

## BCEC BRIEFING NOTE

### An Intra-state Regional Framework for Analysing the Western Australian Economy

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#### Executive Summary

Western Australia is a diverse state with unique regions. Studies on the economy that ignore regional developments are likely to be hindered by a lack of the richness and variability inherent in the intra-state regions. This note introduces a framework for analysing and projecting WA economic growth using a regional approach. As an export-oriented state, WA is affected by external factors such as the exchange rate, commodity prices and developments in emerging economies. However, with different composition of domestic- versus external-facing industrial sectors, each region is expected to respond differently to such shocks. Initial projections suggest WA's growth is likely to decrease from its present 6.7 per cent to between 4-5 per cent through 2014-2015. When hit with an adverse shock to commodity prices initiated by, for example, a structural change in the Chinese economy, the mining-intensive region of Pilbara suffers by a factor of 4 percentage points in the near term over less exposed regions such as Great Southern and Peel.

#### Introduction

The very source of Western Australia's economic prosperity also makes it the most vulnerable to adverse external shocks. Natural resources dominate WA's export such that, in 2011-12, iron ore, gold, crude petroleum and natural gas comprised over 80 per cent of goods outflow. Shocks to the exchange rate and domestic developments in WA's principal export destination, China, have proven to be damaging to the economy. This was witnessed in 2012 when the spot price of iron ore fell from highs of US\$150 per tonne to US\$87, which triggered delays to mining expansion plans, investment in overseas assets, port capacity increase, a significant layoff of mine-site contractors, a lesser though no less significant layoff in the professional labour force in Perth, and induced negative sentiment elsewhere in the state. One could also argue that the downgrade in the state's credit rating to AA+ by Standard & Poor's in September 2013 was a consequence of windfalls from the resource sector leading to increased expectations which, in turn, placed increased tensions in managing the fiscal balance.

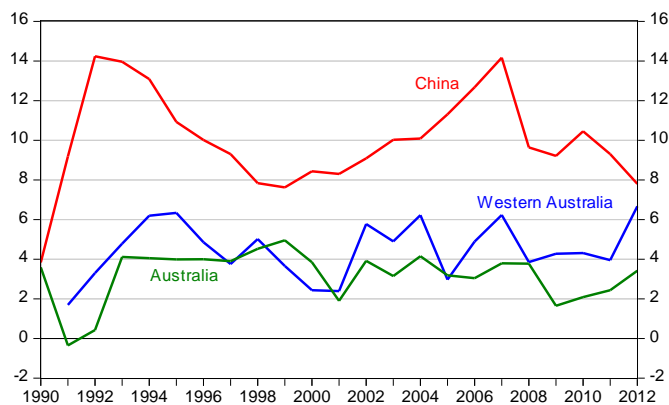
With this onset of a structural change, the following questions which have all been previously raised should be (re-)examined with a fresh perspective:

- How can the state cope with resource companies' move from an investment to production phase?
- What are the implications of China's transition from a fixed asset investment driven to a consumption driven economy?
- To what extent can WA diversify to areas such as education export, science and technology, and back to manufacturing?

In Duncan and Leong (2013) the Bankwest Curtin Economics Centre has initiated a study that aims to create a coherent modelling framework of the Western Australian macro-economy that seeks to address these questions, as well as provide a foundation for forecasting and policy analysis. This note is an abridged version and presents an overview of the capability of the framework with some near-term projections and scenario analysis.

#### The Western Australian Economy

Figure 1: Year-on-Year Percentage Change in Gross Domestic/State Product



Source: ABS Cat. No 5206.0 (June 2013) and 5220.0 (2011-12). IMF World Economic Outlook Database (April 2013).

Note: Data for Australia and Western Australia are expressed in financial year (1 July – 30 June).

Figure 1 shows the growth experienced by WA since 1990 and, for comparison, Australia and its primary trading partner - China. The West Australian economy is worth \$239 billion. The 6.7% increase from 2011-12 over 2010-11 comes on the back of strong export, and is the strongest since the data series started in 1990-91. Annual Gross State Product (GSP) growth rates have also been the highest in recent years when compared to other states and territories. On a per capita basis, 2011-12 GSP was \$100,127 per person, the highest of any state/territory. In real terms, per capita GSP has been the highest in Australia since 1992-93.

Since mid-2005, WA growth has exceeded that of Australia. From Figure 1, it can also be observed that it is a testament to the exceptional strength and persistence of China's growth from the start of the last decade that its current rate of 7.8% is regarded as a slowdown and a

cause for concern. Indeed, the future of China's economic transformation and continued rural-urban migration is pivotal to the prospects of the WA economy, especially in its present economic structure.

On the topic of economic structure Table 1's focus is on the changing industrial composition of the Western Australian economy.

**Table 1: Composition of the Western Australian Economy**

Industry	Code (sect)	1990-1991		2000-2001		2011-2012	
		IGVA (\$m)	Share of GSP (%)	IGVA (\$m)	Share of GSP (%)	IGVA (\$m)	Share of GSP (%)
Agriculture, forestry and fishing	<i>off</i>	3,131	3.7	3,282	3.5	3,703	1.3
Mining	<i>min</i>	27,431	17.7	52,124	21.6	83,136	34.6
Manufacturing	<i>man</i>	5,193	9.1	6,830	8.0	12,261	4.8
Electricity, gas, water and waste services	<i>egw</i>	2,310	3.0	3,131	1.8	4,920	2.1
Construction	<i>cst</i>	8,866	7.4	11,222	7.1	28,340	11.8
Wholesale trade	<i>wht</i>	1,927	3.8	3,741	3.0	7,731	3.0
Retail trade	<i>ret</i>	2,670	4.2	4,506	4.1	7,306	3.1
Accommodation and food services	<i>afs</i>	1,046	1.6	1,852	1.8	2,963	1.3
Transport, postal and warehousing	<i>tpw</i>	4,477	6.1	6,824	4.5	10,556	4.5
Information media and telecommunications	<i>imt</i>	770	2.6	1,743	2.6	2,838	1.3
Financial and insurance services	<i>fis</i>	3,430	3.9	5,245	5.0	8,617	3.7
Rental, hiring and real estate services	<i>rhr</i>	1,680	2.9	2,018	2.4	3,122	1.4
Professional, scientific and technical services	<i>pst</i>	2,797	3.6	5,169	4.8	11,990	5.3
Administrative and support services	<i>ass</i>	1,083	1.5	2,353	1.9	4,021	1.9
Public administration and safety	<i>pas</i>	2,965	3.6	4,274	3.7	6,192	2.6
Education and training	<i>edt</i>	3,695	3.7	4,754	3.5	5,887	2.6
Health care and social assistance	<i>has</i>	3,311	5.4	4,986	5.7	8,262	3.9
Arts and recreation services	<i>ars</i>	423	0.4	578	0.7	1,069	0.5
Other services	<i>ots</i>	1,116	1.7	1,477	1.5	3,187	1.3
Ownership of dwellings	<i>owd</i>	6,398	6.3	9,221	5.9	12,900	5.5
Taxes less subsidies on production	<i>T - S</i>	4,925	7.8	6,648	6.8	8,149	3.7
Statistical discrepancy	<i>statdiscp</i>	2,199	-0.1	485	0.0	-813	-0.1
Gross state product	<i>gsp</i>	91,939	100	139,565	100	236,338	100

Source: ABS Cat. No 5220.0 (2011-12). Values are chain volume measure. Shares are current prices.

Alongside the increase in the share of mining, presently at 35%, there is also an increase in the share of construction and a decrease in manufacturing. To an extent, the fortune of WA is not completely at the hands of China and emerging economies. As shown in Table 1, industries such as Construction, housing and implicit rent in the form of Ownership of Dwellings, Professional, scientific and technical services, as well as other sectors which are individually small but which add up to a sizeable amount, are largely domestically focussed. It is these sectors that are the target of concerted efforts to diversify the WA economy to insulate the state from external shocks. Duncan and Koshy (2013) examines the state's comparative performance with other states and territories before and since the onset of the mining boom in greater depth and discusses the longer term outlook.

### A Regional Approach

Duncan and Leong (2013) adopt a regional approach to analysing the Western Australian economy. WA is a diverse state and, regardless of how intra-state regions are defined, there are significant differences in endowment of resources, climate and connectivity to the capital city of Perth. In addition, different regions have different exposure to the export (domestic and international) market and belong to distinct electoral boundaries which set different priorities for future development.

The first step in the analysis is to arrive at a classification of the regions within Western Australia. Table 2 illustrates that this is not necessarily straightforward, since government departments dissect WA along different geographic boundaries, each set of course catering for a different audience or to facilitate different analysis.

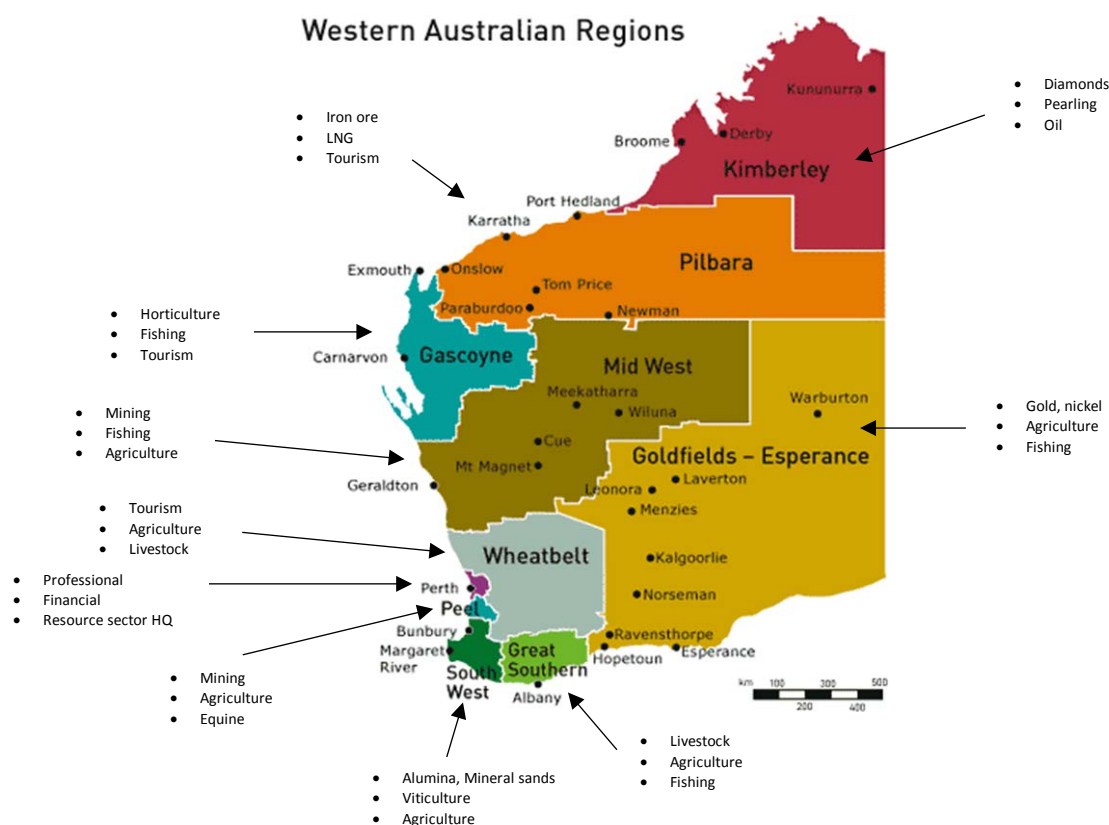
**Table 2: Examples of Alternative Classification of Regions within Western Australia**

Regional Development Commissions Act 1993	Bureau of Meteorology	Department of Agriculture and Food	Main Roads Western Australia	Tourism Western Australia
Gascoyne	Kimberley	Northern Agricultural Region	Kimberley	Perth
Goldfields – Esperance	Pilbara	Rangelands Region	Pilbara	Coral Coast
Great Southern	Gascoyne	Southern Agricultural Region	Gascoyne	Golden Outback
Kimberley	Goldfields	Central Agricultural Region	Mid-West	North West
Mid West	Eucla	South West Agricultural	Goldfields – Esperance	South West
Peel	Northern Interior		Wheatbelt North	
Pilbara	Southern Interior		Wheatbelt South	
South West	Central West		Metropolitan	
Wheatbelt	Lower West		Great Southern	
	South West		South-West	
	South East Coastal			
	Great Southern			
	Central Wheat Belt			

Most of the data used in the empirical part of this project is obtained from the Australian bureau of Statistics. The ABS has largely moved away from broad regional grouping such as those in Table 2 to Statistical Areas.<sup>1</sup> For this reason the source of data is not a guiding factor in deciding on regional grouping since low-level statistical area data can easily be aggregated to construct broader groupings. Importantly for this project, there are development commissions for each of the nine regions corresponding to the Regional Development Commissions Act. Since the individual development commissions provides additional data as well as future plans, which are used to cross-check findings from BCEC studies, the RDC definition (with the addition of the City of Perth) is chosen for this project.

<sup>1</sup> Statistical areas are classified into SA(2) [e.g. Pemberton], SA(3) [e.g. Manjimup], and SA(4) [e.g. Bunbury]. In this example, these sub-areas belong to the South West region of Western Australia.

Figure 2: West Australian Regions and Principal Industries



Source: Map from Small Business Development Commission. Principal industry identification from regional development commissions.

Figure 2 shows the ten regions and their predominant industries. A similar map can also be made showing rainfall dispersion and temperature differences through the state. Yet another map can show the spread of population and skilled workers in WA (see, for example, Cassells *et al.* 2013). These further illustrate the benefit for modelling the West Australian economy at the regional level.

### Measuring Gross Regional Product

All national statistics departments compile data for and calculate measures of gross product at the state level. While underlying surveys are conducted at the postal code level of granularity there are difficulties in arriving at measures of gross product at the regional/intra-state level. The ABS does not calculate gross product at the regional level. However, in WA, the Department of Regional Development estimates Gross Regional Product (GRP) using the state accounts measure of WA Gross State Product. At present, the data are not published on a regular basis and are not up-to-date on their internet site. In addition, the methodology used to estimate gross product for the regions is unclear.

As part of Duncan and Leong (2013), BCEC has constructed an experimental series of GRP. The starting point is the state account's GSP for WA, which is expressed on a financial year basis from 1990-91. It is also available in current price and chain-volume estimates. Within the state accounts, industrial gross value added (current price and chain volume measure) and total factor income (current price) are available by industrial sectors.

$$GSP_t = aff_t + min_t + man_t + egw_t + cst_t + wht_t + ret_t + afs_t + tpw_t + imt_t + fis_t + rhr_t + pst_t + ass_t + pas_t + edt_t + has_t + ars_t + ots_t + OWD_t + (T - S)_t + StatDiscp_t \quad (1)$$

Equation 1 shows the national accounting identity where gross state product is decomposed into industry gross value added.<sup>2</sup> Assume that each industrial sector, including ownership of dwellings, net taxes, and statistical discrepancy, can be disaggregated by region, where  $aff_t = \sum_{i=1}^{10} aff_t^i$ ,  $min_t = \sum_{i=1}^{10} min_t^i$ , ...,  $StatDiscp_t = \sum_{i=1}^{10} StatDiscp_t^i$  where  $i$  denotes region (1=Gascoyne, ..., 10=Wheatbelt).

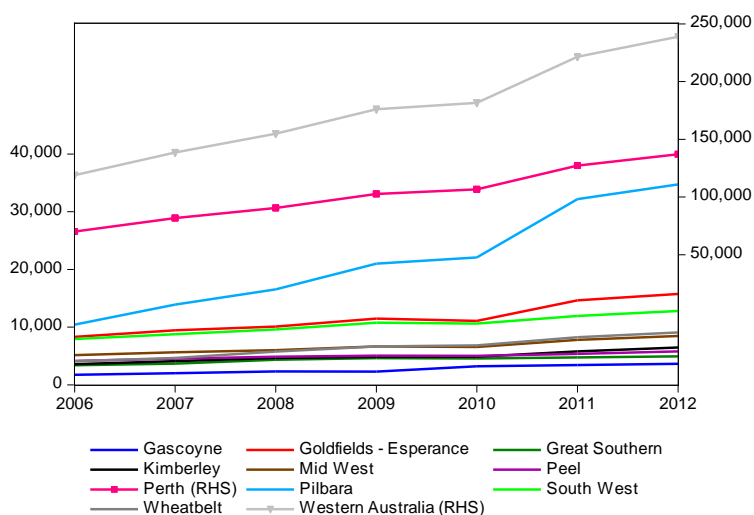
The allocation of state-level industrial gross value added into the 10 regions is done through the use of shares, where  $sect_t^i = \alpha_{sect,t}^i \times sect_t$ , where  $sect$  denotes industrial sector and  $\alpha$  is a share where  $\sum_{i=1}^{10} \alpha_{sect,t}^i = 1$ .

To obtain the shares, time series data on a regional basis with a sectoral focus are required. Unfortunately, there is only a limited amount of published data available at this level of detail. One set of data, which is the one used in Duncan and Leong (2013), is Census 2011 data

<sup>2</sup> Unduplicated value of goods and services produced by sub-level industries. Refer to Table 1 for variable definitions.

on *persons employed by industry*.<sup>3</sup> For ownership of dwellings, the shares are generated using median house price for the most populous town within each region. Finally, WA's statistical discrepancy is distributed evenly into the 10 regions. The estimated GRP data are shown in Figure 3.

**Figure 3: Gross State Product and Estimated Gross Regional Products**



Source: BCEC analysis. Values expressed in millions of dollars, current price.

Appendix A shows the industrial composition of each region using area charts. Several points are worth noting. Perth has the highest GRP and is also the most diversified. Regions such as the Pilbara, Goldfields – Esperance and Mid West are heavily mining driven. The economies of Great Southern and Wheatbelt in contrast have a significant share of agriculture, forestry and fishing. This GRP dataset is continually refined with the use of more regional data and forms of the basis of the modelling work.

## Model

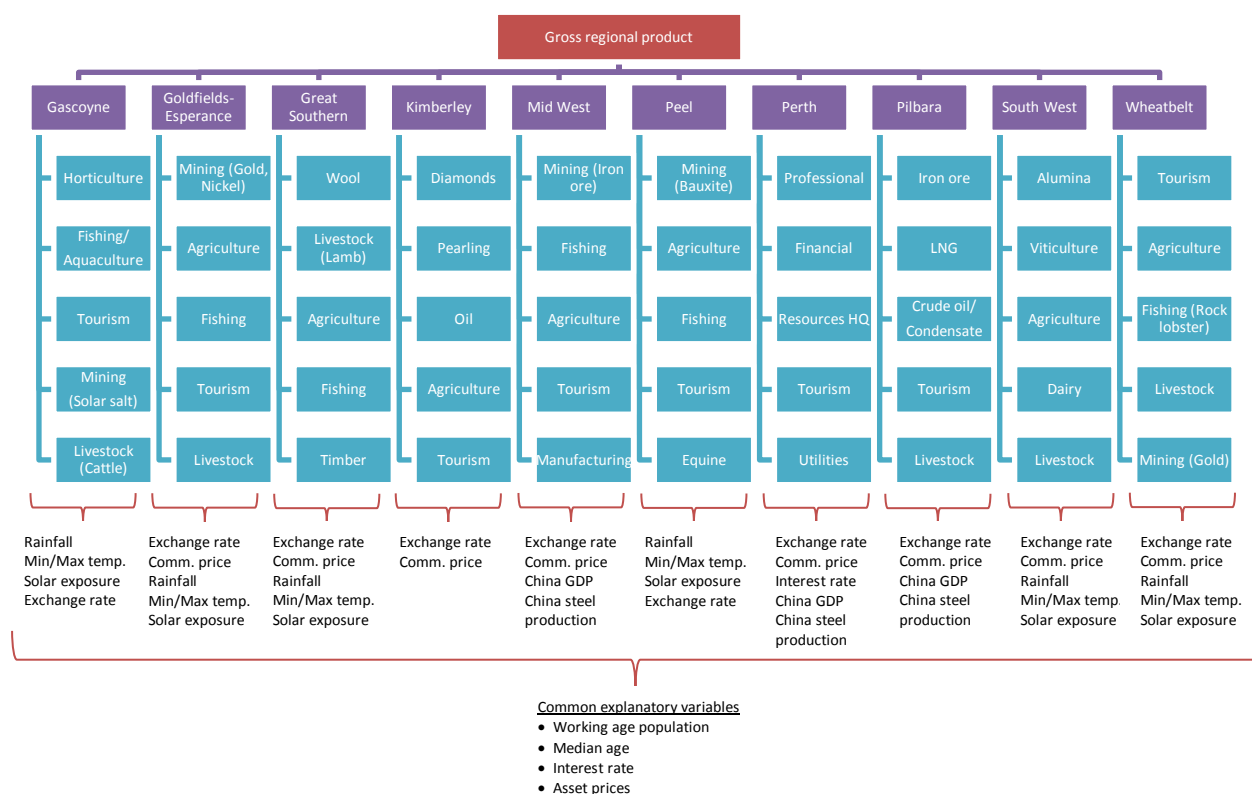
The objective of the project is to forecast WA economic growth by aggregating regional GRP projections. To this end, an econometric specification derived from a theoretical framework is required. A balance needs to be struck between theoretical foundation and being pragmatic due to the challenge of the exercise (analysis by region and industry), most notably limited by the availability of regional-level time series data.

To facilitate policy and scenario analysis the model for GRP should ideally include a set of variables on demography, regional trade and climate in addition to macroeconomic drivers. Figure 4 expands the information in Figure 2 by specifying the principal industries followed by an articulation of their underlying drivers. In doing so, a range of region-specific as well as common explanatory variables becomes evident. GRP (per capita) being a function of demographic/social/economic/meteorological determinants as well as regional and possibly period fixed effects is well documented in the literature (see, for example, Kelly and Schmidt 2005).

Duncan and Leong (2013) compile a range of common and region-specific variables that forms the basis of the analysis (Table 3). Much of the regional level data are obtained from the Census, in which data are available at the Statistical Area level. Regional demographic and economic data are also obtained from the Census. Climate data are obtained from the Bureau of Meteorology. Financial and overseas data are obtained from the Reserve Bank of Australia and the International Monetary Fund. Duncan and Leong (2013) contain a full description of the data and assumptions adopted in constructing missing values (e.g. constructing 2012 data not available from Census 2011).

<sup>3</sup> See Duncan and Leong (2013) for details. For example,  $\alpha_{man,2010}^4$  is the number of persons employed in the manufacturing sector in the Kimberley in 2010 divided by total WA manufacturing workforce in 2010.

**Figure 4: Determining Common and Region Specific Drivers for WA Economy Growth**



**Table 3: Specifying Groups of Explanatory Variables for WA Gross Regional Product**

Demographic	Economic
<ul style="list-style-type: none"> <li>• Population</li> <li>• Working age population (age 15-64)</li> <li>• Population density (population per square kilometre of land mass)</li> <li>• Median age</li> <li>• Number of wage and salary earners</li> <li>• Urban clusters (centres with 1,000 or more people)</li> </ul>	<ul style="list-style-type: none"> <li>• Total wage and salary income</li> <li>• Median house price</li> <li>• Cash rate</li> <li>• Exchange rate</li> <li>• China: GDP, Crude steel production (unfinished steel usually produced through a blast furnace from sintered iron ore)</li> </ul>
Meteorological	Indicators
<ul style="list-style-type: none"> <li>• Average rainfall</li> <li>• Average minimum/maximum temperature</li> <li>• Average daily global solar exposure (total solar radiation on the earth's surface)</li> </ul>	<ul style="list-style-type: none"> <li>• Coastal influence</li> <li>• Other regional-specific restrictions/bottlenecks</li> </ul>

Having compiled the data a challenge arises where the dependent variable GRP, which uses Census sectoral employment to allocate state-level data into the regions, is only available from 2006 to 2011. Notwithstanding data construction work to update the dataset to 2011-12 (the latest data point in the state accounts) many of the explanatory variables often also span 2007 to 2011. This challenge lends itself to pooling the data together to form a panel. This panel approach has two advantages. First, with 10 regions and data from 2007 to 2012, the pooled dataset has 60 observations, which is a good start for modelling work, bearing in mind that any new data release will make available a further 10 observations. Second, in using fixed and random effects, the model will not restrict gross product in different regions to react in the same way to changes in the exogenous variables.

**Table 4: Model specifications**

Variable	Specification 1 (Domestic drivers) Dependent variable: Change in pooled GRP		Specification 2 (includes international factors) Dependent variable: Pooled GRP	
	Value	t-statistic	Value	t-statistic
Constant	-5.546	-2.159 [0.038]	1.986	5.532 [0.000]
Gross regional product (lag 1)	-0.178	-2.353 [0.024]		
Population aged 15-64 (lag 1)	0.664	2.359 [0.024]		
Change in population density	2.557	2.612 [0.013]		
Average rainfall			0.040	2.599 [0.013]
Change in average rainfall	0.089	6.012 [0.000]		
Median house prices			0.239	4.325 [0.000]
Change in median house prices	0.175	2.815 [0.008]		
Index of commodity prices			0.378	6.652 [0.000]
<b>Regional response to Chinese steel production</b>				
Gascoyne			0.583	4.412 [0.000]
Goldfields – Esperance			0.472	4.070 [0.000]
Great Southern			0.158	1.449 [0.154]
Kimberley			0.606	5.527 [0.000]
Mid West			0.315	2.712 [0.009]
Peel			0.202	1.858 [0.069]
Perth			0.692	6.375 [0.000]
Pilbara			1.587	12.218 [0.000]

South West			0.432	4.050 [0.000]
Wheatbelt			0.919	7.970 [0.000]
<b>Regional fixed effects</b>				
Gascoyne	1.215		-1.162	
Goldfields – Esperance	0.214		1.187	
Great Southern	0.120		1.989	
Kimberley	0.360		-0.755	
Mid West	0.180		1.572	
Peel	-0.337		1.970	
Perth	-1.632		1.797	
Pilbara	0.259		-5.527	
South West	-0.436		1.157	
Wheatbelt	0.056		-2.227	
<b>Summary statistics</b>				
Adjusted R <sup>2</sup>	0.668		0.999	
Standard error of the residuals	0.050		0.038	
F-test of poolability	F(9,35) = 2.14 [0.052]		F(9,47) = 18.93 [0.000]	

**Note:** All variables expressed in logs. Values in brackets are probability values.

Table 4 presents two preliminary and illustrative set of estimates of the pooled model. Specification 1 includes only domestic drivers. In this specification, the growth rate in GRP is a function of working age population in the long run, and in the short run affected by growth in population density, average rainfall and median house prices. The model allows each region to have a different intercept in the form of regional fixed effects. Specification 2 allows external variables to play a role. In this specification, the (log) level of GRP is a function of average rainfall, median house prices, commodity prices, and Chinese steel production. Like specification 1, the model too is estimated with fixed effects. In these preliminary estimates, the explanatory variables have correctly signed partial effects and are statistically significant.

#### Uses of Model – Ex Ante Forecasts

With a degree of richness, the model can be used as a simple framework with which to analyse developments in the economy and the effects of external shocks, and to generate a path of the state's likely future trajectory.

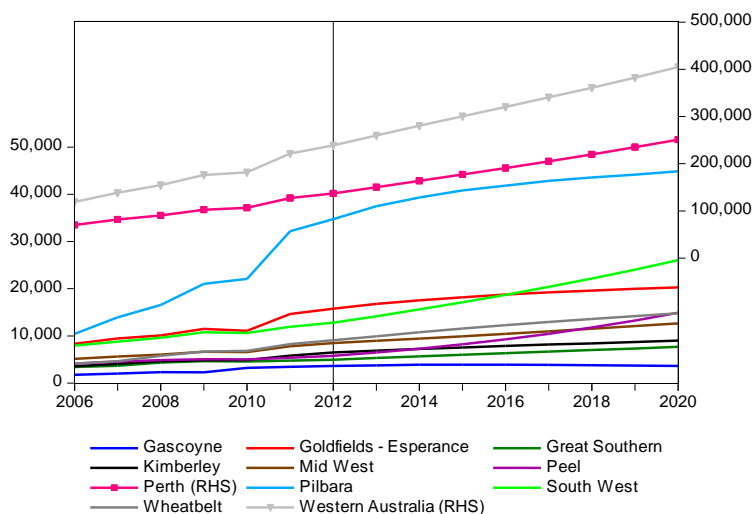
In this section, the model (specification 1) is used to forecast WA's Gross State Product through to 2020. The assumptions and procedure used in extrapolating forward the model's exogenous variables are shown in Table 5. As discussed in Duncan and Leong (2013), there is scope to incorporate various rules for projecting the exogenous variables, as well as allowing users to enter preferred values.

**Table 5: Steady State Values of the Exogenous Variables**

Variable	Data edge	Extrapolation method
Population aged 15-64 by region	2011	2012 preserves 2011 total population share. Thereafter, apply the 2009-2011 average total population share. Total population is extrapolated using the Department of Planning's Central Case projections (Department of Planning 2012).
Population density by region	2012	Use total population projections assuming unchanged land mass
Average rainfall by region	2012	Linearly reverts to 2003-2012 average values
Median house price by region	2012	Projected using a combination of average 2010-2012 and 2011-2012 growth rates

Having specified the model and characterised future trends of its fundamental drivers, Figure 5 shows forecasts of the WA economy by region.

**Figure 5: Trajectories for Western Australian Gross State Product by Region**



**Note:** Values expressed in millions of dollars, current price.

#### Uses of Model – Scenario Analysis

There is now strong evidence of China's economy shifting from investment- to consumption-driven mode<sup>4</sup>, leading to an earlier than expected peak in the production of crude steel and an ultimately lower level. As a result the price of iron ore fines falls and the commodity price profile shifts down.

To quantitatively analyse a situation such as this, the model is augmented with external/overseas influences (specification 2). Table 6 sets up the scenario with respect to the two external sector variables in the model. In the baseline assumption, China at its peak consumes just short of 700 kilograms of finished steel products per person, which translate to approximately 1 billion tonnes of crude steel production. With the structural change in the Chinese economy, the maximum steel intensity is reduced by approximately 100 kilograms per person due to decreased investment in non-construction steel intensive sectors, and the peak in the curve is brought forward. As a consequence of decreased demand, in 2014, the index of commodity prices (SDR terms) falls by 5% relative to its baseline value.<sup>5</sup> From 2015 onwards, it is assumed to converge to a new lower (by 25%) level, in this example of a sustained negative shock.

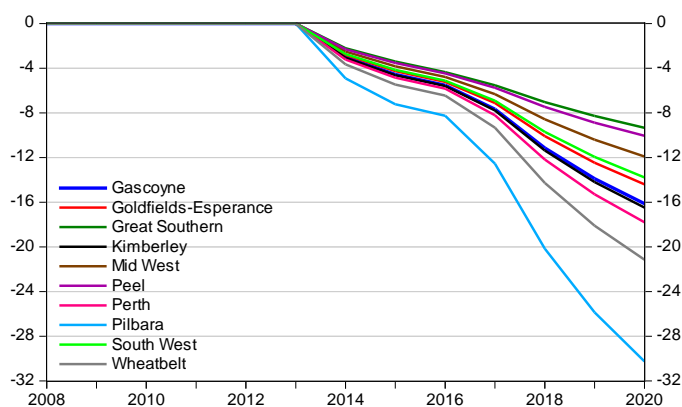
**Table 6: Scenario Specification**

Exogenous variable	2012	2013	2014	2015	2016	2017	2018	2019	2020
Crude steel production (Mt) [Baseline assumption]	709	767	826	885	916	945	969	991	1,009
Crude steel production (Mt) [China rebalancing scenario]	709	767	810	860	890	895	871	853	840
Index of Commodity Prices [Baseline assumption]	100.00	87.83	90.04	92.04	93.83	95.45	96.91	98.22	99.39
Index of Commodity Prices [China rebalancing scenario]	100.00	87.83	85.54	84.96	84.44	83.97	83.54	83.16	82.82

Source: BCEC analysis. 2013 commodity prices are actuals.

Figure 6 plots the percentage deviation of the scenario simulation relative to the baseline simulation (in the absence of the shock). The adverse shock is assumed to occur next year. In the first period, the Pilbara, given its exposure to Chinese steel demand and exchange rate fluctuations, responds aggressively in the negative direction. Thereafter, the Pilbara continues to be the main region pulling WA GSP down. Great Southern and Peel, with little to no direct exposure to events in China, do fall relative to baseline given that their economies have a significant share of rural commodities and other resources which are affected by the sustained decrease in commodity prices. The city of Perth, with its diversified economy, reacts to the shock in the middle of the range of regions.

**Figure 6: Time Path of GRP Response to Adverse Shock (China Rebalancing) Relative to Baseline, Percentage Deviation**



### Conclusion

One of the aims of this project is to examine the capacity to forecast Western Australia's future economic trajectory. In the first stage of this study, BCEC researchers have reaffirmed:

- WA is a diverse state and there are separate and unique regions
- Each region has both fixed and variable endowment which explains its current economic composition and would dictate future evolution
- As an export-orientated state, WA will be affected by external factors such as the exchange rate, commodity prices and development in emerging economies
- However, with different composition of domestic- versus external-facing industrial sectors, each region is expected to respond differently to such shocks

Duncan and Leong (2013) develops a framework for analysing WA's future trajectory. The point of departure is the framework is centered around the ten regions of the state. Initial projections suggest WA's growth decreasing from its present 6.7 per cent to between 4-5 per cent through 2014-2015. When hit with an adverse shock to commodity prices initiated by, for example, a persistent slowdown in China, the primary mining-intensive Pilbara region suffers by a factor of 4 percentage points in the near term over less exposed regions such as Great Southern and Peel.

<sup>4</sup> See, for example, Huang (2013).

<sup>5</sup> In 2013, the index of commodity prices has its weights revised. Iron ore's weight has increased to 32.7% (Robinson and Wang 2013).

A major part of this project has been the construction of a regional Western Australia database of economic, demographic and other indicators, from which other current and future research work in the Bankwest Curtin Economics Centre can benefit.

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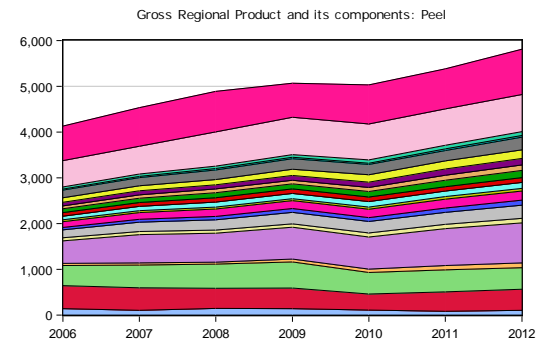
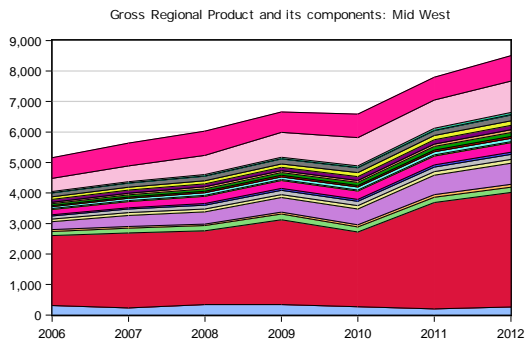
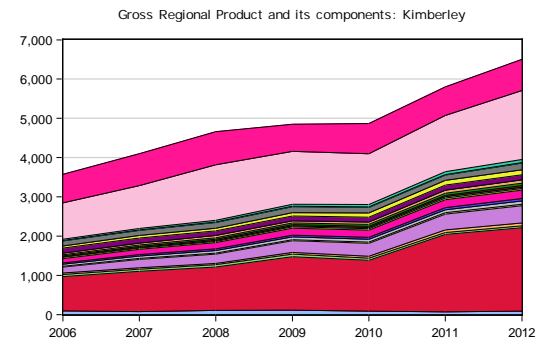
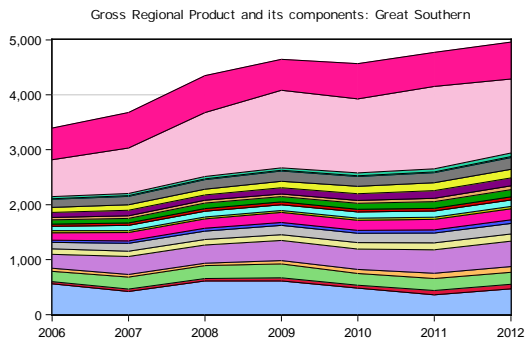
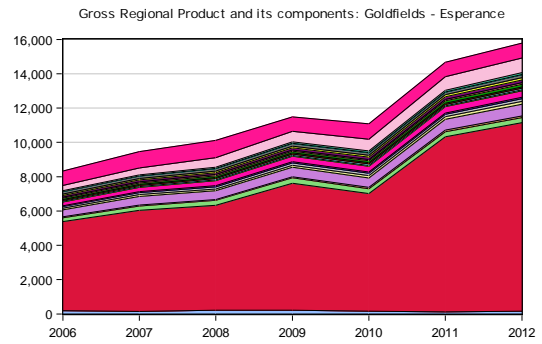
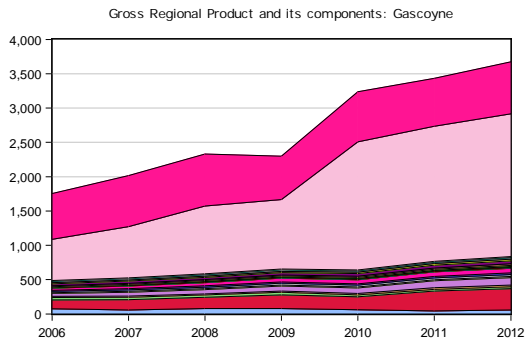
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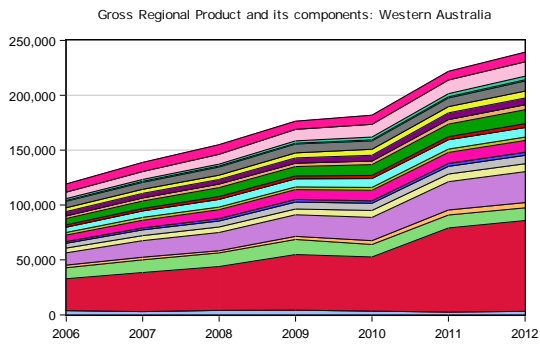
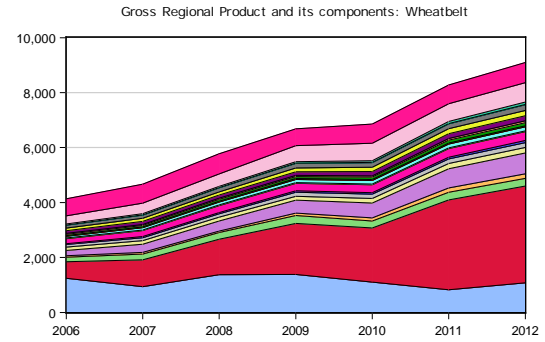
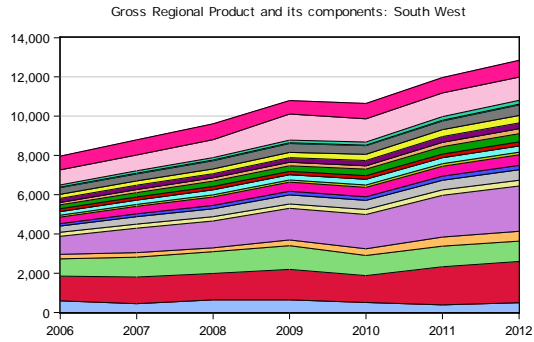
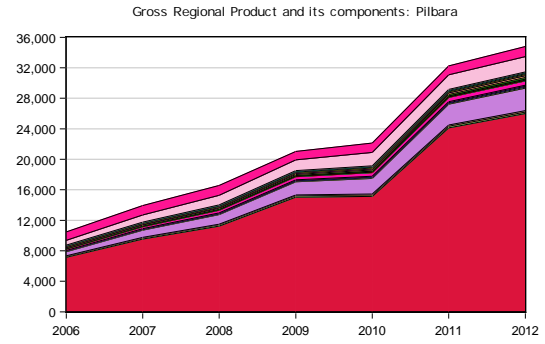
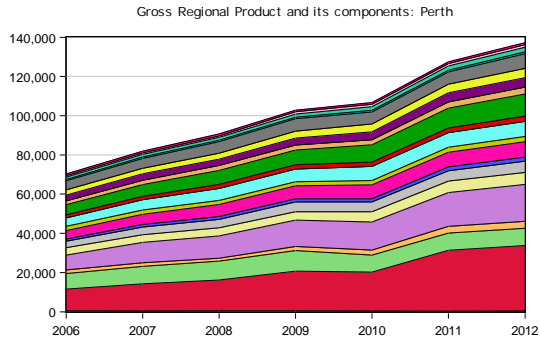
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**Appendix A: Estimated Gross Regional Product and its components (\$m, current price)**



- Agriculture, forestry and fishing
- Wholesale trade
- Financial and insurance services
- Education and training
- Taxes less subsidies on products
- Mining
- Retail trade
- Rental, hiring and real estate services
- Health care and social assistance
- Manufacturing
- Accommodation and food services
- Professional, scientific and technical services
- Arts and recreation services
- Electricity, gas, water and waste services
- Administrative and support services
- Other services
- Construction
- Information media and telecommunications
- Public administration and safety
- Ownership of dwellings



- |                                     |   |   |  |  |
|-------------------------------------|---|---|--|--|
| ■ Agriculture, forestry and fishing | ■ Mining                                  | ■ Manufacturing                                   | ■ Electricity, gas, water and waste services | ■ Construction                             |
| ■ Wholesale trade                   | ■ Retail trade                            | ■ Accommodation and food services                 | ■ Transport, postal and warehousing          | ■ Information media and telecommunications |
| ■ Financial and insurance services  | ■ Rental, hiring and real estate services | ■ Professional, scientific and technical services | ■ Administrative and support services        | ■ Public administration and safety         |
| ■ Education and training            | ■ Health care and social assistance       | ■ Arts and recreation services                    | ■ Other services                             | ■ Ownership of dwellings                   |
| ■ Taxes less subsidies on products  |   |   |  |  |