Department of Treasury and Finance
Government of Western Australia

CGE MODELLING AS A TOOL FOR EVALUATING PROPOSALS FOR PROJECT ASSISTANCE: A VIEW FROM THE TRENCHES

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The views expressed are those of the author and not of the Department of Treasury and Finance

Argyle at risk as Rio pushes for royalty cut

EXCLUSIVE
MARK DRUMMOND
CHIEF REPORTER

It has been a cash cow for the State Government for more than two decades, but now the owners of the Argyle diamond mine have warned Labor that the mine could soon be shut unless big royalty concessions are granted.

In a formal submission to State Development Minister Clive Brown, Argyle owner Rio Tinto has warned that the closure of the diamond mine would have dire economic and social consequences for the East Kimberley region.

Mr Brown: Request going to Cabinet.

In a move flagged in *The West Australian* in March, Rio has asked Mr Brown for a big reduction in the annual diamond royalties it pays the Government to help ensure a proposed $800 million underground expansion of the mine is economically viable.

The Argyle mine — which has generated $825 million in diamond royalties for the State Government since mining began in 1983 — will close in 2008 if Rio does not proceed with the underground expansion.

Argyle commercial general manager Bruce Cox confirmed yesterday that an $80 million feasibility study into the underground expansion indicated it would be difficult to get the project over the line unless there was some "value retrieval" in government royalties or water charges.

While the exact size of the royalty concessions sought by Rio are confidential, it is likely they would cost the Government tens of millions of dollars in forgone revenue.

The Government pocketed $73 million in royalties from the mine in 2002 and $68 million last year.

Mr Brown said yesterday that Rio's request for a restructuring of its royalty arrangements would have to go before Cabinet.

It is understood the mining giant has asked for a response by late next month.

Mr Cox said Rio was not asking for royalties from Argyle to be scrapped altogether, but just for a fairer deal from the Government.

He said Argyle was paying the highest royalties of any mine in Australia. Under the 1981 Diamond (Argyle Diamond Joint Venture) Agreement Act, Argyle is obliged to pay the Government royalties amounting to as much as 22.5 per cent of profits.

Mr Cox said the royalty arrangement which had been in place since the 1981 legislation did not reflect the high capital costs and risks associated with underground mining.

He said Rio had been "flawed by the impact" that closing the Argyle mine would have on the East Kimberley region, according to regional modelling by Monash University which had been included in the submission to government.

"There's a fair bit of power in that . . . it's not an ambit claim with no basis," Mr Cox said.

Mr Brown would not indicate whether he supported the royalty concessions requested by Rio.

"What's been put to us is the mutual benefits involved in going forward with the ($800 million underground) project," Mr Brown said. "I'm confident we will give the matter thorough consideration and make a decision that is in the public interest."

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Featuring WA and the Kimberley region

Gilchrist sensation

The sexual rumours that rocked my family

EXCLUSIVE BOOK EXTRACTS TOMORROW AND MONDAY

China signs up record $30b Gorgon gas deal

■ EXCLUSIVE
By Steve Pennells
State Political Editor

THE single biggest export deal in Australian history will be unveiled today when the international petroleum giants behind the controversial Barrow Island gas project sign a $30 billion agreement to sell liquefied natural gas to China.

The agreement, conditional on the project going ahead, would trump the previous record $25 billion gas export contract concluded last year. Signing of the latest agreement in Canberra coincides with the visit by Chinese President Hu Jintao.

The West Australian understands the joint venture partners in the Gorgon gas project have also agreed to sell a slice of the development to the China National Offshore Oil Corporation to secure the sales deal needed to underpin the Barrow Island project. Under the deal -- which is subject to the signing of official contracts — the Chinese Government-owned company has agreed to buy between 80 million and 100 million tonnes of gas over 25 years, which is valued at about $30 billion.

The move mirrors the strategy used by the North-West Shelf project to win last year's contract to supply liquefied natural gas from the Burrup Peninsula to China.

Under that deal, CNOOC took a 5.3 per cent stake in the North-West Shelf gas reserves, equal to 1.1 trillion cubic feet of gas.

But the Gorgon agreement goes one step further by enabling the company to become a full equity partner in the project.

The three joint venturers — ChevronTexaco, Shell and ExxonMobil — will reduce their holdings in Gorgon to allow CNOOC to take a 12.5 per cent stake.

The deal cements WA's position as one of the world's leading oil and gas producers and is a big win for the State Government. It also underpins the commercial viability of the Gorgon development.

But the lucrative agreement is certain to reignite the State-Federal war over royalties.

Gorgon is expected to generate up to $18 billion in royalties over its 30-year life. But the WA Government's slice is just $300 million, mostly payroll tax. The WA Government will have to contribute to infrastructure costs.

About $500 million a year will go to Canberra in petroleum resource rent tax.

Premier Geoff Gallop and State Development Minister Clive Brown have visited China to push WA gas reserves as an energy source.

The Gorgon partners need to sell enough LNG to support a single production train producing five million tonnes of LNG a year, from 2008, for the $11 billion project to get off the ground. Last month, the Gorgon project won vital support when the State Government agreed to allow the project to be built on the environmentally-sensitive Barrow Island.

The in-principle approval was considered important because the Gorgon partners need to show potential customers the project is real if they are to commit to buying LNG. Environmentalists opposed the expansion because the island is an A-Class reserve.

The State Government and the joint venturers would not comment on the deal yesterday.

Mr Hu told business leaders yesterday that China was committed to cementing formal trade ties with Australia. Trade and Korea are likely to be the main topics when he meets Prime Minister John Howard today.

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The Electricity Reform Task Force commissioned an independent cost and benefit study, which said that the benefits included an average 8.5 per cent cut in retail electricity prices, a boost of gross state product of up to $300 million a year and 2,900 new jobs.

Media Statement
Government of Western Australia
The Hon. Eric Ripper MLA
Deputy Premier; Treasurer; Minister for Energy
15 October 2002

The Rise of CGE Modelling in Analysing Requests for Assistance

- CBA under pressure from multipliers
  - Project supporters wanted indirect effects taken into account
- CGE models the ideal solution
  - Long and credible history of policy analysis
  - Calculate indirect effects, but can still impose factor restrictions

But Are We Presenting Results in the Right Manner?

- Commonly, results are presented as:
  - “The project will increase Gross State Product by $XX million in 2010, while employment will be YY people higher than otherwise.”
  - “Government revenues will be $ZZ million higher in NPV terms over the life of the project.”
- Is this the information Government needs to make a decision?
  - No!

What is Wrong with the Current Way?

- Lack of first principles analysis
  - Why should government subsidise the project?
- Presents economic impact, not economic benefit
  - Results often include additional factors of production, but does not account for their cost
    - Short-run labour, interstate migration
  - Does not include budget impact of higher population on expenses, nor the impact of the Commonwealth Grants Commission redistributions on total revenue
- Project is considered in isolation

Economic Impact versus Economic Benefits

Much decision making involves choosing whether to incur a cost (often in cash) to obtain a desirable outcome. When outcomes are presented in terms of additional economic activity it is not feasible to compare the positive and negative aspects of the change because the two are calculated in different ways. In fact, both are usually expressed in terms of the same measuring rod, dollars; something, which makes them look deceptively comparable.

Dwyer, Forsyth, Spurr and Ho (2003)

Economic Impact versus Economic Benefits

The addition to output normally requires additional inputs, of land, labour and capital, to enable it to be produced. These inputs have a cost, and this cost must be deducted from the change in the value of gross output if a measure of net economic gain is to be made.

Dwyer and Forsyth (1993)

ABC Metals

- Company has submitted a proposal to the Western Australian Government
  - Company wants to replace one of its ageing steel mills in Japan
  - Can construct its new steel mill in Western Australia or Africa
  - Requires a $200 million capital grant
- Project details
  - $A1 billion in investment over two years
  - Exports of $A445 million per annum
  - Direct employment of 420 people

ABC Metals: Consultant’s CGE Analysis

- Company has hired an economic consultant to undertake economic analysis of the project
  - Results presented in company’s submission:
    - GSP to increase by $500 million per annum
    - Employment to increase by a peak of 6,000 people
    - Western Australian own-source revenues to increase by $60 million per annum
- Basically a sound analysis, but results are not packaged in a meaningful manner
- Makes public servants’ lives very difficult!

2 Stages of Analysis

- Modelling the economic impact of the project
  - Why does the project increase economic activity?
    - Increased productivity; or
    - Increased factor use
- Cost-benefit analysis
  - First principles
  - Account for the cost of extra factor use
  - Compare costs with benefits

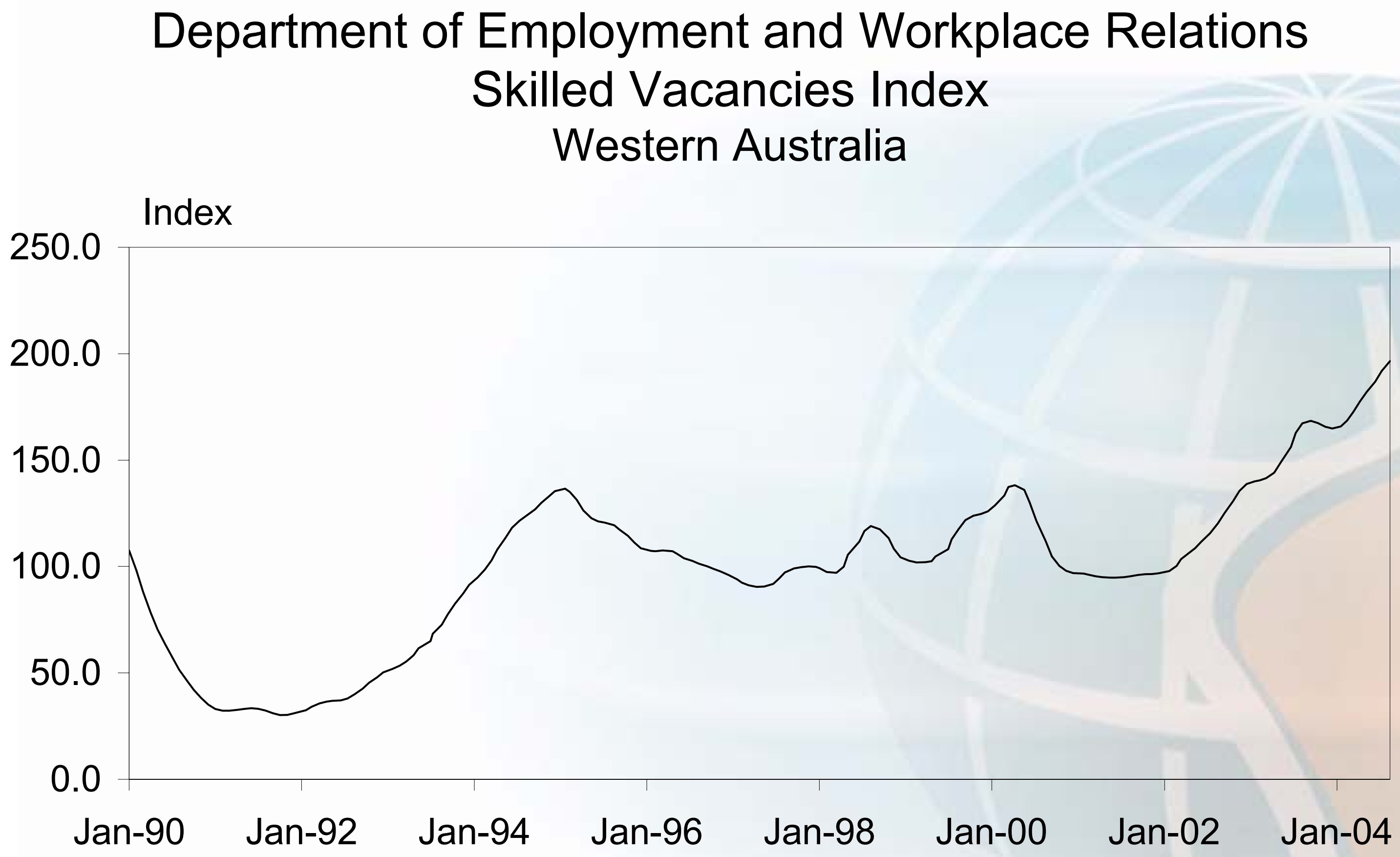
Implementing the Shocks

- MMRF-Green Model
  - Recursive dynamic, 2 region, WA specific, November 2002 version
- Use “dummy industry” method
  - Place “tiny” industry into model database
    - Margins, investment demands as for existing WA Iron and Steel Industry
  - Exogenise investment demand, capital stock, exports, employment in that industry
- Implement additional shocks as required
- Fiscal impacts calculated in spreadsheet
  - Considers royalties, Commonwealth Grants Commission effects
  - Budget balances endogenous

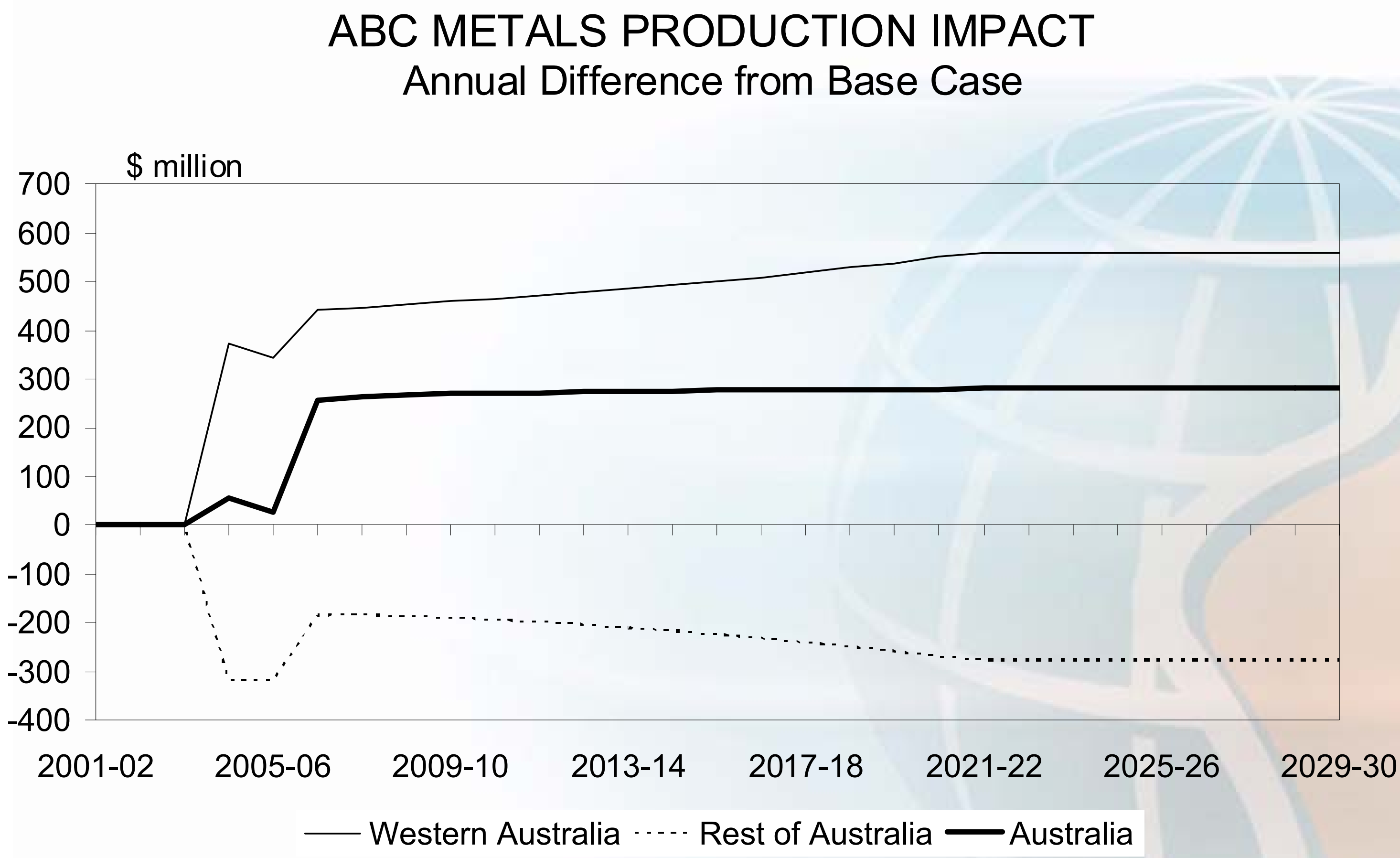
Additional CGE Assumptions

- Additional capital repayments over standard MMRF-Green method
  - Project returns 22% on capital to overseas owners not 7%
- Only replacement demand for iron ore
  - Company is closing one steel mill to start another
- No national short run labour flexibility
  - Currently a shortage of skilled labour
    - But can move between States

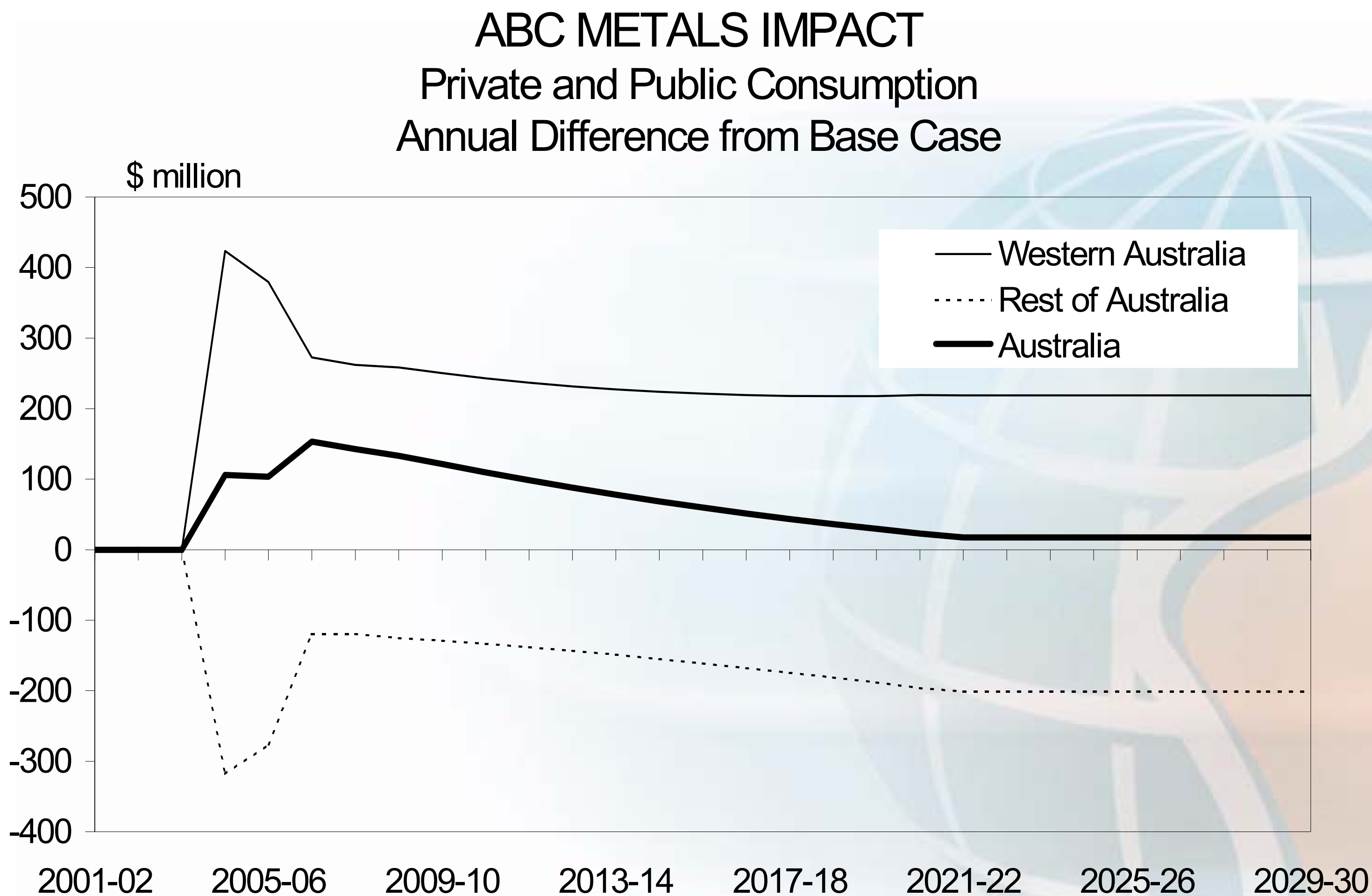
Skilled Labour Shortage?



Results


ABC METALS PRODUCTION IMPACT
Annual Difference from Base Case
$ million
700
600
500
400
300
200
100
0
-100
-200
-300
-400
2001-02
2005-06
2009-10
2013-14
2017-18
2021-22
2025-26
2029-30
Western Australia
Rest of Australia
Australia

Results



ABC METALS IMPACT
Private and Public Consumption
Annual Difference from Base Case
$ million
500
400
300
200
100
0
-100
-200
-300
-400
2001-02
2005-06
2009-10
2013-14
2017-18
2021-22
2025-26
2029-30
Western Australia
Rest of Australia
Australia

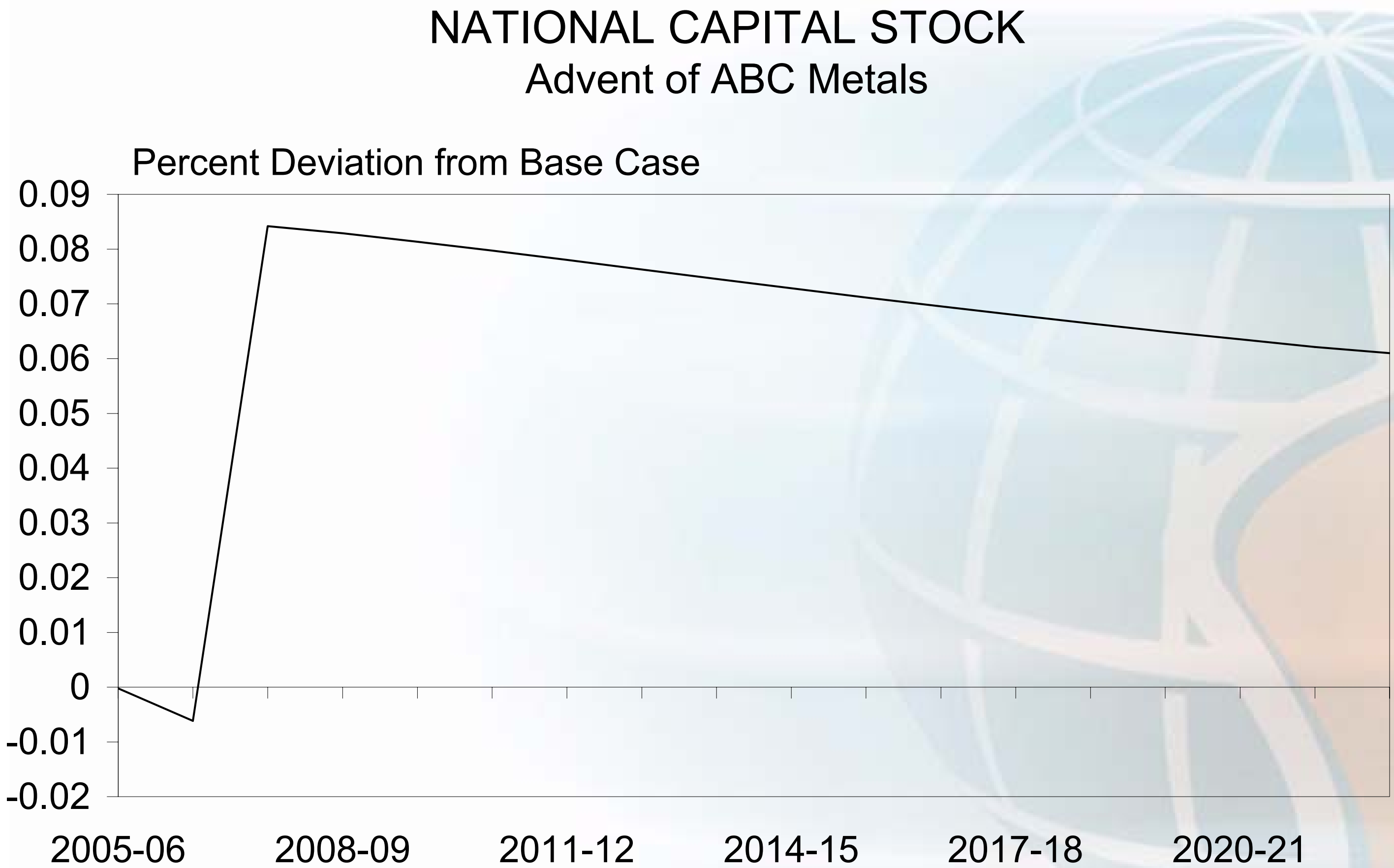
“Short-run” Results

- Investment phase
  - Inflow of funds - increased consumption
  - Factor restrictions at national level
    - Little production impact
    - But regional production influenced by movements of labour

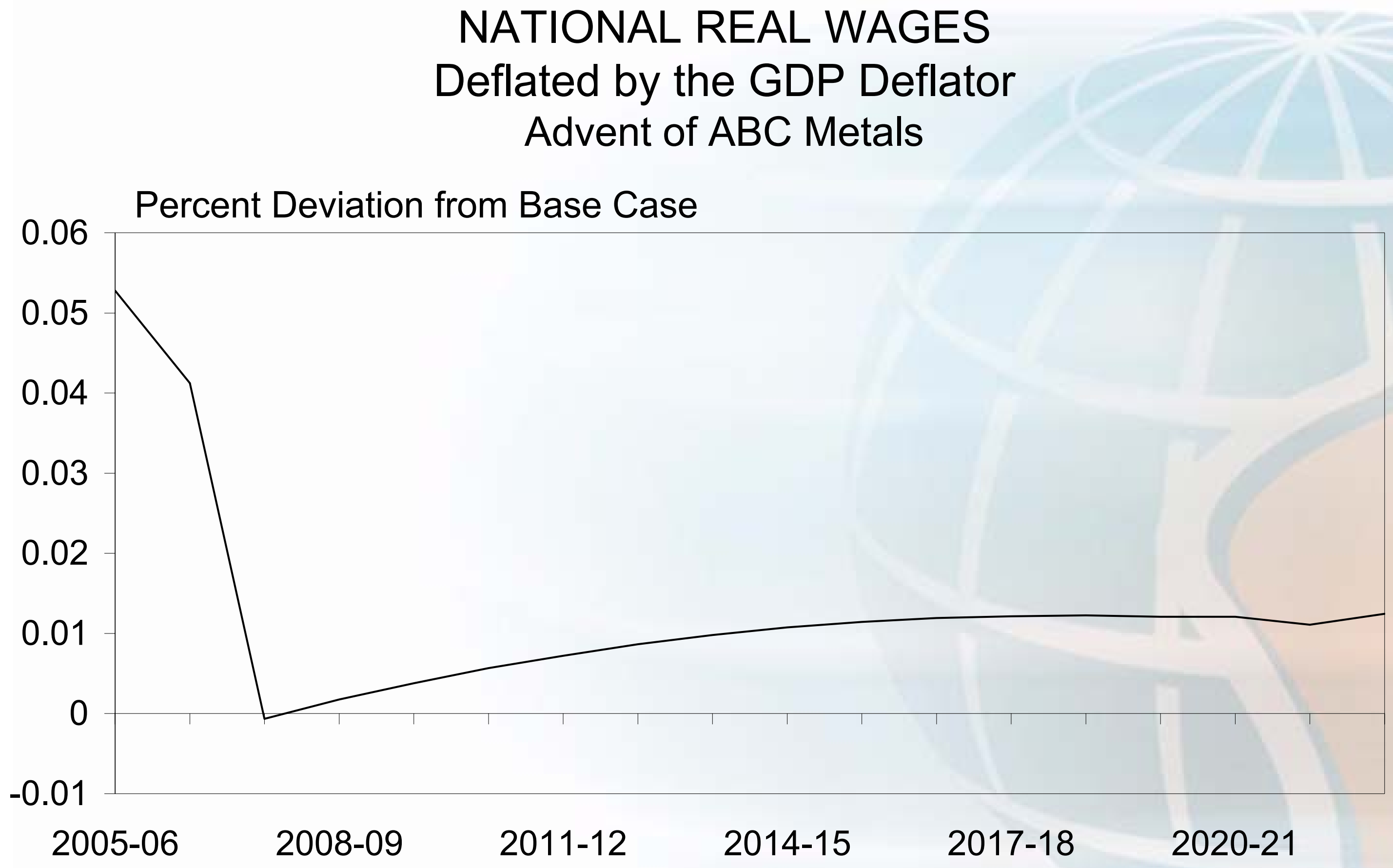
“Long-run” Results

- Production phase
  - Add capital stock to the economy
    - Other capital, which is now gaining a lower rate of return, takes time to depreciate.
  - Project is highly productive but:
    - Capital productivity captured by overseas shareholders
    - No capacity in model to reflect higher wages in the new industry

Impact on National Capital Stock



Higher Capital Stock Increases Demand for Labour



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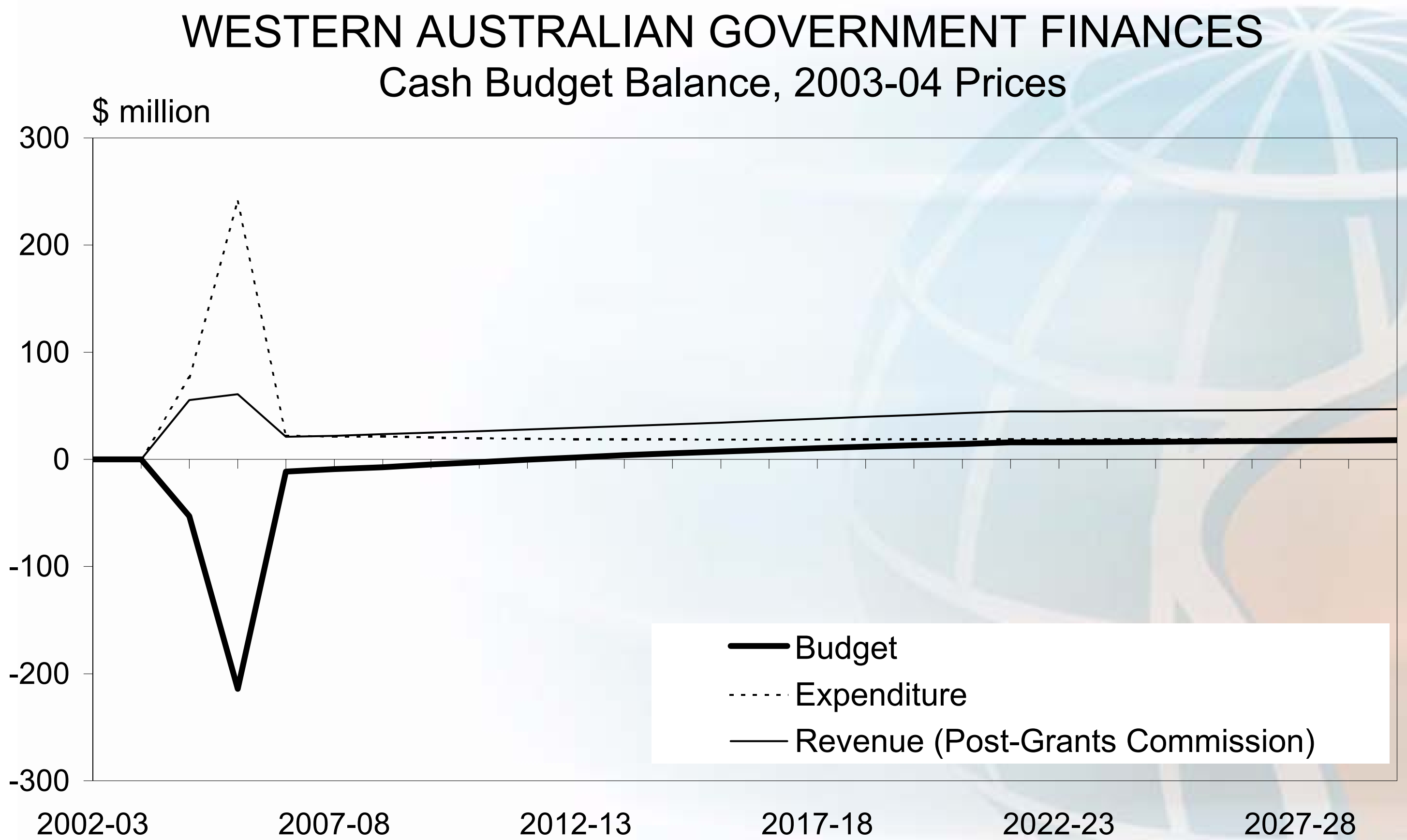
Fiscal Impacts

- Must consider costs as well as increased revenues
  - Cost of subsidy
  - Increased population
- Commonwealth Grants Commission redistributes much of the revenue gain to other States
  - But gives some back due to higher population

Fiscal Impacts



Cost Benefit Analysis

- First principles
  - Why should government assist the project?
- Estimation of the costs and benefits
  - Extra resource use is a cost
- Calculation of BCR, NPV and (sometimes) IRR
- Based on Dwyer, Forsyth and others
  - Tourism and special events analysis

First Principles

- Company will only undertake project if subsidy is provided is not a good enough reason to provide assistance!
  - If project is beneficial to the economy, then why doesn't it happen without assistance?
    - Market failure
      - Externalities that make return to society greater than returns to project proponent
      - Market power (assume the case here)
    - Will another company undertake a similar investment?
    - Is the company bluffing?

Costs and Benefits

Cost-benefit Analysis of the ABC Metals Project Western Australia Deviation from Base Case $m NPV to 2029-30, 8% nominal discount rate	
Benefits	
Consumption	3,549
Government Revenue	314
Less	
Wage Bill[a]	990
Total Benefits[b]	2,873
Costs	
Government Expenditures	383
Subsidy	171
Total Costs	554
Net Present Value	2,319
Benefit-cost Ratio	5.18

a. Including additional labour used valued at opportunity cost (base-case wage rates).
b. Equal to additional consumption, plus government revenue, minus additional wage costs.

Assistance Decision

- Cost-benefit is greater than one
  - But moderate compared with scale of project
- Assist the project?
  - Yes
  - But only if satisfied it is an “all or nothing” decision
  - Need to note that it has a negative fiscal impact
    - Can’t fund an unlimited amount of such projects

Summary

- CGE Models have been a very positive advance in the evaluation of assistance proposals
  - Can enhance traditional CBA
- However, we have not been presenting results in a format that is useful to decision makers
- It is up to Governments to be strong on this issue
  - Need to specify the results required for consideration of a decision