

***Presentation to 2011 Tasmanian Economic Forum  
Hobart  
2 December, 2011***

***The economics of dear oil***

***by Dr Rana Roy  
Consulting Economist  
& Principal Consultant,  
Tasmanian Oil Price Vulnerability Study,  
Department of Infrastructure, Energy & Resources***

## *Introduction*

- The structure of the presentation: (1) the trajectory of oil prices; (2) the impact on the world, Australia and Tasmania; (3) the challenge for Tasmania.
- Acknowledgement: what follows draws on my work for DIER on the TOPVS and on the modelling by CoPS.
- Disclaimer: the views expressed are mine and do not necessarily coincide with the views of DIER or CoPS.

## *The trajectory of oil prices – the story so far*

- Since 1973 and *a fortiori* since 2001: underlying the volatility of prices in the short term is the long term trend-line of high and rising prices.
- The US annual average import price for 2011, at US\$101 per barrel, represents a 260% increase in real terms over the 2001 price of \$28 (in 2011 dollars),
- and more than five times the pre-1973 historical price.

## *The trajectory – a story of supply and demand*

- This trajectory is rationally explicable by supply and demand – monopolistic supply, increasing demand –
- only partially offset by efforts to diversify supply, and to decouple growth in demand for oil from growth in output (by means of increased efficiency in use of oil and technical substitution in place of oil).
- These drivers are likely to persist for some decades. So, too, therefore, is this trajectory. Cf. IEA, IMF, EIA.

## *The trajectory – like the story of iron ore prices*

- Just as the 900% increase in iron ore prices in the last decade from *circa* US\$20 per tonne to *circa* US\$200
- is also rationally explicable by monopolistic supply (Australia 38%, Brazil 34%) and increasing demand,
- only partially offset by attempts to diversify sources of supply and to increase efficiency in steel production and substitute new materials in place of steel.

## *The trajectory – monopolistic supply*

- OPEC's *circa* 40% share of world supply, conventional and non-conventional, suffices to deliver high and rising prices (its reference case range) in most circumstances.
- Its current share of world *supply* is not a limit but a choice designed to support its pricing strategy.
- Its share of world *reserves* is estimated at 70% (after counting Canadian oil sands, etc.).

## *The trajectory – offset by diversification?*

- At the end of 30+ years of effort at diversification following the oil shocks of the 1970s,
- and despite a temporary reduction in OPEC market share and in world oil prices in the 1980s and 1990s,
- OPEC still holds a 40% share of supply, a 70% share of reserves and the ability to maintain a floor to prices at *circa* US\$80 per barrel (its 2010 reference case).

## *The trajectory – increasing demand*

- Demand for oil is a function of the growth in world output – and also the oil-intensity of output.
- World output has grown at 2% per year for two centuries. It is growing at 4% per year in the 21<sup>st</sup> century...
- driven by the take-off in Asia. Held down to <1% per year until 1950, Asia has been growing at >5% since 1950, and at 9% in the 21<sup>st</sup> century (China at 10%, India at 8%).

## *The trajectory – offset by de-coupling?*

- At the end of 30+ years of effort to reduce the oil-intensity of output, by reducing oil's share in energy supply (technical substitution) and increasing efficiency of use,
- oil's share of TPES is down from 46% in 1973 to 33%, efficiency is up in every sector, consumption per unit of GDP has fallen world-wide (by 50% in US, more in EU).
- *But:* consumption has risen by > 50% in absolute terms.

## *The trajectory – the role of transport*

- Arguably, however, the problem of decoupling is now largely reducible to one sector: transport.
- The transport sector's share of world oil consumption has risen from 45% in 1973 to 61%.
- The 55% rise in world oil consumption since 1973 is the sum of a modest 10% increase in all non-transport usage and a 111% increase in transport usage.

## *The impact on the world, Australia and Tasmania*

- To map the likely impact on Tasmania, we need to model first the world economy and then the Australian economy.
- For the TOPVS, CoPS modelled two scenarios of oil price increases, each beginning in 2011 and running to 2030:  
(1) a one-off increase of 65% in the world price of oil and  
(2) an increase of 13% p.a. for ten years → (1) a one-off increase of 22% in the Tasmanian consumer price of gasoline and (2) an increase of 5% p.a. for ten years.

## *The impact – the world economy*

- Large increases in oil prices → large changes in terms of trade, and trade balances, of oil exporters and importers.
- Oil exporters collect higher revenues despite exporting less; oil-importers pay larger bills despite importing less.
- Net result: a reduction in the rate of growth of world output. The 65% increase in the world price of oil shaves 2.7 percentage points from the growth in world output.

## *The impact – Australia, relative to the world economy*

- As a net oil-importer, Australia is negatively impacted – but much less severely than the rest of the world. The 65% price spike shaves 0.57% from GDP, not 2.7%.
- Australia is protected by its energy endowment (of oil, gas and coal, its fourth, fifth and second largest exports).
- High real wages + labour market flexibilities enable real wage reductions required to restore full employment.

## *The impact – Australia, continued*

- The bad news:  $\uparrow$  price of petroleum products  $\rightarrow$   $\uparrow$  cost of freight  $\rightarrow$   $\downarrow$  rate of profit  $\rightarrow$   $\downarrow$  employment  $\rightarrow$   $\downarrow$  marginal product of capital  $\rightarrow$   $\downarrow$  investment and capital stock  $\rightarrow$   $\downarrow$  lower marginal product of labour, lower real wage.
- Scenario 1: by 2030, GDP below baseline by 0.25%, capital stock by 0.36%, real wage by 1.77%. Scenario 2: same pattern, slower pace of change, greater magnitude in final outcomes. By 2030, GDP below baseline by 1.18%, capital stock by 1.49%, real wage by 5.80%.

## *The impact – Tasmania, relative to the rest of Australia*

- If Australia is less severely impacted than the rest of the world, Tasmania is more severely impacted than the rest of Australia. A key finding of TOPVS: T is more V!
- Scenario 1: by 2030, GSP below baseline by 0.32%, capital stock by 0.71%, real wage by 1.75%. Scenario 2: by 2030, GSP below baseline by 1.59%, capital stock by 2.73%, real wage by 5.69%. Note: greater ↓ in capital stock relative to Australia but same fall in real wages → employment remains below baseline.

## *The impact – Tasmania, continued*

- Reasons for Tasmania's underperformance relative to the rest of Australia – mirror image of reasons for Australia's outperformance relative to the rest of the world.
- Industry profile: Tasmania is not protected by abundant oil, gas and coal. Some of its major industries are the ones most exposed to reductions in exports and output: forestry and wood products, aluminium and other metals.
- Labour market: insufficient ↓ real wages to ↑ employment.

## *The challenge for Tasmania – the shared challenge of decoupling*

- In facing the prospect of high and rising oil prices, Tasmania shares with the rest of Australia the common challenge of decoupling oil demand growth from output growth – i.e., reducing the oil-intensity of future output.
- Esp. in the transport sector – given that transport absorbs 72% of oil consumption in Australia, and given that the single act of raising vehicle fuel-efficiency standards to EU levels could cut oil consumption in 2030 by 25%.

## *The challenge – more on decoupling*

- Tasmania can draw on a well-established national and international agenda to increase efficiency in oil usage everywhere and to apply technical substitution where appropriate. There is no need to re-invent the wheel!
- In one respect, Tasmania is better placed than other states to pursue the shared challenge of decoupling: the availability of hydro-electricity and its potential use in technical substitution and as an export in its own right.

## *The challenge – the additional challenge of productivity*

- The modelling also shows that Tasmania has an additional handicap: its capital stock and related level of labour productivity in the new dispensation is insufficient to maintain full employment at “Australian” real wages.
- To maintain full employment here in a world of high and raising oil prices requires either a disaggregation of the labour market to permit a harder fall in real wages (not recommended!) or a successful effort to raise the level of labour productivity. Hence, the additional challenge.

## *The challenge – more on productivity*

- As before, no need to re-invent the wheel: Tasmania can draw on a well-established national and international agenda on productivity, including both revenue-neutral tax reform (cf. Henry Review, OECD) and budget-neutral reform of expenditure, esp. investment (cf. IA, OECD).
- Of course, the Tasmanian Economic Forum will not need to be reminded that the need to reduce oil price vulnerability is by no means the only compelling reason for Tasmania to pursue the challenge of productivity.