The marginal excess burden of capital taxation with heterogeneous firms

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- How important is it to look beyond the average firm?
- We analyse the distortion of dividend taxation before the Bush era tax cuts and show that it can be very important.

What we do

- Calculate the marginal excess burden of corporate tax, dividend tax and capital gains tax.
- Use a dynamic general equilibrium model of the US economy with a distribution of firms and a representative households.
- Include heterogeneous firms to capture the variation in the impact of taxes on different firms.

Taxes on capital

- Corporate tax.
    - Lowers capital stock.
- Capital gains tax.
    - Lowers capital stock.
- Dividend tax.
    - 'Old view' - lowers capital stock.
    - 'New view' - does not lower capital stock.

Summary of results

	CIT	CGT	DT	LIT
Full model	$0.90	-$0.35	$2.34	$0.28
NH: external financing	$0.71	$0.13	$0.91	$0.29
NH: internal financing	$0.64	$1.87	$0.00	$0.29

Table: Marginal excess burden by tax instrument and model.

The model

- Use the model of Gourio and Miao [2010] and Gourio and Miao [2011]
- Dynamic general equilibrium model
- Distribution of firms that undergo idiosyncratic productivity shocks.
- Representative household.
- Closed economy.

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- Standard representative household.
- Taxed on dividends and capital gains on accrual basis.

$$\tau^d d_t$$

and

$$\tau^g (P_t^0 - P_{t-1})$$

- Equity prices before and after equity issuance are given by P_t^0 and P_t where s_t is equity issuance giving capital gains tax as

$$\tau^g (P_t - P_{t-1} - s_t)$$

where $P_t^0 = P_t - s_t$.

Firm constraint

- Firms maximises it's current share price

$$\max P_t = E_t \left[\sum_{j=t+1}^{\infty} \frac{(1-\tau^d)d_j - (1-\tau^g)s_j}{1-\tau^g + r_j(1-\tau^i)} \right] \tag{1}$$

- Firm's budget constraint is given by

$$d - s = (1-\tau^k)(zk_k^{\alpha} l_l^{\alpha}) + \delta\tau^k k - i - \frac{\psi i^2}{2k}. \tag{2}$$

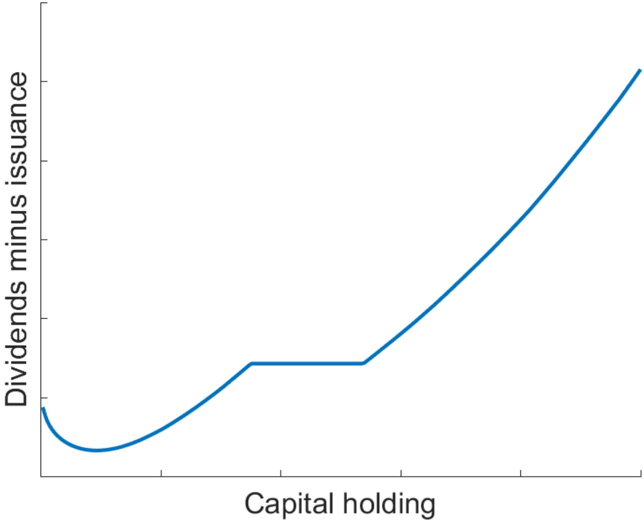
- But it is also subject to constraints on dividends and share buy backs

$$d \geq 0, \tag{3}$$

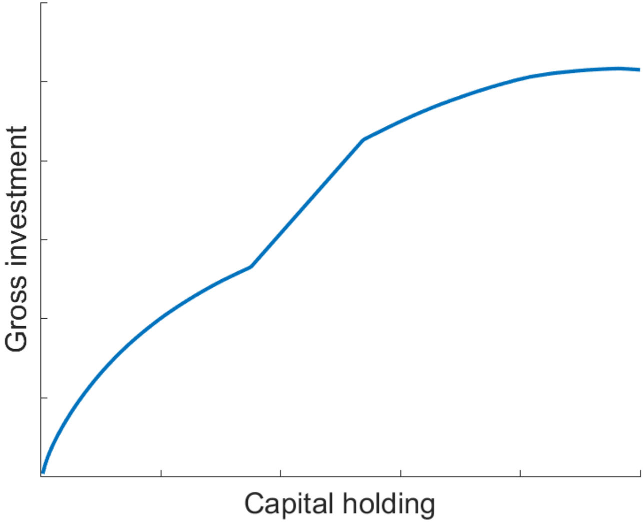
$$s \geq \bar{s}. \tag{4}$$

- In the initial calibration $\tau^d > \tau^g$.

Dividends or issuance by capital level



Investment by capital level



Government and closing the model

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- Government collects CIT, dividend tax, CGT and LIT and distributes this to households.
- The aggregate resource constraint is given by

$$C_t + I_t + \Psi_t = Y_t \tag{5}$$

Calibration

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- Model is calibrated as in Gourio and Miao [2011] to the US in 2002 (before the 2003 Bush tax cuts)

	Parameter	Value
Corporate income tax	τ^k	0.34
Dividend tax	τ^d	0.25
Capital gains tax	τ^g	0.20
Labour income tax	τ^n	0.25
Interest income tax	τ^r	0.25

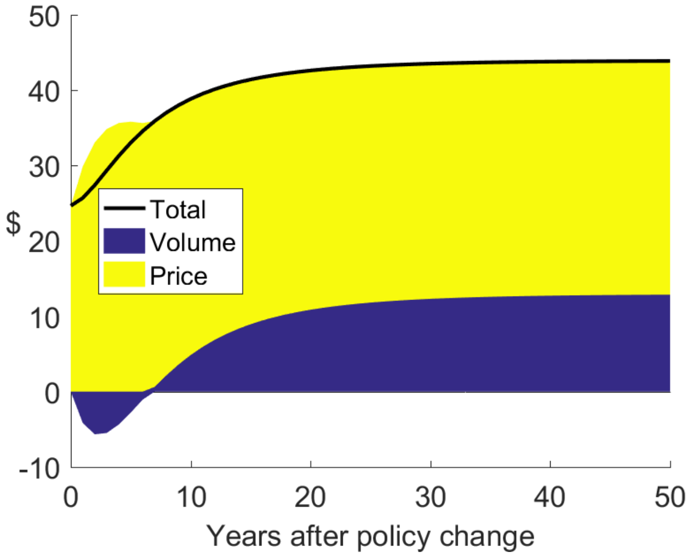
Table: Model Calibration

Quantitative analysis

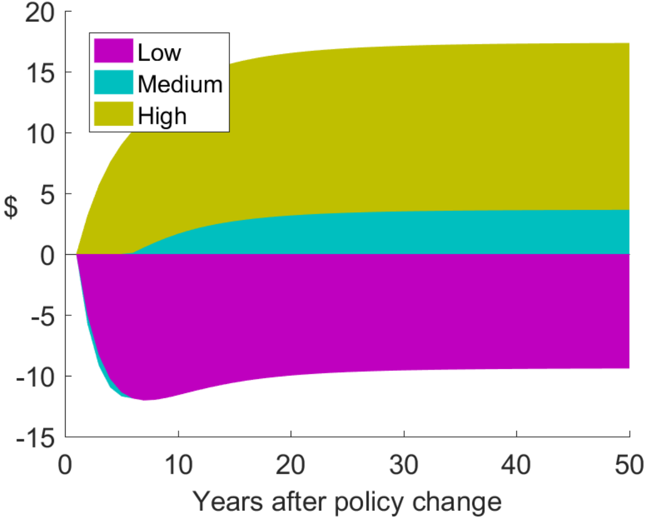
- Simulate decreases in the various taxes CIT, DT, CGT and LIT.
- Results are normalised for revenue change
  - Graphs show change per dollar of net revenue lost.
  - Welfare change equals MEB.

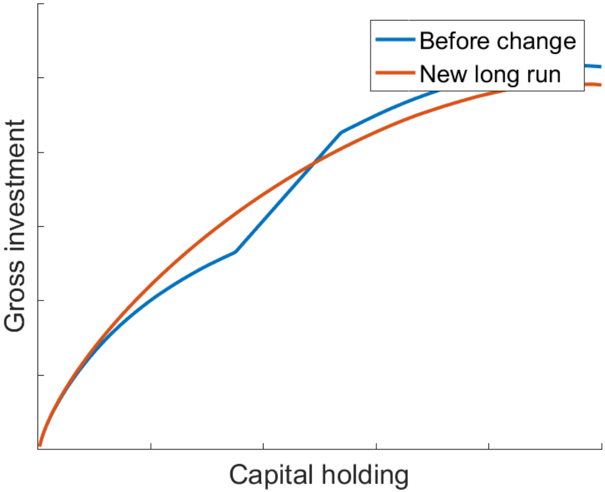
Dividend tax rate decrease.

Dividend tax: Equity value

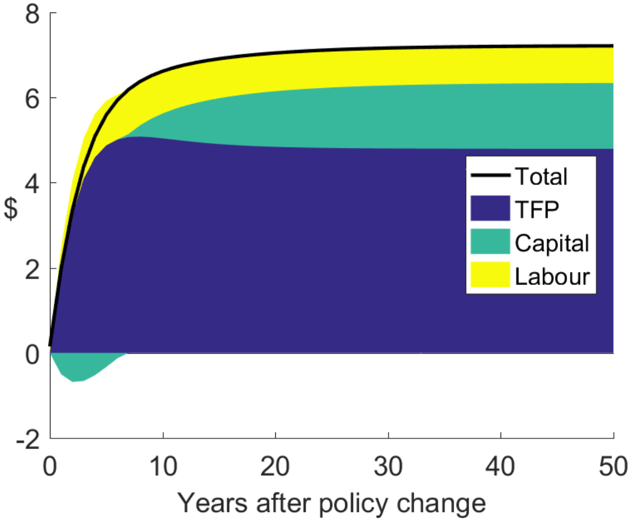


Dividend tax: Capital by productivity




Before change
New long run
Gross investment
Capital holding

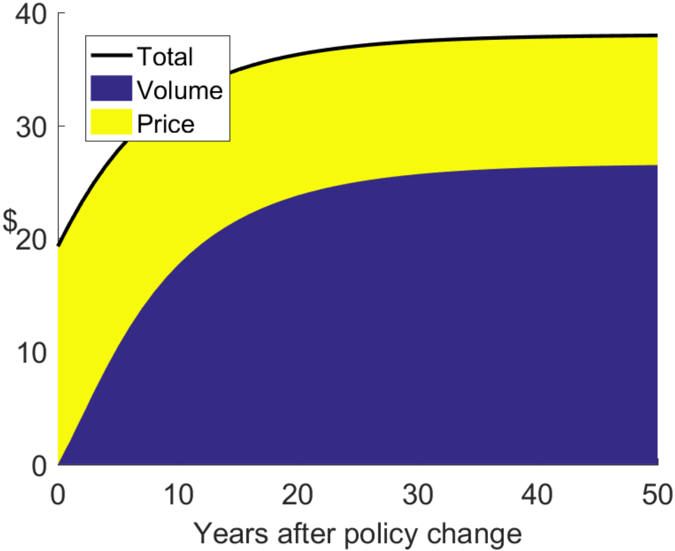
Dividend tax: Output



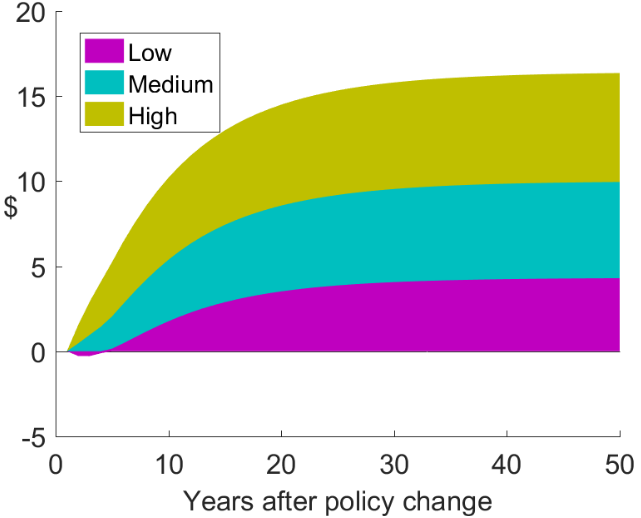
$$TFP = Y/K^{\alpha_K} L^{\alpha_L}$$

Corporate tax rate decrease.

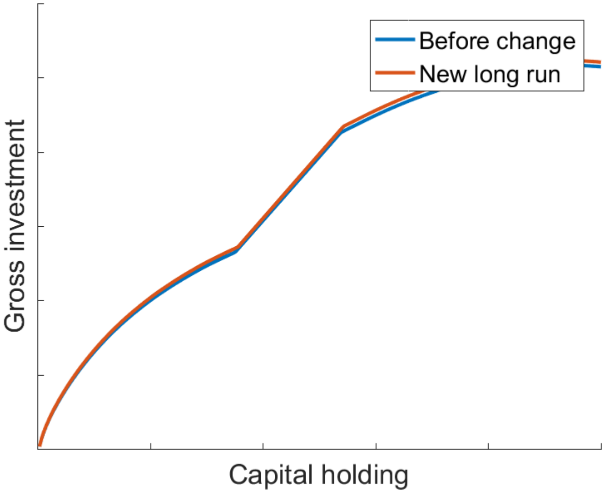
CIT: Capital Stock



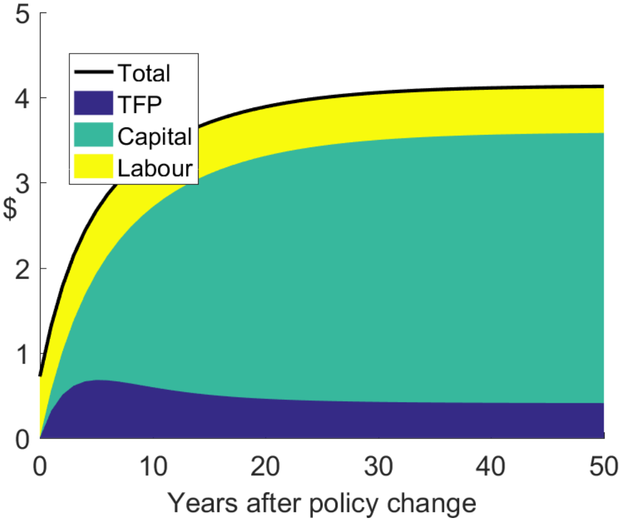
CIT: Capital by productivity



CIT: Investment by capital



CIT: Output



$$TFP = Y / K^{\alpha_K} L^{\alpha_L}$$

	CIT	CGT	DT	LIT	DT & CGT
Full model	$0.90	-$0.35	$2.34	$0.28	$0.62
Equal taxes	$0.61	-$0.58	-	$0.27	$0.49
NH: external financing	$0.71	$0.13	$0.91	$0.29	$0.70
NH: internal financing	$0.64	$1.87	$0.00	$0.29	$0.58
NH: Ext. fin. & CRTS	$0.95	$0.96	$0.93	$0.30	$0.95

Table: Marginal excess burden by tax instrument and model.

Conclusion

- Model captures varied impacts of taxes on firms (internal and external financing).
- Shows how distortion to firm financing can affect aggregate productivity.

Francios Gourio and Jianjun Miao. Firm heterogeneity and the long-run effects of dividend tax reform. *American Economic Journal: Macroeconomics*, 2:1:131–168, 2010.

Francios Gourio and Jianjun Miao. Transitional dynamics of dividend and capital gains tax cuts. *Review of Economic Dynamics*, 14:368–383, 2011.