Taxing Mining for the Use of Crown Resources

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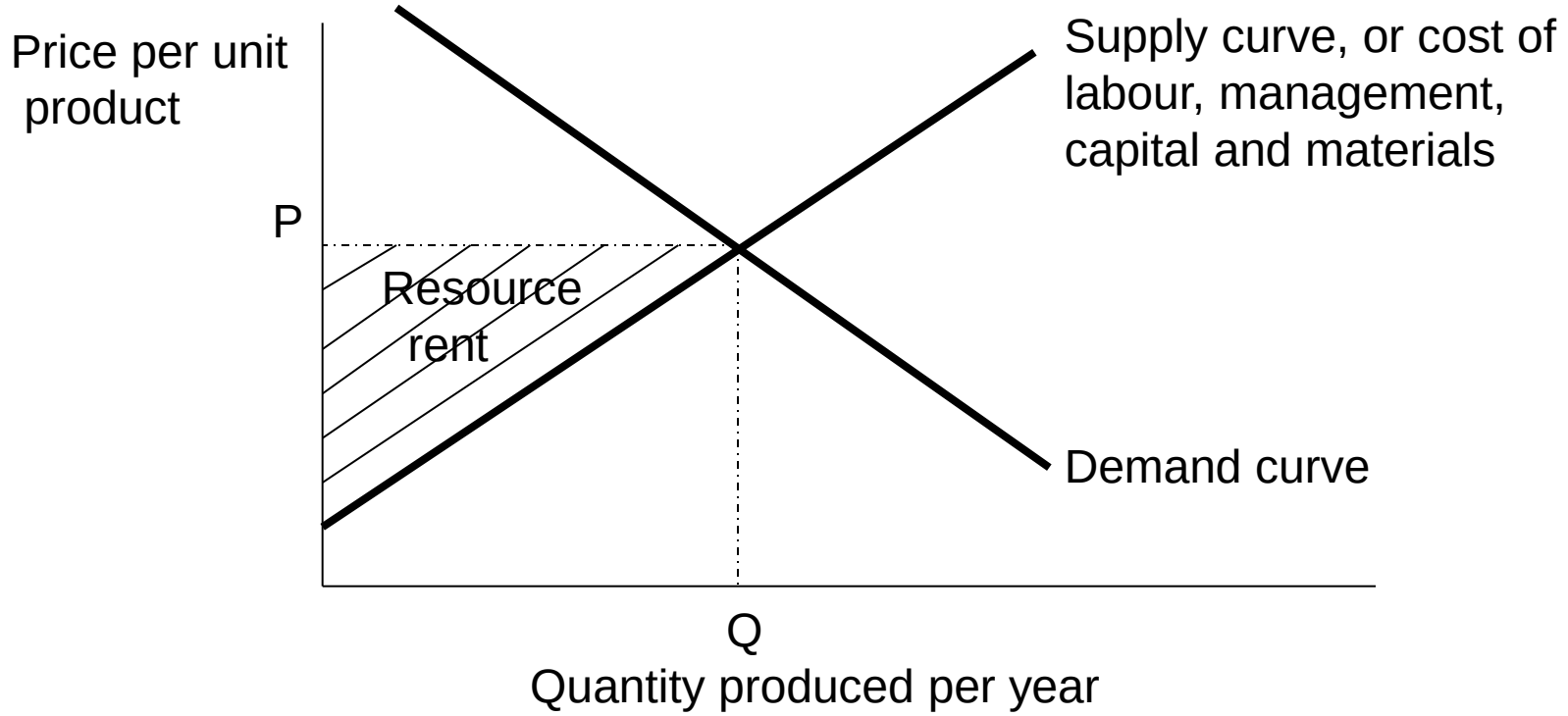
Questions and Context

- What tax system and tax rate should apply to the special taxation of the mining (and energy) industries?
- Mining requires:
  - Exploration, development, extraction and closure
  - Access to natural resources. They are owned by the crown and geographically fixed in supply.
  - Capital, labour, management and materials. Mining has to compete for these mobile inputs against the rest of the economy.
- Mining pays regular income, consumption, payroll, etc taxes
- In addition, most mining also pays special taxes for
  - The right to use natural resources
  - Income payment to crown owned resources
  - These special taxes are a cost deduction for income taxation

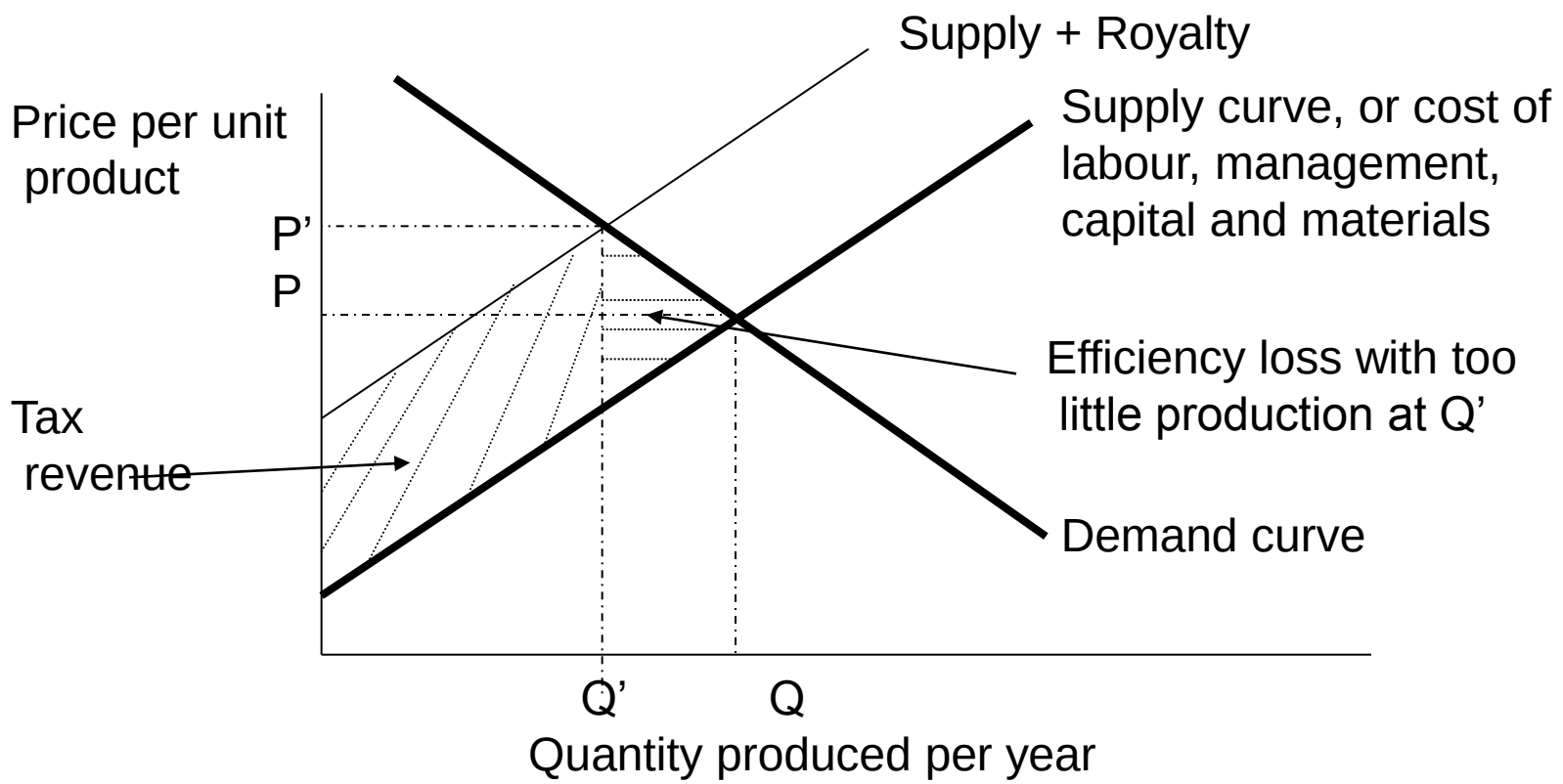
Special Mining Industry Tax System Options

- Quantity based royalties. Used by most state and territory governments.
  - Ad valorem. % of price.
  - Specific. $ per unit production
- Share of economic rent
  - Brown or expenditure tax
  - Resource rent tax, e.g. PRRT on off-shore petroleum and MRRT
  - Henry review proposed Allowance for Corporate Capital, relabelled as SPRT
  - Auction rights to explore and develop
- Augmented corporate profit based tax

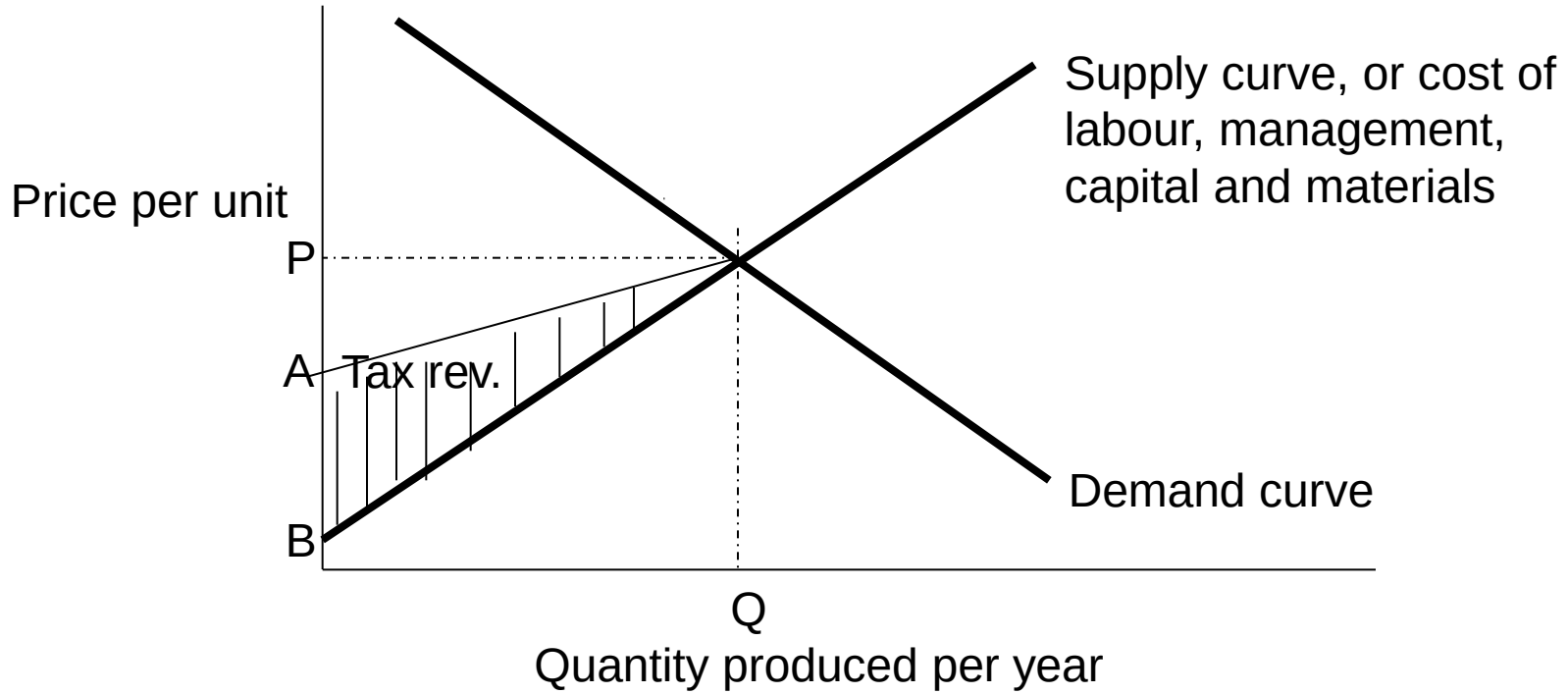
Mining Industry Before Special Taxes: Efficient benchmark



Mining Industry with Royalty: Efficiency cost of reduced output



Mining Industry with Resource Rent Tax: Efficient outcome and government shares rent



Replace Royalty with a Tax on Rent

- Rent tax advantages
  - Increase Q and reduce P
  - Efficiency gain
  - More favoured deposits pay more, and less favoured less
  - Pay more in price booms and less in price slumps
- Government revenue more volatile with rent over commodity cycle: advantage for mine
- Royalty advantage
  - Easier to measure with integrated supply chain
  - “An old tax is a good tax” ??

Change the Tax Mix from Global Mobile to Immobile Factors

- Immobile factors (inelastic supply)
  - Land
  - Natural resources
- Relatively immobile
  - Consumption expenditure
  - Labour
- Relatively mobile factor (elastic supply to Oz)
  - Capital to invest in machinery, buildings, R&D

Arguments for Changing Tax Mix to Immobile Factors (Henry Review)

- Specific example
  - Increase rent tax on mining (fixed factor supply) to fund lower corporate tax (elastic factor supply)
- Equity
  - In final economic incidence, most of tax on both the mobile and immobile factors is passed back to the immobile factors
- Efficiency
  - Minimise tax distortion costs with higher tax rates on factors with relatively less elastic supply

Tax Mix Change Effects

(1) Lower tax on capital. With elastic supply of capital, leads to

- After tax rate of return rises
- More investment with the lower required pre-tax return becomes worthwhile. Capital suppliers receive same after-tax return.
- Larger capital stock per unit of natural resource and per worker raises labour productivity and real market wages
- A larger economy
- Effectively, most of the tax cut on capital is passed onto labour as a higher market wage

Tax Mix Change Effects

(2) Higher tax on land and natural resources, with inelastic supply, leads to:

- No change in land and natural resources supplied
- And with increase in capital, aggregate economic activity expands
- No change in economic rent for natural resources, but a fall in the residual after-tax rent for shareholders
- Mining shareholders bear all of the extra special mining tax as a one-off windfall capital loss in share price (to restore after tax return).
- But, as a part of the reform package, shareholders in non-mining companies gain from lower taxes on earnings and a larger economy. Benefits received as a one-off windfall capital gain.

Tax Mix Change Effects

(3) Net Effects of Reform Package

- Larger more capital intensive economy. This is the efficiency gain.
- Shareholders of mining companies lose from higher special mining taxes and gain from lower capital tax
- Shareholders in other parts of the economy gain.
- More capital per worker and higher productivity increases real wages.

The efficiency and equity arguments for changing the tax mix from mobile factors to immobile factors.

Models to Measure Economic Rents

- Brown or expenditure tax
- Resource rent tax, e.g. PRRT and MRRT
- Henry review proposed Allowance for Corporate Capital, relabelled as SPRT
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Brown or Expenditure Tax

- Economic rent equals net cash flow, or revenue (R) – expenditure (E) on all other capital, labour, management, purchased materials and services inputs
- If cash flow >0, tax revenue received. If cash flow <0, as during early phase of mine or if project goes broke, government pays share of loss.

- Firm decision before tax

  $$NPV\ (\text{before tax}) = \sum (R_t - E_t) / (1 + d)^t$$

- Firm decision after Brown tax at rate v

  $$NPV\ (\text{after tax}) = \sum (R_t - E_t)\ (1 - v) / (1 + d)^t = (1-v)\ NPV\ (\text{before tax})$$

- Tax neutrality applies to all investment decisions, including
  - Exploration and development of mine
  - R&D investment
  - Downstream capital and management investments

Some Properties of Brown Tax

- Close to neutral effect on firm investment decisions. And for tax rate up to 100%.
- Exempts the normal rate of return from capital from taxation (unlike income tax) because capital costs are expensed rather than depreciated
- Government effectively becomes a shareholder equal to tax rate. This means it can write cheques to miners.

Last point is apparent reason for not being liked by governments.

Resource Rent Tax (RRT) (e.g. PRRT and MRRT)

- Cash flow or Brown tax base, but
  - any negative cash flow is carried forward and indexed by (1 + long term bond rate + risk premium),
  - if mine ends at a loss no government payout.
- Risk premium varies by mine and is not known.
  - With an arbitrary average, for low risk mines a subsidy and for high risk mines a royalty-type tax. Distorts investment and factor mix decisions.
  - Australia inconsistency: PRRT on oil and gas has 40% tax rate and 10% risk premium on exploration and 5% for development; proposed MRRT on coal and iron ore has 22.5% tax rate and 7% risk premium.
- Compared with Brown tax, RRT
  - overcomes government pay-out concerns, but
  - asymmetric treatment of wins and losses for firm increases firm risk
  - not as efficient.

Allowance for Corporate Capital (ACC) or SPRT

- Tax base:
  - As for corporate income tax, allow depreciation rather than expense capital
  - Allow a deduction for normal rate of return (long term bond rate) on undepreciated capital stock;
  - Any losses carried forward indexed by (1 + long term bond rate).
  - If a net carried forward loss at time of mine closure, government pays a share of that loss.
- Provides for symmetrical treatment of wins and loses. Tax rate can be between 0% and 100%
- Government effectively becomes a shareholder, and the firm a compulsory provider of debt funds to government.

Comparison of ACC with Brown and RRT Taxes

- Identical in present value terms to Brown tax, and smooths revenue flows for government.
- More efficient than RRT, but has prospect of government pay-out
- Miners concerned about
  - credibility that a future government would refund a loss at mine closure.
  - the flexibility and value of its loans to government relative to regular bonds, i.e. LTBR too low

Auction Rights to Explore and Develop Mines

- In principle, an informed competitive bidding process will have firms bid up front most of the rent, but using a firm discount rate > LTBR
- Practical concerns include
  - Extent of competition
  - Up-front capital requirements for bid and for project
  - Sovereign risk of special taxes in the future on revealed highly profitable mines (net of bid)
- Lumpy cash flows for government

Serious Practical Problems with Proposed Reform

- Commonwealth-state financial relations
  - Royalties a state revenue and operation of horizontal fiscal equalisation
  - Rent based taxes perceived as commonwealth revenue
- Treatment of existing mines and sovereign risk
- Measurement of economic rent at the mine head with integrated production firms

Conclusions

- Shifting from royalties to an economic rent tax offers large efficiency gains
- A tax mix change involving an increase in the relative tax burden on mining rents in a wider tax reform agenda offers further efficiency gains
- Of the economic rent tax options, the Brown tax is simpler and with clear efficiency gains
- Clearly there are practical issues with tax reform
- 2010 political role in tax reform, including special taxation of mining, has been lamentable

Reference Materials

- Henry, K. et al. (2009), Australia's Future Tax System, Report to the Treasurer, Commonwealth of Australia, chapter C1.
- Daniel, P. et.al. (2010), The Taxation of Petroleum and Minerals: Principles, problems and practice, Routledge, London, and especially chapter 2 by Boadway and Keen.