LABOUR MARKET CLOSURES AND CGE ANALYSIS

Elspeth Wilson

Department of Treasury and Finance

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

Long Run Labour Market Behaviour and the CGE Model

- Importance of the results
- Results of labour market adjustments are not necessarily realistic
- Potential for closures to better fit reality
- Lack of research regarding behaviour of Australian labour market in relation to regional shocks

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

MMRF GREEN MODEL

- MMRF-Green Model
  - Comparative-static model
  - Two region version
    - WA and ROA
  - Rate of return equation (E_del_f_ror) modified
    - ROR for each industry set at economy-wide level
    - Reference to capital stocks removed

ABC Metals Project

- Hypothetical resource processing project in regional Western Australia
  - Total export revenue of $455 million
  - Direct expenditures of $122.5 million
  - Labour costs of $17 million

Project Details (cont.)

Project details	$ Million
revenue	445.0
expenditures	
iron ore	38.0
basic chemical	69.8
Gas	14.7
sub total	122.5
Labour	18.0
Total Expenditure	**140.5**
Returns to capital	**304.5**

Cost of Labour by Occupational Type	$ Million
1 Manager, Administation	1.06
2 Professional	2.15
3 Associate Professional	0.70
4 Trades	4.46
5 Advanced Clerical, Service	0.27
6 Intermediate Clerical, Service	1.25
7 Intermediate Production, Transport	5.00
8 Low Clerical, Service	0.16
9 Labourers	1.95
Total	**17.00**

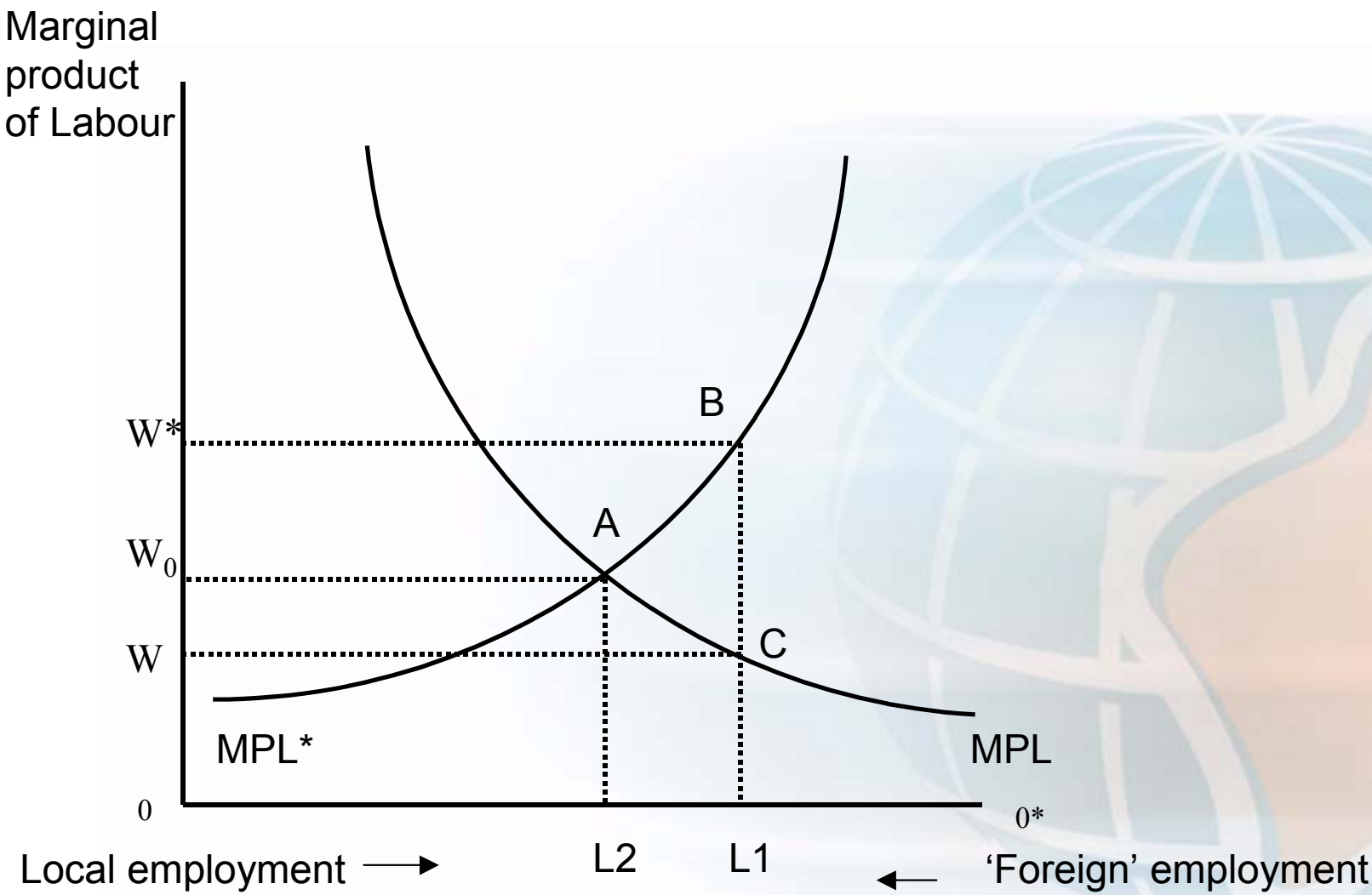
Simulation Assumptions

- Long Run simulation
  - Returns to capital fixed
  - National employment fixed
- Capital of new project domestically owned
  - Returns to capital stay in domestic economy at same proportion as in database and are included in GNP
- Exchange rate is the numeraire

Labour Market Closures

1) Regional wage differentials and unemployment rates are exogenous and regional labour supply is endogenous;
2) Regional labour supply and unemployment rates are exogenous and regional wage differentials are endogenous; and
3) Regional labour supply and wage differentials are exogenous and unemployment rates are endogenous.

Open interstate migration



National Results

National Macroeconomic Variables			
	Wage Differential fixed	Regional Employment fixed	WA unemployment rate open
		% increase	
GDP	0.0666	0.0451	0.1178
Household consumption	0.061	0.0526	0.0963
Exports (volume)	0.134	0.027	0.2801
Imports (volume)	0.0578	0.0302	0.0752
Consumer Price Index	0.0661	0.0406	0.0352
Employment*	0.0026	0	0.0515

Employment Results

Region A = 100 people (60% Participation rate)

Region B = 100 people (70% Participation rate)

Labour Force = 70%*100 + 60%*100 = 130

10 people move from Region A to Region B

Labour Force = 70%*110 + 60%*90 = 133

State Results

	GSP* Change from Base $'000		POPULATION Change from Base '000		GSP PER CAPITA CHANGE %	
	WA	ROA	WA	ROA	WA	ROA
Original	81,107	653,102	1,972	18,110	n.a	n.a
Simulation 1	970	-592	9.85	-9.51	0.6928	-0.0382
Simulation 2	259	-22	-	-	0.3193	-0.0034
Simulation 3	1,014	-3	-	-	1.2506	-0.0004

	GDP Per Capita ($)		Change ($)	
	WA	ROA	WA	ROA
Original	41,137	36,064	n.a	n.a.
Simulation 1	41,422	36,050	285.01	-13.78
Simulation 2	41,268	36,063	131.35	-1.23
Simulation 3	41,651	36,064	514.46	-0.14

State Results (cont.)

	Nominal wage changes			
	New Wage		Change ($)	
	WA	ROA	WA	ROA
Original	988.57	998.1	n.a	n.a.
Simulation 1	989.55	999.1	0.97	0.98
Simulation 2	993.49	998.3	4.92	0.20
Simulation 3	989.09	998.6	0.51	0.52

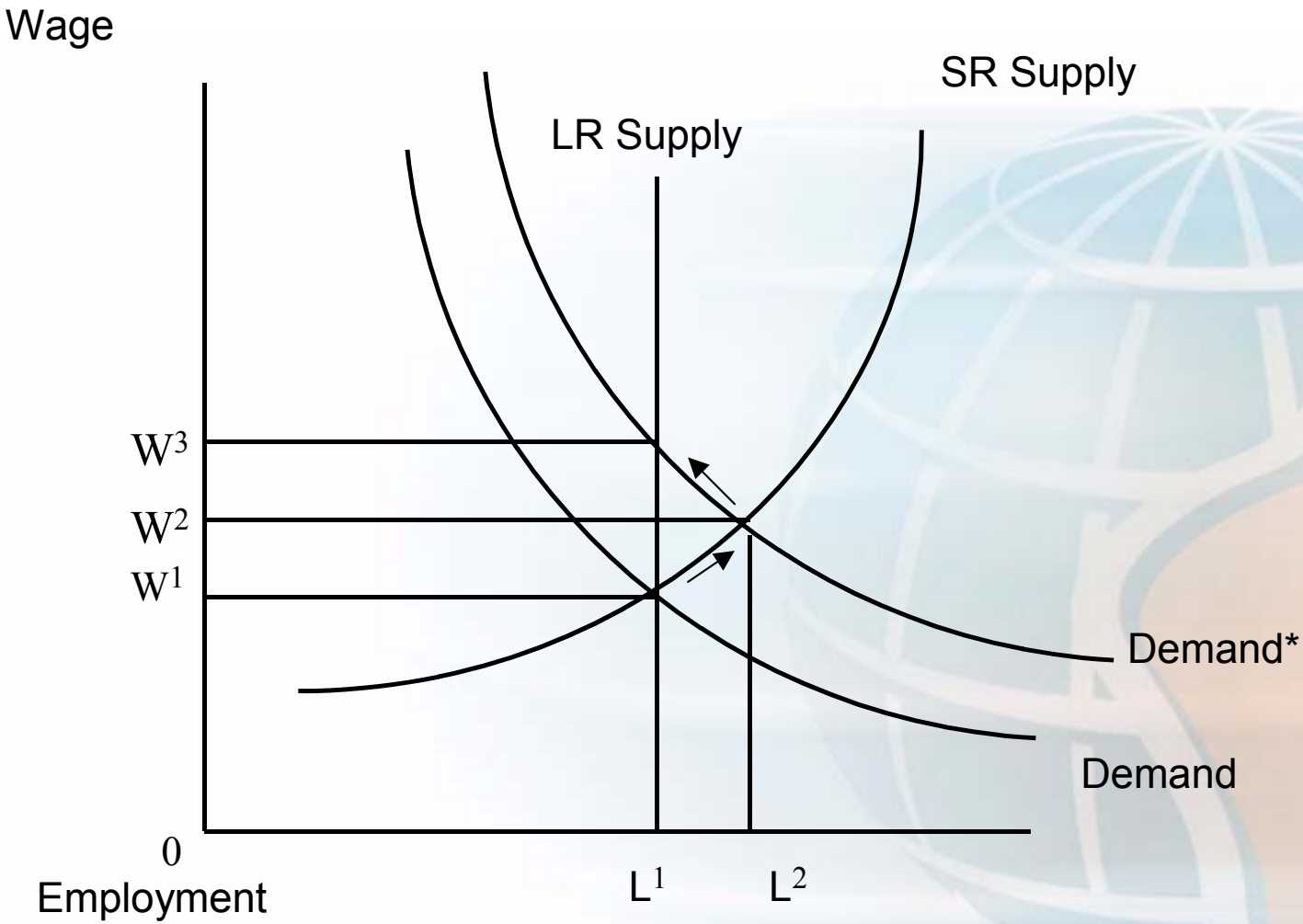
Simulation 1- Fixed wage differentials regional employment endogenous

- Increase in production from new project creates additional demand in the WA economy
- In-migration of labour to WA to meet additional demand
- Increase in wages due to higher demand distributed at national level

Simulation 1 (cont.)

- Increase in prices (CPI)
- Increase in real exchange rate
  - Real Exchange Rate = er*PA/PW
- Decreased competitiveness
  - Fall in export volumes
  - Fall in production for industries that compete with imports (EG)

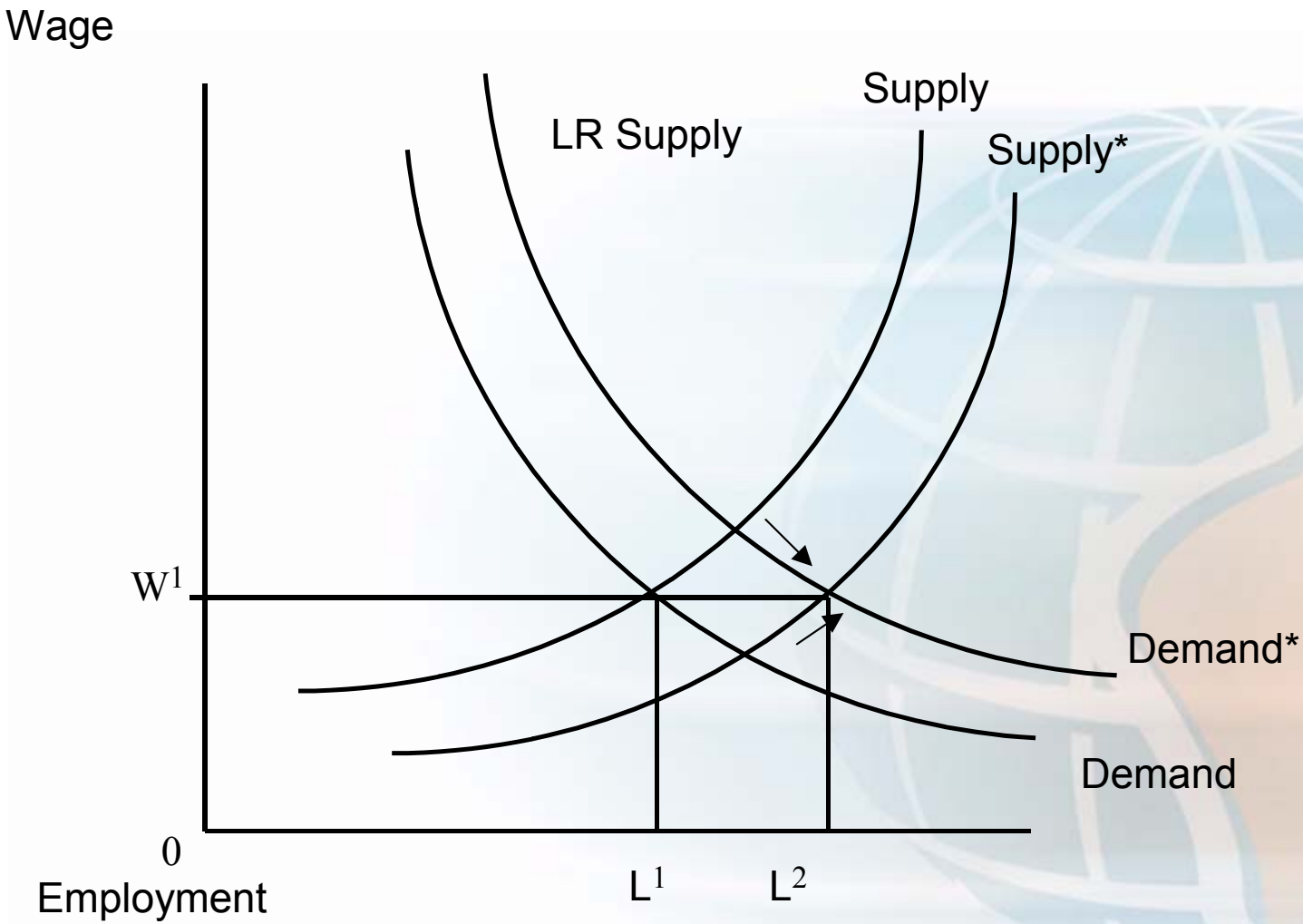
Scenario Two – Regional Employment Exogenous, Wage Differentials Endogenous



Scenario 2 (cont.)

- Net positive effect for WA and Australia
- Overall impact less than Scenario 1
  - Fall in GSP per capita for ROA
- Fall in employment in most other industries
  - Crowding out
  - Appreciation of real exchange rate
    - Fall in employment in export-oriented industries

Scenario 3 – Regional unemployment rate endogenous



Scenario 3 (cont.)

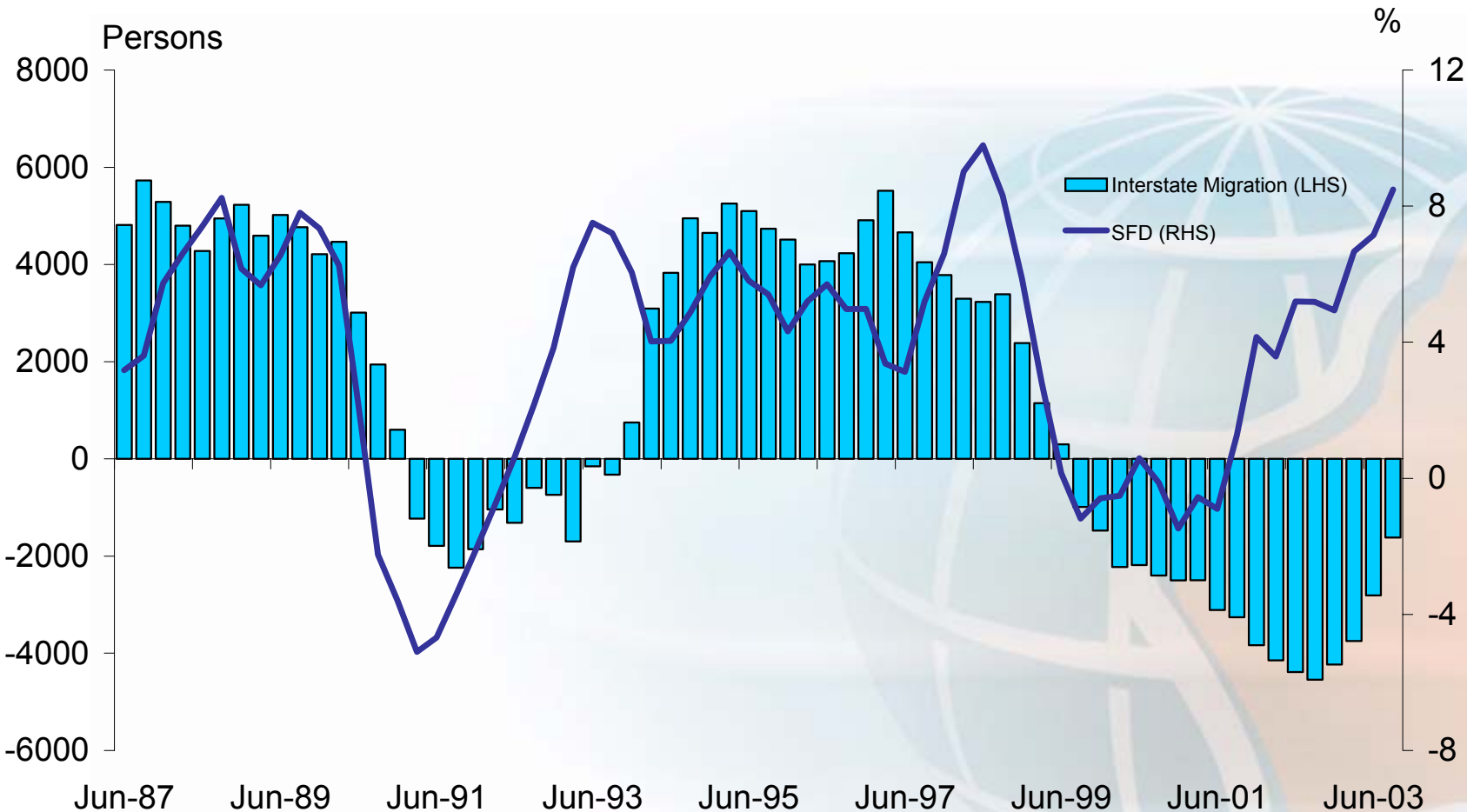
- Demand is met through increase in labour force (reduction in UR)
  - Contradicts standard long-run assumption
- Lack of constraints means result is similar to input-output multiplier
  - Largest increase in overall GDP growth

How the result stack up

- Scenario 1 – Interstate in-migration is 9,800 persons
- Scenario 2 - Wage differential increases by $4.70
- Scenario 3 – Unemployment rate falls by 0.5 percentage points (4,800 persons)

INTERSTATE MIGRATION AND SFD GROWTH*

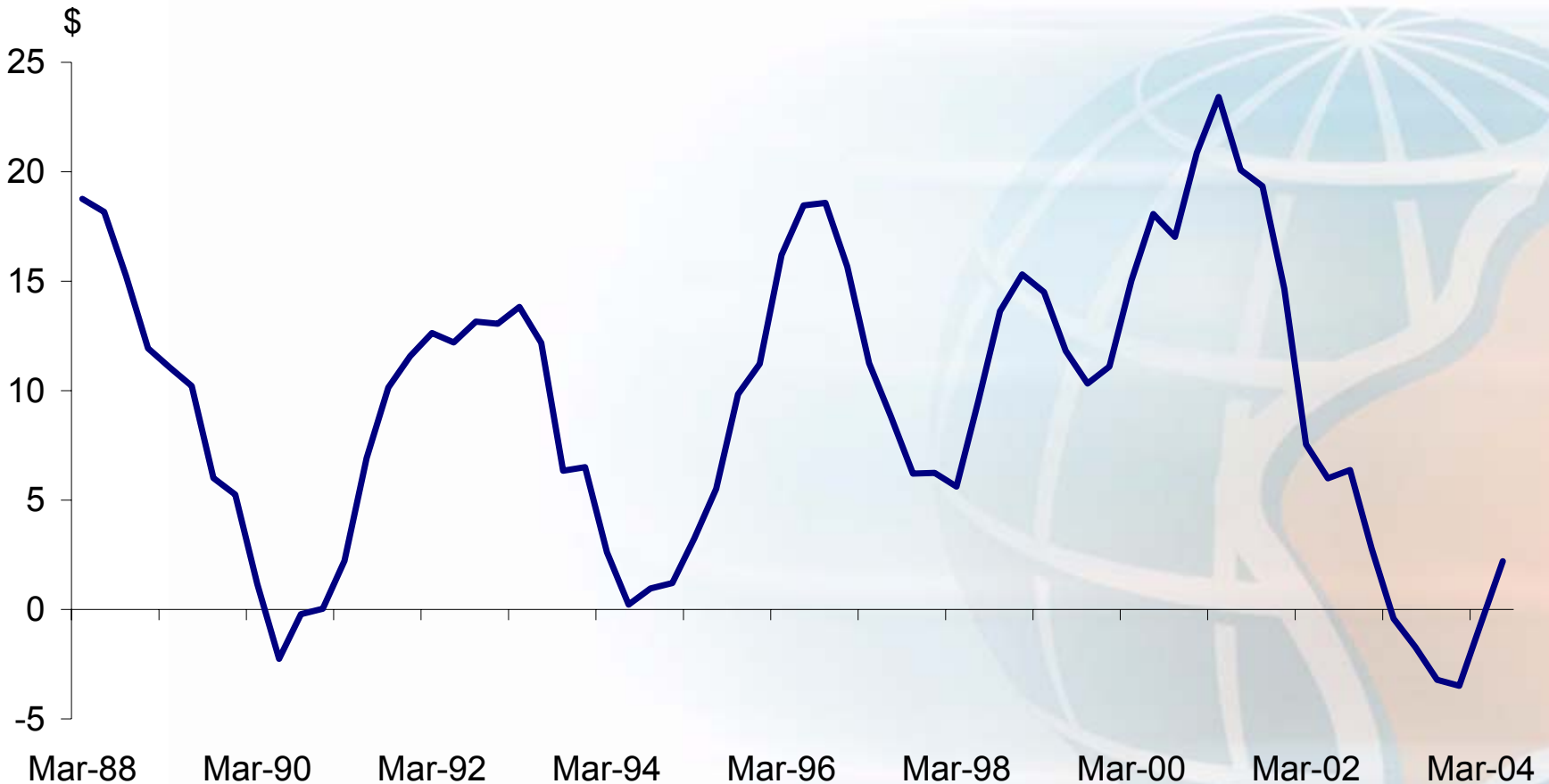
Western Australia



*SFD is annual average growth and IS migration is year-to change

WAGE DIFFERENTIAL

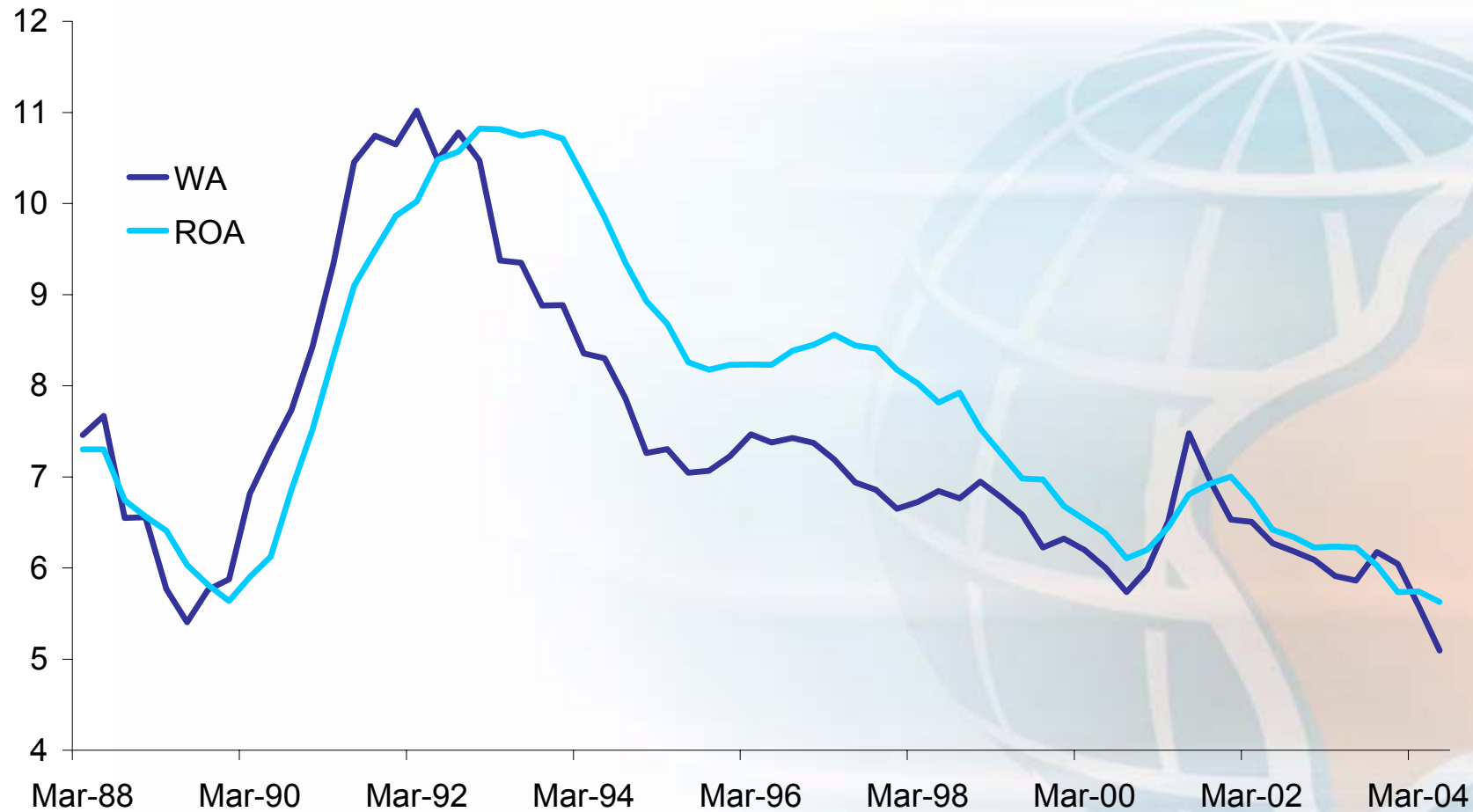
WA compared to ROA, Year-to Average



Excluding NT and ACT

UNEMPLOYMENT RATE

Year-to Average



Labour Market Literature

- Dearth of concrete information to explain labour market movements in Australia
- Accepted that labour migration is responsible for majority of adjustment to regional shocks
- However, lack of information on reaction to positive shocks
  - In-migration versus out-migration

Labour Market Literature (cont.)

- Effect of non-economic factors influencing migration
  - Particularly in isolated region

Conclusion

- The results do matter!
- Further research is required
  - Possibility of combination of adjustment mechanisms?
- Discussion - What are our options?