

Institute for
Fiscal Studies

Relationships between tax bases

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Main focus of this presentation

- Equivalences between tax bases in family of taxes that economists sometimes lump together under heading of ‘expenditure taxes’
 - Not what everyone else calls expenditure taxes, i.e. indirect taxes
- Some of these exist in the UK (and/or elsewhere), some don’t
 - Idealised versions
- These taxes have some nice properties:
 - Don’t distort (domestic) saving and investment decisions
 - Don’t distort (domestic) production patterns
 - Can alleviate many of the boundary issues that plague tax policy
- Harder to find equivalences in taxes outside this family
 - Nice properties, elegant simplicity and equivalences go together
 - Academics have devised equivalent ways to implement e.g. comprehensive income tax, but horribly complicated and never done

Equivalence

- Definition:

Two tax systems are equivalent if they provide the same opportunities for consumption and work at all times

- That is, they give the same budget constraint
- Same opportunities implies same optimal choices
- Other things can be different (but often aren't):
 - Timing of government revenue (but not present value, so adjusting borrowing can offset)
 - Asset portfolios
 - Nominal prices of goods and assets
 - Properties in transition and adjustment

Assumptions

- Key premise: who is legally/administratively responsible for handing over the tax does not matter in the long run
 - Though it certainly matters in the short run
- For exposition, also assume:
 - Single uniform tax rate (so can isolate comparison of tax bases)
 - Closed economy (ignore international considerations)
 - Alternative tax systems in place forever (ignore transition)
 - ❖ Come back to these at the end

Retail sales tax (RST) and value added tax (VAT)

- Aim is to tax households' consumption expenditure
 - But not business purchases of inputs to production
- Two ways to achieve this:
 1. RST taxes sales to retail consumers, but not sales to businesses
 2. VAT taxes all sales, but allows businesses to recover any VAT charged on the inputs they have bought

Simple supply chain with 20% VAT

	VAT charged on sales	VAT reclaimed on input purchases	Net VAT liability
<i>Analysis of transactions</i>			
Sale from firm A to firm B for £100	£20	£20	£0
Sale from firm B to firm C for £300	£60	£60	£0
Sale from firm C to consumer for £500	£100	£0	£100
<i>Analysis of firms</i>			
Firm A	£20	£0	£20
Firm B	£60	£20	£40
Firm C	£100	£60	£40

Income tax with cash-flow (EET) treatment of savings

- Savings treated as follows:
 - amounts saved are tax-exempt (E)
 - returns (income or capital gains) kept within the account are exempt (E)
 - money withdrawn from the account is tax (T)
- Like income tax treatment of pension saving
- Tax on amount saved is deferred until withdrawn to spend
- If applied to all income and all saving, this taxes total expenditure
 - Exactly equivalent to an RST or VAT
- Expenditure = income – net saving
 - To tax expenditure, don't have to monitor all amounts spent; instead, tax income that isn't spent
 - Distinction between income tax and expenditure tax is treatment of saving

Income tax with exemption for savings income (TEE)

- Don't deduct amounts saved (T) or tax returns (E) or withdrawals (E)
 - Simply ignore saving – like ISAs, or NICs treatment of all saving
 - If applied uniformly, this is a labour earnings tax
- This is equivalent to a cash-flow (EET) expenditure tax if present value of outlay and return are the same
 - Government takes its share of money put into account, rather than money taken out as with EET
 - 30% of outlay worth the same as 30% of return
 - Still leaves saver with 30% less to spend than if no tax
- Equivalence also holds for risky returns (adjust asset holdings)
- But important differences:
 - If an asset makes exceptional returns (including disguised labour income)
 - Applied in transition to existing assets (past outlay, future returns)

Rate-of-return allowance (TtE)

- Based on current (TTE) system
 - Taxing income and capital gains
- But with an annual allowance for a ‘normal’ return on amounts saved
 - Deduct (say) 5% of amount saved from taxable income / gains
 - Used in Norway for shareholdings
- If only ‘normal’ return earned, no tax levied (i.e. identical to TEE)
- The ‘normal’ rate of return is:
 - interest rate used to discount future income in present value calculations
 - rate of return earned on a risk-free asset (e.g. gilts)
- If ‘normal’ return set correctly, stream of allowances has the same present value as 100% up-front allowance in cash-flow (EET) tax
- So EET and TtE are equivalent in present value terms
 - Present value of tax base is above-normal returns

Comparison of savings tax regimes

Tax rate 20%, 'normal' return 5%, actual return 5%

	TTE	TEE	EET	TtE
Purchase price	100	100	100	100
Tax relief in year 1	0	0	20	0
After-tax contribution	100	100	80	100
Value of asset in year 2	105	105	105	105
After-tax withdrawal	104	105	84	105
Tax paid in year 2	1	0	21	0
<i>Present value of year 1 tax relief</i>	<i>0</i>	<i>0</i>	<i>21</i>	<i>0</i>
<i>Present value of tax paid</i>	<i>1</i>	<i>0</i>	<i>0</i>	<i>0</i>

Comparison of savings tax regimes

Tax rate 20%, 'normal' return 5%, actual return 10%

	TTE	TEE	EET	TtE
Purchase price	100	100	100	100
Tax relief in year 1	0	0	20	0
After-tax contribution	100	100	80	100
Value of asset in year 2	110	110	110	110
After-tax withdrawal	108	110	88	109
Tax paid in year 2	2	0	22	1
<i>Present value of year 1 tax relief</i>	<i>0</i>	<i>0</i>	<i>21</i>	<i>0</i>
<i>Present value of tax paid</i>	<i>2</i>	<i>0</i>	<i>1</i>	<i>1</i>

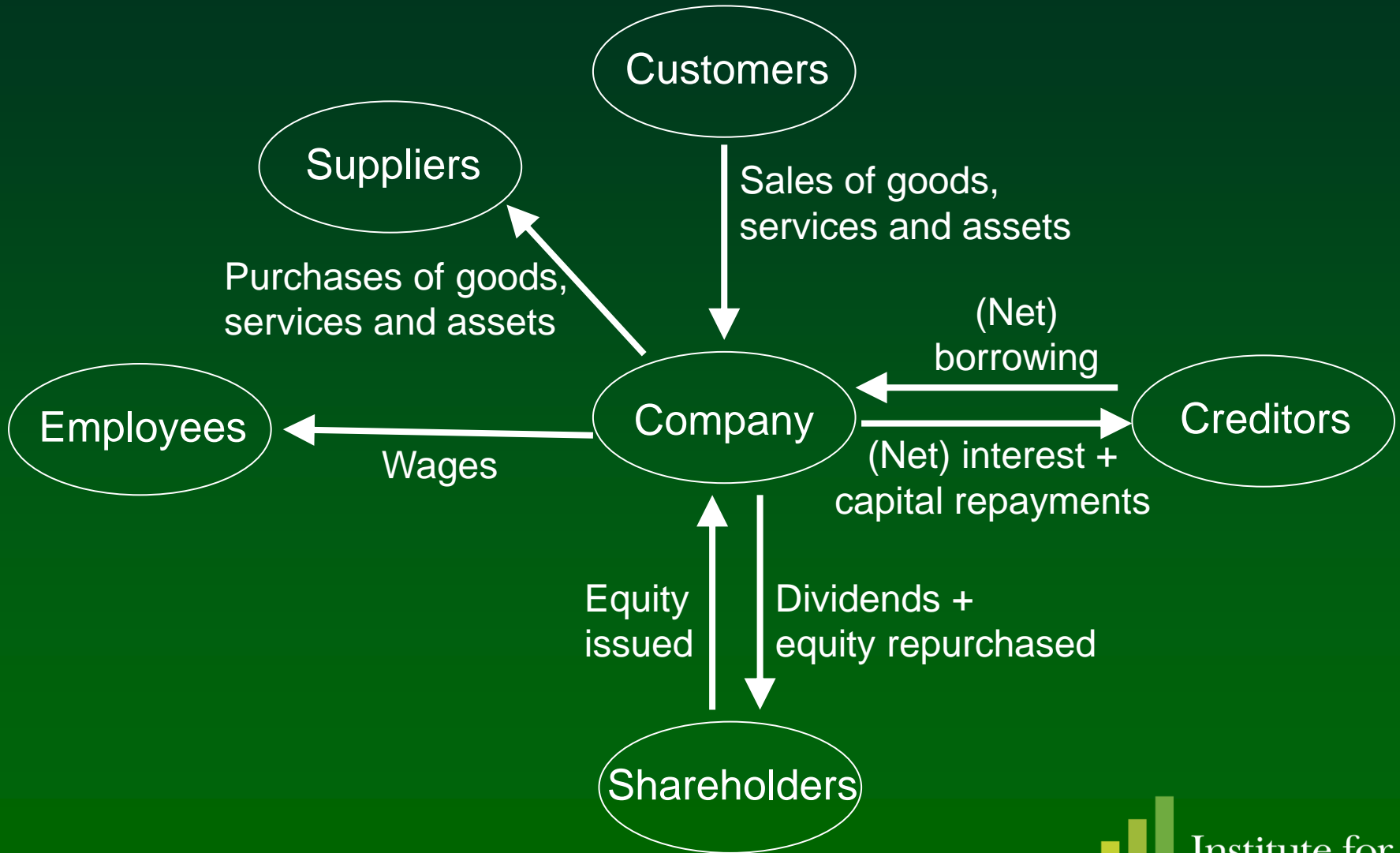
Cash-flow corporation tax

- Corporation tax based only on cash inflows and outflows in each year
 - Not traditional profits including depreciation, capital gains, etc.
- Three versions:
 - R base: cash inflows minus outflows from ‘real’ activities
 - R + F base: cash inflows minus outflows from ‘real + financial’ activities
 - S base: cash outflows to, minus inflows from, shareholders

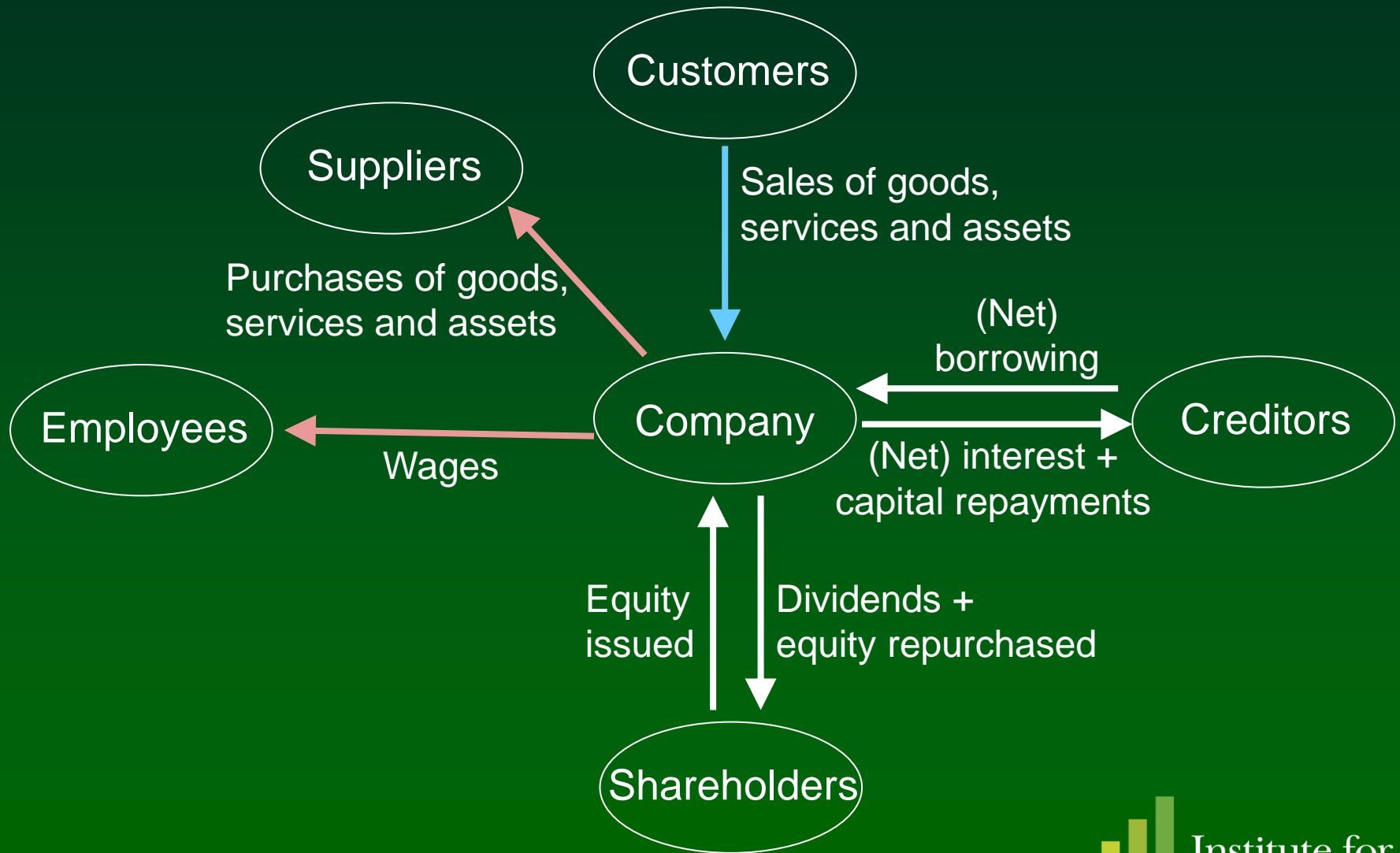
Cash-flow corporation tax

R base	R + F base	S base
Sales of goods, services and assets	Sales of goods, services and assets	Repurchase of shares, dividend payments
	Increase in borrowing, interest received	
<i>minus</i>	<i>minus</i>	<i>minus</i>
Purchases of materials, wages, assets	Purchases of materials, wages, assets	Shares issued, dividends received
	Repayment of borrowing, interest paid	

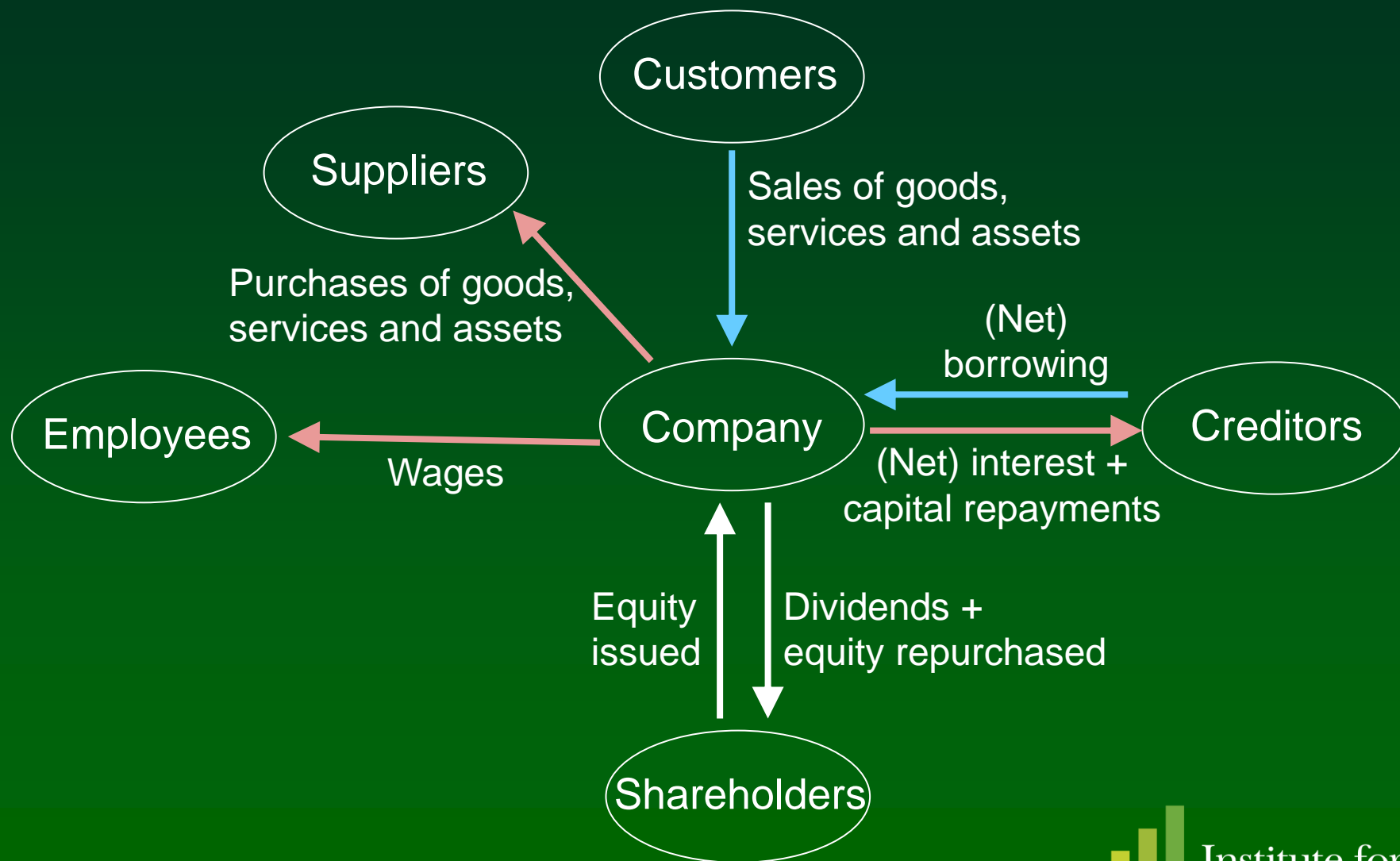
A company's cash flows



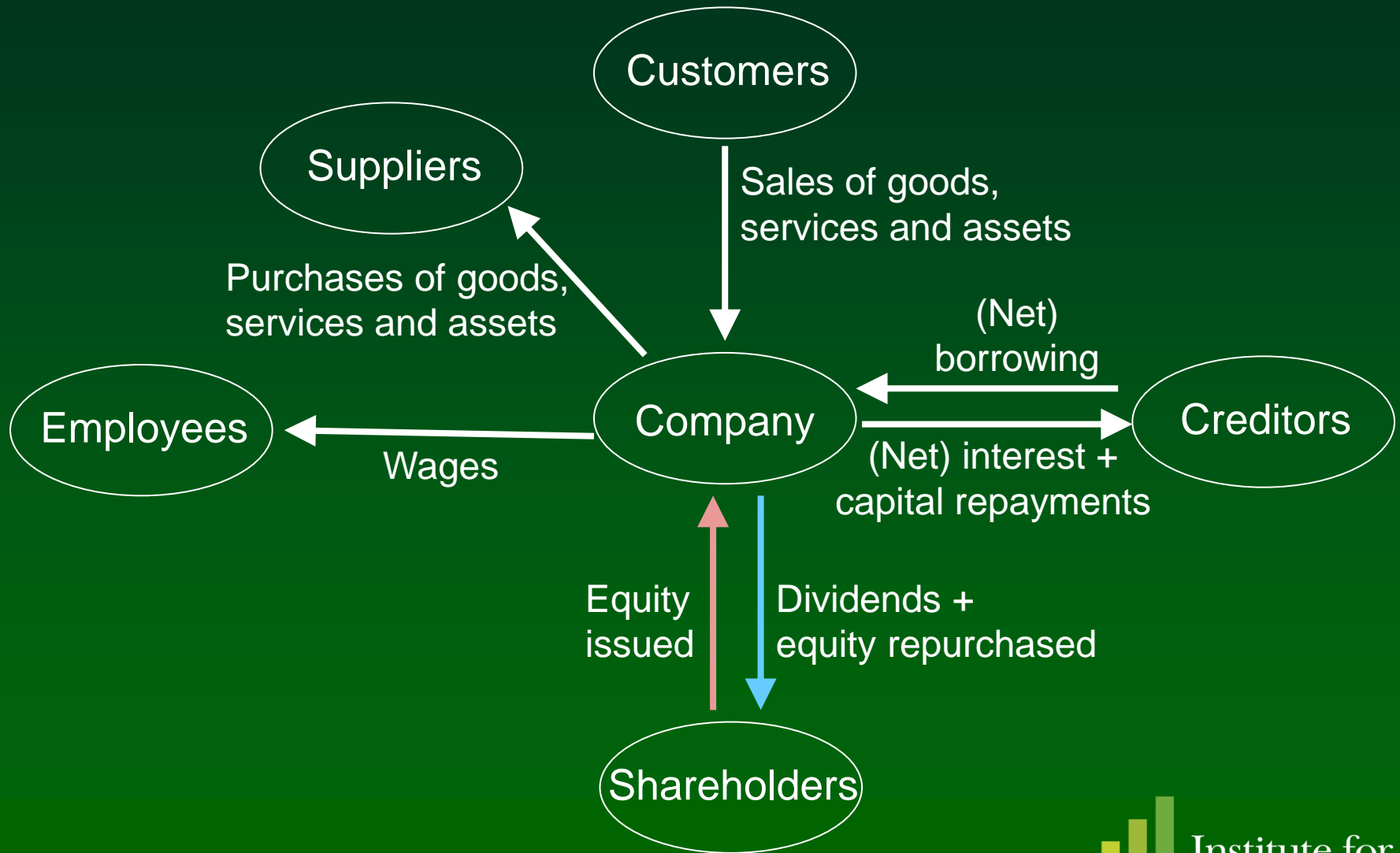
R based cash-flow corporation tax



R + F based cash-flow corporation tax



S based cash-flow corporation tax



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 - R base: cash inflows minus outflows from ‘real’ activities
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 - S base: cash outflows to, minus inflows from, shareholders
- Note that, with uniform tax rates, transactions between (domestic) companies ‘wash out’: one company’s outflow is another’s inflow
 - So net tax only on transactions with households
- R and R + F bases equivalent if loan & repayments same present value
 - Otherwise, R + F base includes interest rate spreads facing households
- R + F and S bases exactly equivalent (by accounting identity)

Corporate and shareholder taxes

- ‘Tax on cash flows from companies to shareholders minus cash flows from shareholders to companies’ (assuming all domestic) describes:
 - An S based cash-flow corporation tax
 - An EET cash-flow tax on saving in shares
- Note that this also means an EET tax on shareholders is equivalent to an R + F based cash-flow corporation tax
- These all tax (cash-flow) profits that companies make for shareholders

Allowance for corporate equity

- Cash-flow corporation tax gives up-front deduction for investment
 - As opposed to capital allowances for depreciation of the assets
- ACE instead gives annual allowance for a ‘normal’ return on investment
 - Used in Italy and Belgium
- If ‘normal’ return set correctly, stream of allowances has the same present value as 100% up-front allowance
 - So ACE equivalent to (R + F based) cash-flow corporation tax
- Analogous to cash-flow (EET) vs rate-of-return allowance (TtE) treatment of personal saving

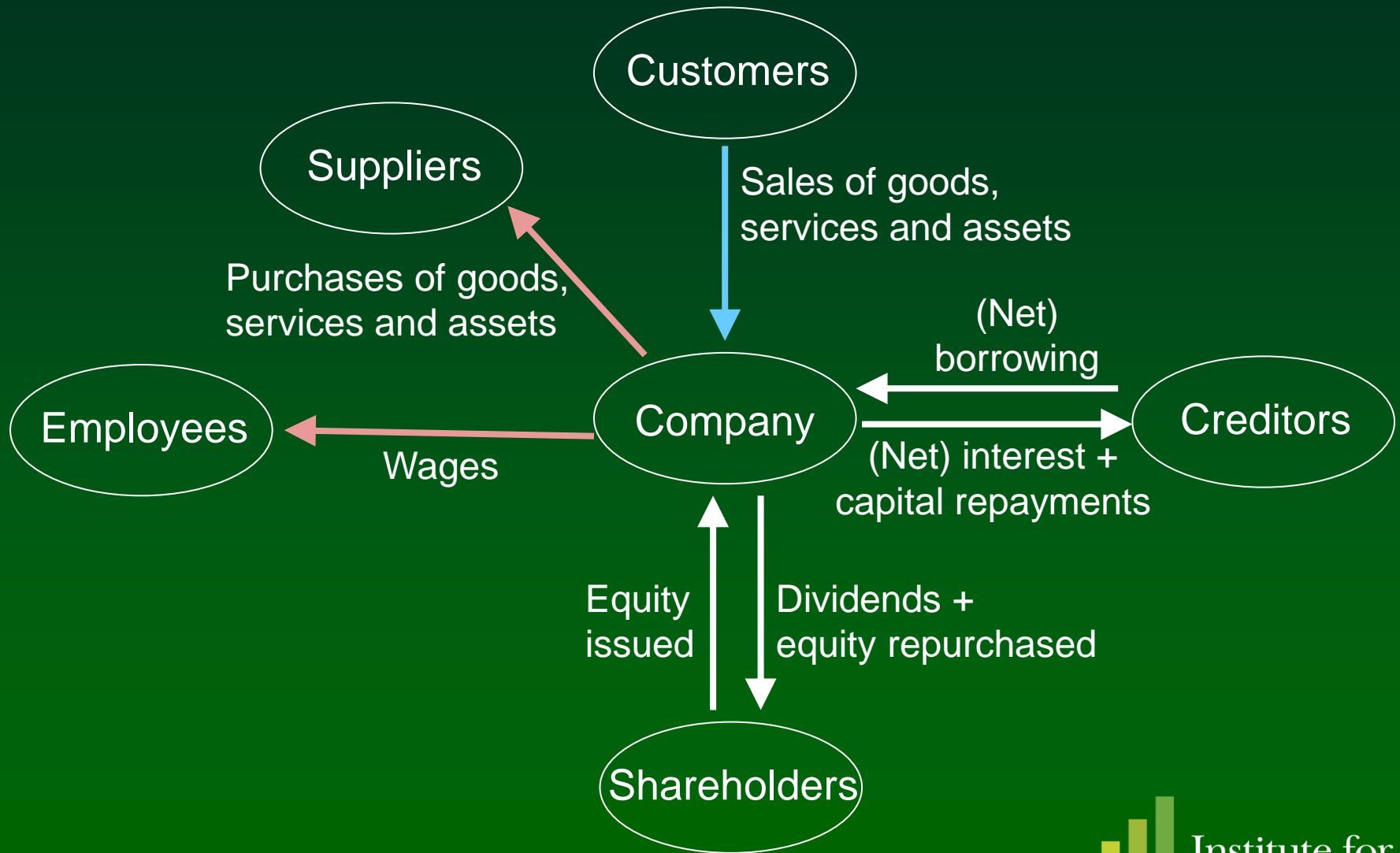
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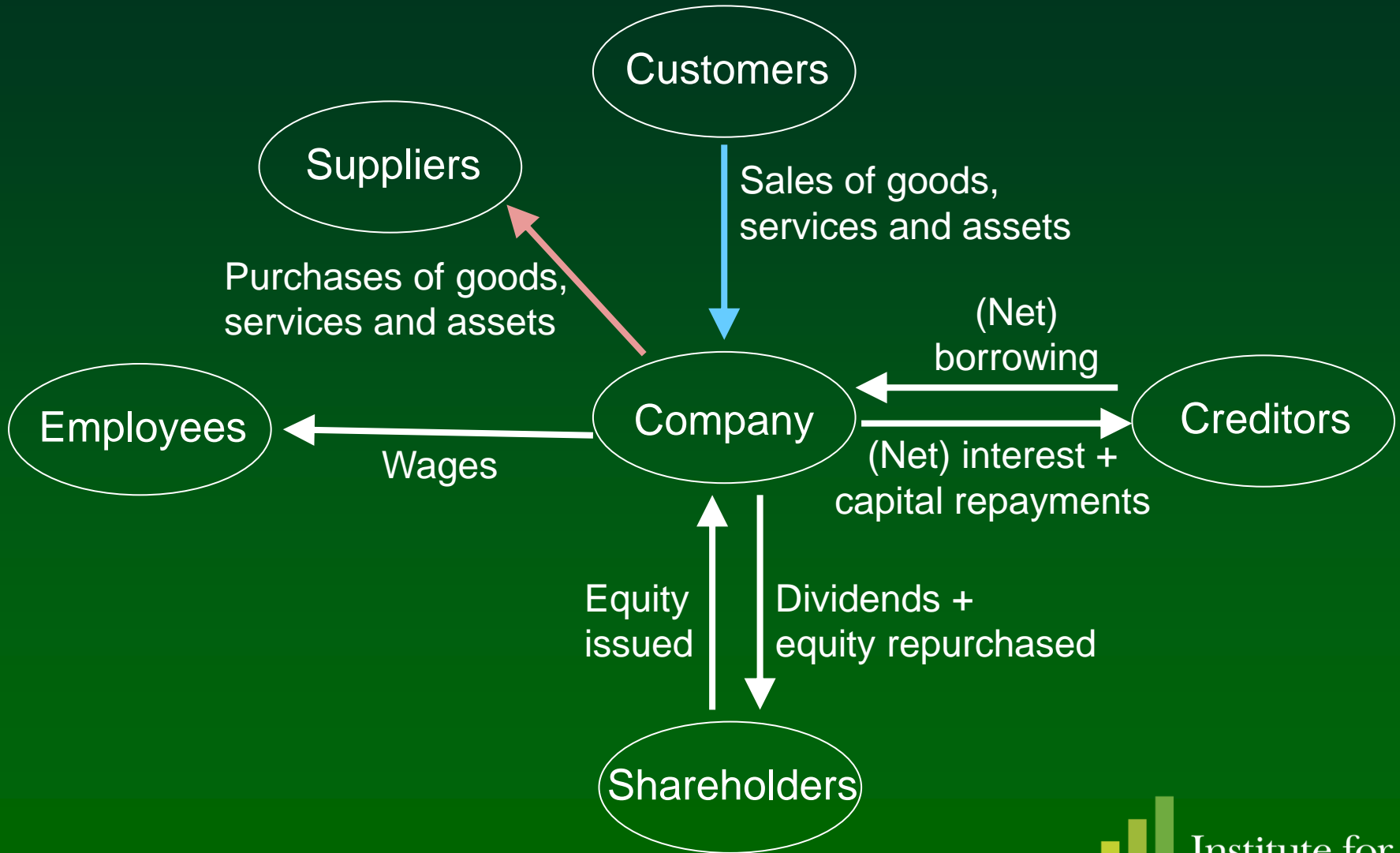
VAT and cash-flow corporation tax + payroll tax

- VAT and corporation tax both tax (broadly) revenue minus costs
- VAT is equivalent to cash-flow corporation tax + payroll tax
- Value added = labour costs + cash-flow profits
- Revenue left over after buying inputs (i.e. value added) is either paid out in wages or is profit
- The equivalence can be thought of as follows:
 - Start with a uniform VAT
 - Give firms a deduction for labour costs (as if it were a VAT-deductible input purchase) and tax workers on their labour income instead
 - This is a purely administrative change, making workers rather than firms remit the tax on labour
 - The remaining tax paid by firms is now a cash-flow corporation tax
 - The new tax paid by workers is a (TEE) earnings tax

R based cash-flow corporation tax



VAT



VAT and cash-flow corporation tax + payroll tax

- VAT and standard corporation tax both tax revenue minus costs
- So what are the key differences?
 1. Investment: deductible input for VAT; capital allowances for CT
 - Cash-flow CT involves immediate deduction (100% capital allowances)
 2. Financial transactions: VAT exempts; CT subsidises borrowing
 - Either could be done on an R or an R + F base
 3. Labour costs: not deductible for VAT; deductible for CT
 - So VAT equivalent to cash-flow CT + (TEE) wage/payroll tax
 4. International: VAT destination-based; CT source-based



Origin vs destination based taxation

- Origin base (VAT terminology) \approx source base (CT terminology)
 - Tax in country where value added / profit generated
 - Used for corporation tax (but often discussed for VAT)
- Destination base
 - Tax in country where sales made
 - Used for VAT (but increasingly proposed for CT, notably in the USA)
- Shift from origin to destination base means an import tax + an export subsidy
 - Might expect that this would increase competitiveness
 - But in fact there is no such effect

Origin vs destination based taxation

- The two taxes are equivalent in the same sense as previously
 - Tax on total UK production vs total UK consumption
 - With trade balanced (as it must be in the long run), these are the same
 - (Real) exchange rate adjusts to keep terms of trade the same
 - So imports and exports, consumption and production, unaffected
- Different in practice:
 - Origin-based tax distorts location of production; destination-based distorts location of consumption
 - Origin-based: profit-shifting and transfer-pricing problems
 - Destination-based: cross-border shopping problems
 - Transitional effects of a shift

Origin vs destination based taxation

International accounting identity allows us to reframe the issue:

- Current account and capital account always balance
- Net imports = cash flows (income – investment) from net foreign assets
- So origin vs destination is a choice of whether tax base should include cash flows from net foreign assets
- Parallel to including cash flows from domestic assets (TEE vs EET)
- Like TEE vs EET, no impact on investment incentives
- Like TEE vs EET, big difference in transition
 - Shift to destination base is one-off windfall tax on net foreign assets
 - Like one-off windfall tax on existing assets if shift from TEE to EET

Wealth tax and tax on normal rate of return

- Suppose normal return is 5%
- 1% tax on stock of wealth = 20% tax on normal return to wealth
 - $20\% \times 5\% \text{ of wealth} = 1\% \text{ of wealth}$
- Annual wealth tax equivalent to an annual tax on capital income that taxes the normal return but not excess returns
- Mirrlees Review argued that we should do the opposite
 - Exempt the normal return to avoid discouraging saving
 - Tax excess returns: pure profits or disguised labour income
- NB one-off wealth tax raises different issues

Why do equivalences matter?

1. Deepen understanding of properties of taxes and clarify thinking
 - Example 1: if VAT is a tax on earnings + profits, what does that imply for widespread views such as:
 - “Taxing earnings and profits is progressive; VAT is regressive”?
 - “VAT is borne by consumers, earnings tax by workers, corporation tax by shareholders”?
 - Example 2: if wealth tax is a tax on normal, but not excess, returns to capital, what does that imply for its desirability?
 - Issues to consider in choice of tax mix not those usually discussed
 - e.g. taxing income vs expenditure vs wealth, or ‘companies vs people’
 - grand philosophical debates often become tractable economic questions
 - Helps us understand relationships between real-world taxes too
 - e.g. how taxes differ from ones we know to be equivalent

Why do equivalences matter?

2. Apparently different taxes often raise the same concerns
 - Example 1: whether an item is for personal consumption or is a work/business expense affects both income tax and VAT
 - Example 2: treatment of financial services is a major issue in corporation tax, VAT and (less obviously) income tax
 - Different taxes have often evolved completely differently in how they deal with these issues
 - Especially direct and indirect taxes
 - Should compare and consider whether different treatments are sensible or whether one should be changed to look (more) like the other

Why do equivalences matter?

3. Gives more than one way to achieve outcome
 - Example: high-rates of standard source-based corporation tax a problem because domestic investment is discouraged, because debt finance is encouraged and because multinationals' profits are mobile
 - One solution: move to a destination-based cash-flow corporation tax
 - Destination-based for profit-shifting, cash-flow for investment & finance
 - Alternative: gradually reduce CT rates while also reducing NICs rates and increasing VAT
 - Since (destination-based) VAT = (destination-based) CFCT + payroll tax, this achieves the same thing without the sudden, radical upheaval
 - Note that this direction is where most developed countries have been moving for decades, for pragmatic reasons
 - If they are equivalent, why is flexibility valuable?
 - Because I defined equivalence narrowly and made assumptions...

How choose between ‘equivalent’ tax options?

- Non-uniformity
 - Indirect taxes allow tax rates to vary by product
 - Direct taxes allow tax rates to vary by total income/expenditure
 - Whether apportion the tax base according to shares of consumption, or value added, or what, matters if taxpayers face different tax rates
- Administrative considerations
- Timing of tax payments / revenue
- Treatment of ‘old capital’ (existing assets and liabilities) in transition
- Short-run effects until prices (or wages, or exchange rates,...) adjust
- International considerations
 - Insofar as can’t easily change international basis of a given tax
 - Some tax bases more mobile, less observable, etc.
- Transparency and presentational considerations

Conclusions

- Taxes implemented in very different ways are sometimes economically equivalent in many ways
 - A notable feature of ‘expenditure taxation’ (broadly understood)
- Understanding this can help us to:
 - Assess the underlying properties of different taxes
 - Find coherent and imaginative solutions to old problems
 - Give flexibility to achieve similar economic outcomes in ways that differ administratively, presentationally, transitionally, internationally, etc.

Further reading

Auerbach (2008), *The choice between income and consumption taxes: a primer* (www.nber.org/papers/w12307)

Auerbach, Devereux, Keen & Vella (2017), *Destination-based cash flow taxation* (www.sbs.ox.ac.uk/sites/default/files/Business_Taxation/Docs/Publications/Working_Papers/Series_17/WP1701b.pdf)

Auerbach, Devereux & Simpson (2010), *Taxing corporate income*, Chapter 9 of Mirrlees et al. (eds), *Dimensions of tax design: The Mirrlees Review* (www.ifs.org.uk/publications/7184)

Hall (1996), *The effects of tax reform on prices and asset values* (www.nber.org/chapters/c10899)

Kay & King (1990), *The British tax system*, Chapters 6 and 7 (www.ifs.org.uk/docs/kay_king.pdf)

Mirrlees et al. (2011), *Tax by Design: The Mirrlees Review*, Chapters 7–8, 13–14 and 17–20 (www.ifs.org.uk/publications/5353)