returns to capital
- Capital demand disincentive from taxing normal returns to capital
- Higher statutory rate leads to shifting of accounting profits offshore
- Higher corporate rate increases franking credits, adding further to concessional tax treatment of saving

Subtracting from MEB:

- Taxation of economic rents is efficient.
- US direct investment in Australia generally receives full tax credits in the US for company tax paid in Australia. However, this will no longer be true if Trump reduces US corporate tax rate from 35 per cent to, say, 25 per cent.

GST MEBs

- Raising the rate has a higher MEB (26%) than broadening the base, so base broadening is to be preferred.

- One base broadening option is to change treatment of banking, life insurance and superannuation from input-taxed to taxable (13%).

- Another base broadening option is to change treatment of fresh food from GST free to taxable (12%).

Major MEBs in different studies: rankings are always the same
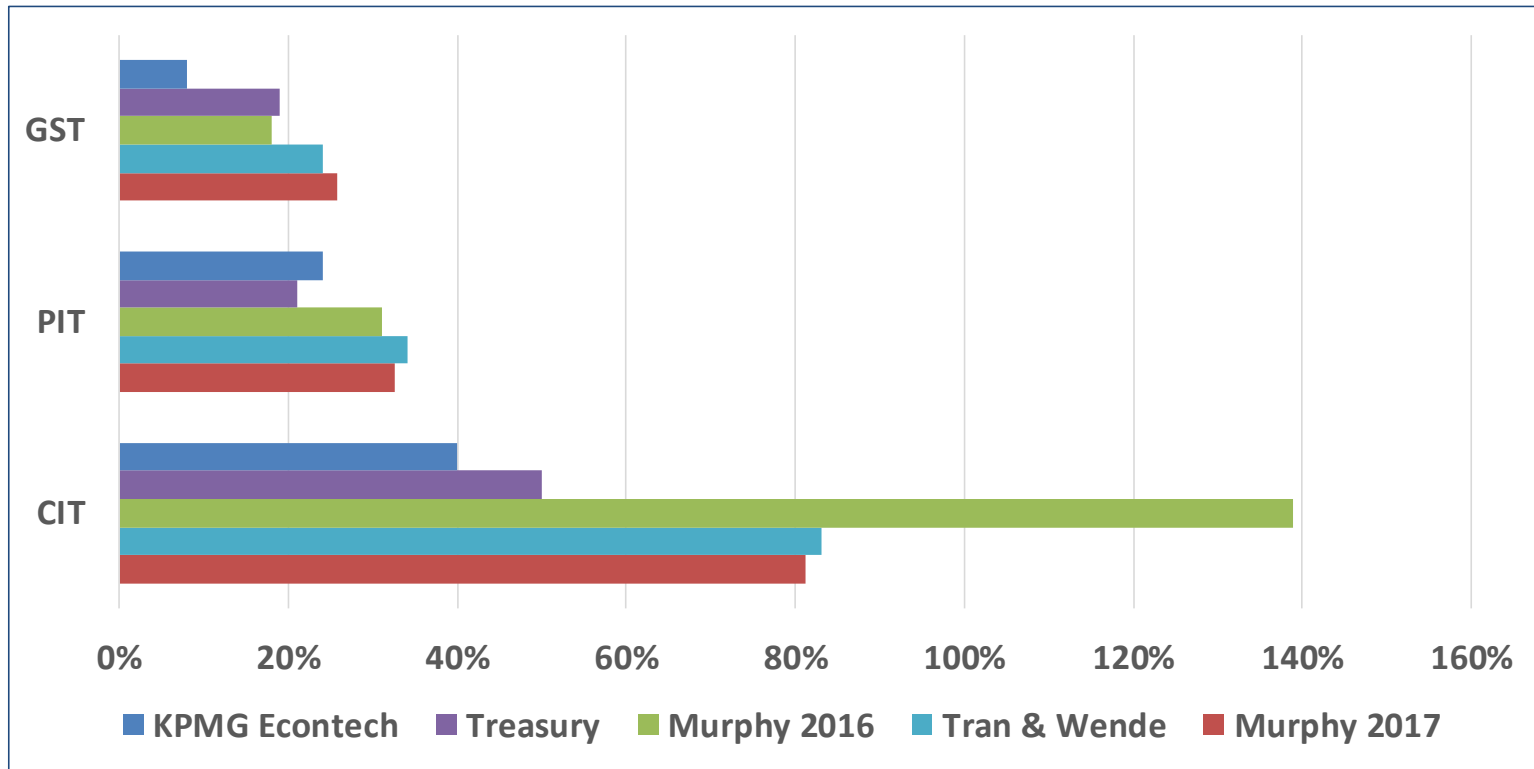
MEBs for other taxes

MEBs and AEBs

	MEB	AEB
Payroll Tax		30%
raise rate	36%	
abolish threshold	21%	
Property taxes:		
municipal rates	0%	-2%
land tax	44%	28%
conveyancing duty: residential	66%	50%
conveyancing duty: commercial	143%	100%
Insurance taxes	62%	41%
Mining taxes:		
PRRT	-10%	-10%
royalties	47%	34%
Financial service taxes:		
major bank levy		81%
rent tax (hypothetical)		-10%

Payroll tax

- While labour income is a reasonably efficient tax base, payroll tax is made less efficient by exemptions.

- The main exemption is the small business exemption. This is taken into account in the modelling by fitting a Lomax distribution, in each industry, to the distribution of firm size by employment.

- Broadening the base by removing the small business exemption is more efficient than raising the rate.

Property Taxes

- As the Henry Review pointed out, land is an efficient tax base because it is in fixed supply.

- The MEB for municipal rates is lower than for land tax because rates are more broadly based e.g. rates apply to owner-occupied housing.

- However, rates are not always uniform across land uses and so do distort land allocation. The Henry Review recommended a reformed land tax that was uniform across land uses.

- Conveyancing duty is triggered on a change of property ownership. This gives it the very narrow base of ownership transfer costs. The resulting very high effective rate leads to very high MEBs.

- The disincentive to move from conveyancing duty means the housing stock is used less efficiently than it would with greater mobility.

Insurance Taxes

- With its fine industry detail, CGETAX not only distinguishes insurance from superannuation but also distinguishes different forms of insurance.

- Insurance tax is a narrow tax that is levied on gross premiums. Further, the true price of insurance is the expected net premium measured as the gross premium net of benefits, making the tax base even narrower.

- Effective tax rates are high for motor vehicle and other general insurance, and lower for health insurance and life insurance.

- High effective tax rates lead to the high MEB for insurance taxes.

Mining Taxes

- Access to mineral resources provides mining company shareholders with economic rents.

- Royalties based on value of production are a disincentive to production. In principle, a well-designed rent tax does not distort production.

- Thus, the MEB for a minerals rent tax is considerably lower than for royalties.

- The MEBs for both taxes are lower than otherwise because of foreign ownership of mining companies. Foreign shareholders share the tax burden with Australian shareholders. This leads to the negative MEB for the petroleum resources rent tax, which is an example of a minerals resource tax.

Financial Service Taxes

- There are parallels between taxing mining and financial services.

- Oligopoly power of the big 4 banks leads to oligopoly rents.

- The major bank levy is based on bank size (as measured by selected liabilities) and hence acts as a disincentive to production. This is exacerbated by the pricing power of the banks. In principle a well-designed rent tax would not distort production.

- Thus, the MEB for a financial services rent tax is considerably lower than for the major bank levy.

- One limitation of the major bank levy, compared to the IMF recommendations for a financial services change, is that it is a flat 6 basis points of selected liabilities, and so does not vary with riskiness.

- Another limitation is that it applies to uninsured deposits rather than the deposits insured for free by government under the financial services claims scheme. This undermines the user pays argument for the levy.

Further work

Further work

- Introduce dynamics. The closeness of the MEB results for the three main taxes between this study, which does not allow for dynamics, and Tran and Wende, which does, suggests that adding dynamics is a secondary rather than primary issue.

- To model the distortion to asset allocation from the unevenness of taxation of asset income. It is likely this could be integrated into CGETAX using a recursive utility function approach. Kanc (2004) uses a recursive utility approach and provides the closest point of comparison with our modelling.

- The trade-off between equity and efficiency could be investigated systematically by introducing a social welfare function (SWF) and simulating welfare outcomes from tax changes under alternative SWF parameters.