

The Allen Consulting Group

**Submission in response to the ICRC draft
report: investigation into the ACT Racing
Industry**

An Economic Valuation of the ACT racing industry

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Report to ACT racing industry

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Executive summary

Introduction

- The Allen Consulting Group welcomes the opportunity to make a submission in response to the ICRC draft report: *Investigation into the ACT Racing Industry*.
- This submission is made on behalf of the ACT racing industry.

Project objectives

- The main objective of this submission is to provide *a robust valuation of the economic value of the racing industry in the ACT*. The valuation includes all three codes represented: Thoroughbreds, Harness and Greyhounds.

Main summary points

- The ACT racing industry is a significant contributor to the ACT economy. It provides:
 - significant jobs in the ACT, with around 500 Full-time equivalent jobs *directly* provided by the industry.
 - 100 race meetings in aggregate per year which attract 45,000 visitors from the territory and interstate.
- The valuation of value-add contributed by the ACT racing industry presented by the ICRC in the draft report can be examined on three fronts. These are:
 - Using the same definition of value-add presented in the report, ABS data and definitions can be used to arrive at a significantly higher value.
 - The upstream and downstream impacts of racing are real impacts that effect other industries in the ACT economy. Accordingly an economy-wide (CGE) analysis is considered appropriate.
 - The historical links between gambling and racing mean that not valuing the impact of racing on gambling understates the value of this sector.

Conclusions and recommendations

- The value of the ACT Racing industry arrived at through the modelling in this submission is significant, reflecting its important contributions to the ACT economy. The impacts on the ACT for 2009-10 ranges from:
 - \$25 million, if only direct value add (using the ICRC definition) is applied using the ABS input-output tables.
 - A \$50 million reduction in GSP, using an economy wide modelling without including any impacts on gambling
 - A \$90 million reduction in GSP, or \$720 reduction in annual reduction of household income, using economy wide modelling and including the gambling on ACT racing by residents and non-residents.

Chapter 1

Introduction: Economic Value of the ACT Racing Industry

1.1 Summary

The Allen Consulting Group welcomes the opportunity to make a submission in response to the Independent Competition and Regulatory Authority's (ICRC) draft consultation paper on the racing industry in the ACT.

This submission, made on behalf of the ACT racing industry, responds primarily to the assessment of the value of the ACT racing industry provided by the ICRC and presents an alternate valuation.

1.2 The ACT racing industry

The ACT racing industry is a vibrant industry. It attracts interest and participation from across the country and stimulates the local economy.

The industry comprises the three racing codes: thoroughbred, greyhound and harness racing. Each is administered by a separate body: the Canberra Racing Club (CRC — thoroughbred racing), the Canberra Greyhound Racing Club (CGRC — greyhound racing), and the Canberra Harness Racing Club (CHRC — harness racing). Collectively, the three clubs:

- host almost 100 racing meetings per year: the CRC hosts 26 per year, all at Thoroughbred Park in Lyneham; the CHRC hosts 25 per year at the Exhibition Park in Canberra; and the CGRC hosts 44 per year at its facility located at Narrabundah;
- attract 45,000 customers to these meets per year — the CRC estimates that 40,000 customers attend each year; the CHRC estimates that on average 150 customers attend each meet, which equates to 3000 customers per year; and
- employ, directly, an estimated 500 FTE employees as well as numerous contractors and suppliers on race days. A summary of the employment contribution of the three codes is presented in Table 1.1.

Table 1.1

EMPLOYMENT BY THE ACT RACING INDUSTRY

Racing club	Total staff	FTE	Details
Canberra Racing Club	n.p.	480 ^b	The CRC is the largest club. This FTE figure includes various supplier and service industry staff
Canberra Harness Racing Club	20	5 ^a	This includes 2 full time staff and various part time and casual staff involved with race days including starters, veterinarians and stewards.
Canberra Grey Hound Racing Club	n.p.	2.5 ^d	This is the smallest of the clubs by number and employment.
Total	More than 100 ^c	—	

Source: ^a Canberra Harness Racing Club. 2010 figures based on the following method: \$250,000/\$50,000

^b Canberra Racing Club 2010, submission to the ICRC investigation into the ACT racing industry.

^c ABS 2006, Sports and physical recreation services 2004-05 (Catalogue number 8686.0).

^d ACIL Consulting 2001, *Beyond the winning post: Impact of the racing industry on the economy of the Australian Capital Territory*, June. Based on the following method: \$130,000/\$50,000.

In addition to the revenue it raises (through non-racing activities, membership and attendance payments, bar takings, sponsorship etc.) the racing industry receives funding through two other avenues:

- *Product payments* (expected to be \$1.5 million in FY 2010-11) — Recent amendments to the *Racing Act 1999* by the *Race Field Information Regulation 2010* now requires the three racing clubs to receive product payments, which are funding from waging operators for race field information (race times, starters and winners, etc.). Prior to these amendments, product payments prior to this race fields legislation (RFL) involved the ACT government taking earnings from the betting agencies (ACTTAB) and distributing the money to the racing clubs. The ‘cut’ that the ACT Government used to take from the ACTTAB was 4.5 per cent of its turnover.
- *Government funding* (\$7.3 million in FY 2010–11).

The ICRC draft report on investigating the ACT racing industry (ICRC 2010) believes current government funding to be generous given the limited economic value of the ACT racing industry. The next section focuses on previous attempts to assess the value added by the racing industry to the ACT economy.

Chapter 2

Past Economic Evaluations of the ACT Racing Industry

2.1 Summary

This chapter focuses on past valuations of the ACT Racing industry, with a particular focus on the ICRC draft report: *Investigation into the ACT Racing Industry*.

Previous multiplier analyses of the economic impact of ACT racing,

Access Economics (2010) estimated the direct contribution of the industry by calculating participant (trainers, breeders, owners and jockeys) spending, customer spending, wagering and racing club spending, which equated to \$52 million in 2008-09.

The direct and indirect value added by this direct spending was estimated using ABS input-output tables. The direct value added was calculated to be \$26.6 million, which consists of \$11.3 in labour income and \$15.4 in gross operating surplus. Indirect value added equaled \$17.7 million.

IER (2007) examined the economic impact of the racing industry by considering direct spending associated with the racing industry in 2005-06. The direct spending is estimated at \$35.9 million. The review calculates the economic impact to be \$49.6 million, by calculating the gross value added by the industry.

ACIL Consulting (2001) determined the outputs from each sector within the racing industry, such as breeding, owning, training and gambling. For each sector, a proportion of the sectors output is allocated to the racing industry. The product of this proportion and each sector's production output yields the racing industry's added value to the economy, which is calculated to be \$24.7 million.

In addition to the value added by the industry, ACIL Consulting indicate other areas the industry stimulates. They estimate that in 1999-2000 the ACT racing industry directly employed 148 FTE staff, with significantly more staff employed in racing-related industries. The ACIL Consulting evaluation notes that almost half the horses racing at Thoroughbred Park originate from outside the ACT, indicating the considerable amount of money the industry attracts to the territory (estimate to be \$3 million p.a.).

ICRC evaluation

The ICRC argued that the previous value-added calculations were conducted by organisations seeking to justify government funding to the industry and felt it necessary to conduct their own evaluation. The ICRC conducted an analysis based on ABS statistics. Since the ABS statistics for the ACT racing industry were deemed unreliable, the ICRC estimated a racing industry value-added for the entire Australia racing industry and used this value to infer the ACT value added.

Using a top down approach, which considered only *direct value-added by the racing industry*, the study determined that the value-added by the ACT racing industry to the ACT economy is in the range 0.019–0.031 per cent of GSP.

Based on the value-added percentages for the racing industry without wagering quoted above (0.019–0.31 per cent of GSP), the value-added by the ACT racing industry is in the range \$5.3 million to \$8.6 million.

Three key considerations were the drivers of the reduced value add for this approach relative to the earlier approaches. These are:

- The approach considers only direct effects
- The approach does not consider the synergies between racing and gambling.
- The value add for racing which can be calculated from the ABS own input-output tables has been ignored in favour of a new approach.

Table 2.1

ECONOMIC IMPACT OF RACING IN AUSTRALIA

Author	Subject	Year	Expenditure (\$ million)		Value added (\$ million)	
ICRC draft report	All three codes in the ACT	2009–2010				5.3–8.6
			Not provided		Estimation of ACT racing industry GSP, based on ABS statistics	5.3–8.6
					Wagering industry GSP (not included in ICRC analysis)	55.0
ACIL Consulting	All three codes in the ACT	1999–2000		— ¹		24.7
			Racing gambling	19.7	Racing gambling	19.3
			Club	6.3	Club	1.3
			Participants (breeding, owning, training, riding, vet, farrier)	7.7	Participants (breeding, owning, training, riding, vet, farrier)	3.8
			Administration	0.4	Administration	0.3
IER	Thoroughbred racing in ACT	2005–2006		35.9		49.6
			Direct spending by participants	13.0	Not itemised	
			Direct spending by customers	1.4		
			Direct spending by racing club	4.0		
			Direct spending from wagering	17.3		
Access Economics	Thoroughbred racing in ACT	2008–2009		52.0		44.4
			Direct spending by participants	15.1	Direct – labour income	11.3
			Direct spending by customers	1.7	Direct – gross operating surplus	15.4
			Direct spending by racing club	7.4	Indirect	17.7
			Direct spending from wagering	27.9		

Source: ICRC 2010, *Draft report: Investigation into the ACT racing industry*, December; Access Economics 2010, *Investigation into the ACT racing industry*, submission to the ICRC, November; IER 2007, *Economic impact of Australian racing*, August; ACIL Consulting 2001, *Beyond the winning post: the impact of the racing industry on the economy of the Australian Capital Territory*, June.

¹ The itemised expenditures are determined from production figures for individual sectors, which are partly made up of the output of other sectors. Therefore, a column total here has no meaning.

Chapter 3

Economic Valuation of the ACT Racing industry – Key considerations

3.1 Summary

The ICRC analysis of the ACT Racing industry in the draft report determined that the value of ACT Racing is in the range \$5.3 – 8.6 million in 2009-10.

This chapter motivates the CGE Analysis in the following chapter by identifying three potential issues in the modelling undertaken to reach this figure. These are:

- Estimates of the Value Add of the ACT Racing industry (direct impact only) appear understated. This is discussed in section 3.2;
- Section 3.3 discusses the strong symbiotic relationship between gambling and racing in Australia. This should be considered in any assessment of the economic value of racing.
- The racing industry has impacts both upstream and downstream that need to be considered in any assessment of its economic value, these are discussed in section 3.4.

3.2 A “back of the envelope” estimate of value added by the ACT racing industry

In this section, ignoring the indirect effects that the racing industry imparts on other industries in the economy, we provide a “back of the envelope” approach to calculating the value add of the racing industry in the ACT. This does not examine the flow-on or indirect impacts of racing, it simply uses ABS data and definitions to provide a robust valuation of the value add contributed by ACT racing. The calculations and sources are summarised in Box 3.1

Box 3.1

THE VALUE ADD OF THE ACT RACING INDUSTRY: TOP DOWN APPROACH

The value add contribution of the ACT racing industry can be determined using publicly available ABS data and definitions. From the Input output tables:

- Approximately 2.4 billion dollars worth of racing was consumed domestically in 2005-06.
- Value add (the return to labour, capital and certain taxes) makes up approximately 38 per cent of the value add of the Sports and Recreation Industry of which racing is a part.
- So racing value add can be estimated to be approximately 900 million dollars in 2005-06.
- This indicates that a figure of 0.09 per cent of GDP (and thus GSP) for racing would be appropriate.
- Given GSP of \$27.8 billion for the ACT in 2009-10, the value add contributed by racing can be estimated at \$25 million.

Source: ABS Catalogue 5209.0, 5215.0, Allen Consulting Group Analysis

The calculation in Box 3.1 obtains a value of \$25 Million, between 3 and 5 times greater than the estimate provided in the ICRC report into ACT racing. Whilst this larger estimate of value added is intriguing in its own right, it does not consider the potential impacts of gambling or the potential flow on benefits provided by the ACT racing industry. These impacts are discussed later.

3.3 Wagering and the ACT racing industry

The most significant difference between the ICRC and the other estimates for the racing industry value added described in the previous section is that the ICRC report doesn't consider the wagering industry to be stimulated by the local racing industry. The ICRC states that only 2 per cent of wagering occurs on local ACT races and that therefore racing in the ACT and wagering on ACT races are independent. Based on the simple proportion of ACT residents who wager on ACT races, this appears to be so. However, the relationship between racing and wagering on the races in the ACT cannot be treated so simply, and therefore not so independently, as the next section describes.

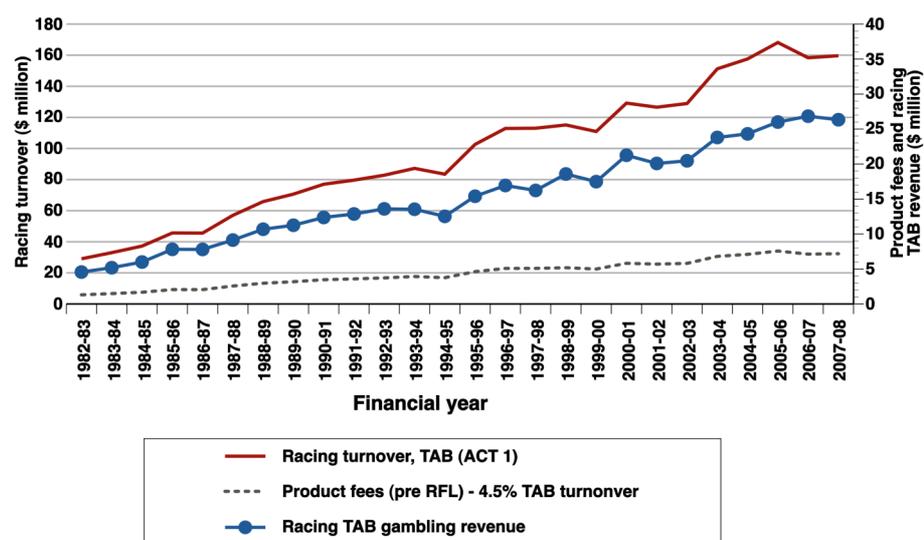
Wagering and racing mutual interdependence

Historically, wagering and racing funding arrangements have been intertwined. The wagering operators have provided the vast majority of the racing industry funding, while the racing industry conducts the events and races on which the wagering operators conduct business. This itself demonstrates the interdependent relationship between the two.

The historical funding link between the racing industry and wagering operators is exhibited in Figure 3.1, which charts wagering turnover from the ACTTAB, racing revenue earned by the ACTTAB and product payments paid by the ACTTAB² to the government (which would pass it onto the racing industry) since 1992.

Figure 3.1

ACTTAB RACING WAGERING TURNOVER, PRODUCT FEES AND REVENUE



Source: Australian Gambling Statistics, Queensland Government, 2010.

² Prior to 2010 the ACTTAB was required to pay the ACT Government product payments of 4.5 per cent of its racing gambling turnover.

In addition to funding arrangements, wagering operators and the racing industry are dependent on each other in other ways. Wagering operators rely on accurate and timely information and advice from the racing industry in order to conduct proper business. Additionally, if the integrity of the racing industry is compromised, the health of race wagering declines. As for the racing industry, improper wagering can adversely impact the industry, and therefore relies on the integrity of the wagering operators.

Broadcasting links the two industries as it drives interest and facilitates engagement. According to the Australian Racing Board (2010) wagering turnover increases by 10-40 per cent from live telecasts, usually screened at TAB outlets and hotels/clubs, but increasingly viewed on pay television. This increase is itself increasing in an age where internet and phone betting is increasing. Also, Victoria's Radio Sport station suggests that almost all TAB bettors listen to this station, and three quarters of them use racing coverage to guide their selections.

Race wagering in the ACT

Comparison of ACT race wagering with other states and territories is presented in Table 3.1. The first two columns list the proportion of Australia's total race wagering turnover spent by each state and spent on races held in each state, respectively. These data are thoroughbred race wagering statistics only, presented by Betfair to the Productivity Commission (2010), but are assumed to be representative of race wagering across the country.

The last two columns use the total race wagering turnover in Australia (\$17.35 billion) to determine the wager dollar value of the wagering turnover spent by each state and spent on races of each state, respectively.

Table 3.1

WAGERING ON THOROUGHBRED HORSERACING IN AUSTRALIA, 2008–2009

	Wagering by residents ^a	Wagering on jurisdiction racing ^a	Implied transfer ^a	Wagering by residents ^b (million)	Wagering on jurisdiction racing ^b (million)
NSW	41.5	31.0	10.5	\$7,200	\$5,379
VIC	26.6	33.8	-7.2	\$4,615	\$5,864
QLD	18.9	17.2	1.7	\$3,279	\$2,984
SA	4.6	7.9	-3.3	\$798	\$1,371
WA	1.9 ³	7.8	-5.9	\$330	\$1,353
TAS	5.2	1.6	3.6	\$902	\$278
NT	0.6	0.1	0.5	\$104	\$17
ACT	0.7	0.6	0.1	\$121	\$104
Total	100.0	100.0	—	\$17,350	\$17,350

Source:

^a Table 16.1, Productivity Commission report on Gambling, 2010, p. 16.19.

^b Australian Gambling Statistics,

³ The relatively low wagering in WA is probably explained by the fact that these data are Betfair statistics, which WA residents were prohibited from betting with until March 2008.

The third (*implied transfer*) column is the difference of the first two columns and, in conjunction with a figure on internal wagering (wagering by state residents on races within their own state), can be used to determine whether a state or territory is a net importer or exporter of race wagering.

According to the ICRC (2010) a negligible amount (only two per cent) of wagering by ACT residents is spent on ACT races. And whilst the figures in Table 3.1 may demonstrate that the ACT is a net importer of racing, the real figure that is of note here that demonstrates the national significance of the ACT racing industry is the \$104 million that is bet on ACT racing. ACT residents may choose to consume a wide bundle of racing across the country - evidenced by the \$121 million that they spend on Australian racing of which only a portion is on racing in their own jurisdiction – but ACT racing is also from the data above an important part of non-ACT residents consumption bundles.

So the argument that ACT racing and gambling are not interconnected due to the low proportion of ACT residents betting that is on ACT racing is not satisfactory. Racing is a highly tradable good, and the national (and increasingly international) market for racing is evidence of this. The proportion of it that stems from locals is not the issue of note.

3.4 The impacts of the racing industry on other industries in the ACT

The ICRC report limits the analysis to the direct impacts, specifically the direct value add of the racing industry.

The draft report cites the South Australian Centre for Economic Studies in suggesting that:

Studies commissioned by the racing industry clearly overstate the size and role of the racing industry by including all employment in all industries throughout the economy that results from spending in the thoroughbred racing industry. They are not estimates of employment in the racing industry itself, but further and equally importantly, it only makes sense to measure the ‘economic impact’ resulting from international tourism relating to racing, not general spending by Australians (i.e. if the racing industry didn’t exist Australians would enjoy their leisure time and expenditure in other ways). We conclude that the industry estimates of the economic impact of the industry, and accompanying multiplier analysis and employment estimates overstate the role played by the racing industry. (ICRC, 2010, p 21)

This is used by the ICRC in the draft report to motivate the use of Value Added by the racing industry, as an appropriate measure of the economic impact of that industry.

It should be noted though, that the ACT racing industry is not isolated from the rest of the economy – a shock to this industry has impacts on other industries. Obvious examples of the employment of veterinarians downstream and its demand for bloodstock services upstream.

Not all of these upstream and downstream impacts inflate the value of ACT racing, for example a negative shock to the racing industry may benefit other industries which compete with racing for scarce labour and capital.

Analysis of all of these impacts is best performed in a Computable General Equilibrium or CGE framework. This is presented in Chapter 4.

Chapter 4

CGE Analysis of the ACT Racing Industry

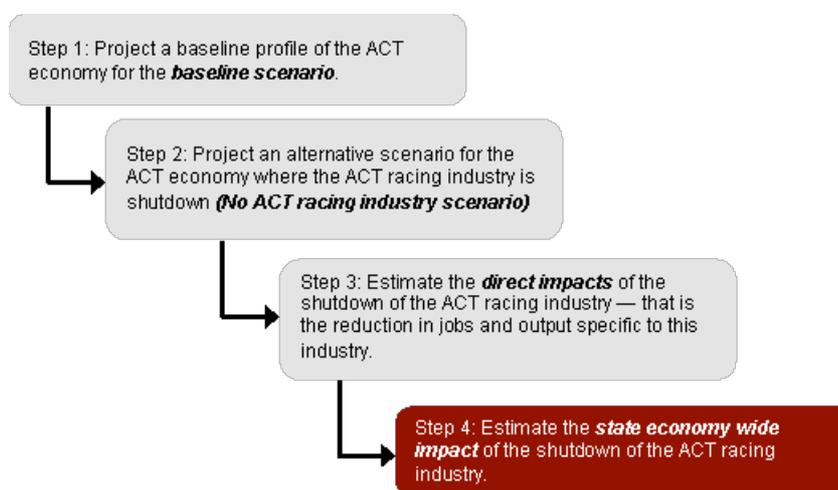
4.1 Modelling framework

The preceding chapter discussed earlier studies on the economic contribution of the ACT racing industry. Using ABS data and definitions, an estimate of the direct value added created by racing in the ACT was given as 25 million.

This chapter sets out the Allen Consulting Group’s methodology in estimating the economy-wide impacts of the ACT racing industry on the ACT economy. Figure 4.1 sets out the modelling framework for the analysis.

Figure 4.1

MODELLING FRAMEWORK



Source: Allen Consulting Group analysis, 2011.

4.2 Modelling scenarios

Two scenarios were set up in estimating the economic impacts of the ACT racing sector (Step 1 and Step 2 in Figure 4.1).

- *Baseline scenario*: this scenario shows what is expected to happen under the current business-as-usual scenario where ACT racing industry is in operation.
- *No ACT racing industry scenario*: this scenario refers to a case where the ACT racing industry is removed from the economy.

4.3 Estimating the direct impact of ACT racing industry

In step 3 of the modelling framework, it is necessary to estimate the direct impact of the ACT racing.

In the MMRF model, the racing industry is captured under the ‘Other services’ sector, which consist of the Arts and Recreation Services and the Other Services sectors as defined under the ANZSIC 2006 (ABS 2006). According to the 2006-07 input-output tables (ABS 2010a), the racing industry is around 3 per cent of Arts and Recreation Services and the Other Services sectors.

According to the latest ABS States national account (ABS 2010b), the gross value added of the Arts and Recreation Services and the Other Services sectors amounts to \$971 million in the ACT. It is estimated that the racing industry accounts for around \$29 million. Shutting down the ACT racing industry would have the direct impacts of reducing \$29 million from the ACT economy.

4.4 The MMRF model

The economy-wide impacts of the racing sector on the ACT economy were estimated using a Computable General Equilibrium (CGE) model of the Australian economy, the Monash Multi Regional Forecasting (MMRF) Model. Note that CGE models are different from and more conservative than multiplier analysis. Whilst both are based on the ABS input-output tables, CGE analysis will be by definition more conservative in modelling exercises such as this as:

- CGE modelling imposes supply side constraints – labour and capital are finite.
- CGE models drive price responses – both input prices and output prices can vary.

Box 4.1 provides a brief description of the MMRF model. Appendix A provides a detailed write-up on the MMRF model.

Box 4.1

THE MMRF MODEL

The MMRF is a multi-sector dynamic CGE model of the Australian economy, covering the six states and two territories. It models each region as an economy in its own right, with region-specific prices, region-specific consumers, region-specific industries, and so on. Importantly, the ACT is separately identified in the model.

The MMRF contains 58 industrial sectors, which produce 63 commodities. The sectoral details allow the economic contribution of the ACT racing industry to be allocated appropriately in the model. Specifically, the racing industry is captured under the ‘Other services’ sector.

The MMRF model is a high-level representation of the Australian economy, facilitating measurement of the wider effects of changes in economic activity in key industries and regions. To the extent that economic activity is interlinked, the MMRF model captures any indirect effects that arise from direct measures. In this instance, the direct impact of shutting down of the ACT racing industry is a reduction of output in the ‘Other services’ sector. The MMRF captures the flow-on impacts of this reduction in output from the ‘Other services’ sector to upstream and downstream sectors.

Importantly, the MMRF model is widely known and has been used for a wide range of policy studies. The Productivity Commission used the model to examine the potential benefits of the National Reform Agenda, and the Commonwealth Treasury used a version of the MMRF to produce the 2008 report, *Australia’s Low Pollution Future*, which was a companion report to the Climate Change White Paper. The MMRF model has therefore demonstrated its ability to estimate economy-wide impacts of industry or policy changes.

Key assumptions

At the national level, the consumer's real wage rate is expected to remain unchanged from its baseline forecast level, while employment is adjust according to changes in the demand of the sectors. Capital stock (apart from the 'Other services' sector in the ACT) is expected to remain unchanged.

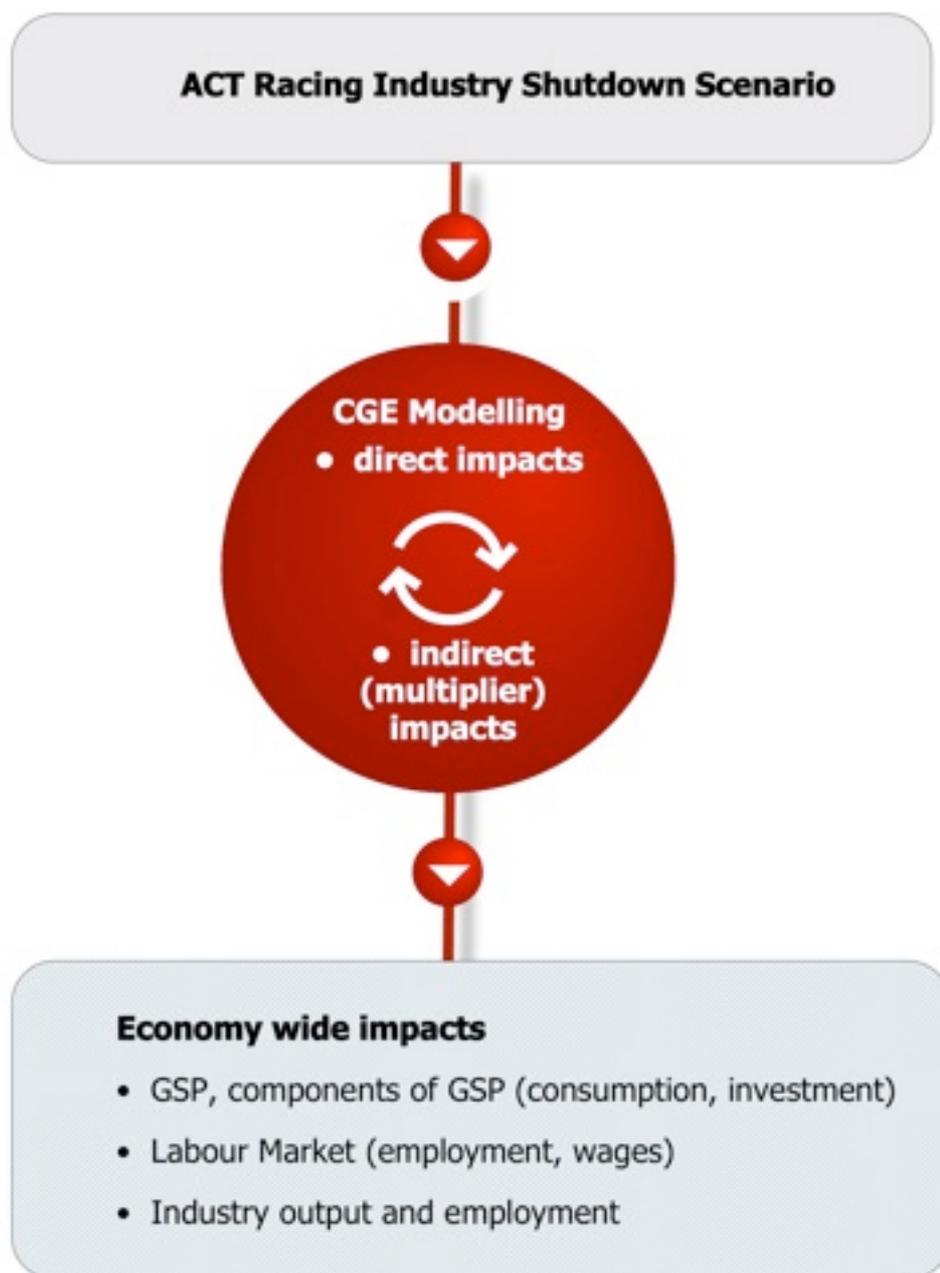
These are consistent with the classic short-run assumption where wages and capital are fixed. Policy changes would have a greater impact on employment as producers adjust their labour needs in view of changes in the demand of their products.

Source: Allen Consulting Group, 2011.

The MMRF model is a high-level representation of the Australian economy, facilitating measurement of the wider effects of changes in economic activity in key industries and regions. To the extent that economic activity is interlinked, the MMRF model captures any indirect effects that arise from direct measures. In this instance, the direct impact of shutting down of the ACT racing industry is a reduction in output from the 'Other services' sector. The MMRF captures the flow-on impacts of this reduction in output from the 'Other services' sector to upstream and downstream sectors. (see Figure 4.2).

Figure 4.2

THE CGE MODELLING APPROACH



Source: Allen Consulting Group, 2011.

The shutdown of the ACT racing industry is modelled as a 3 per cent reduction in the output and investment in the other services sector in the ACT (The proportion estimated using ABS tables 5209.0 and 5215.0). Employment in all sectors and states is allowed to adjust freely within the model, whilst the consumer's real wage rate is expected to remain unchanged, reflecting the classic short-run economic assumption. The section below highlights the flow on impacts onto the rest of the ACT economy.

4.5 Impacts on the ACT economy

This section analyses the economic contribution of the ACT racing industry to the ACT economy. Specifically, it examines what would happen to the ACT economy if the racing industry shuts down.

As discussed above, two scenarios (*baseline* and *no ACT racing industry*) were modelled. The differences in a series of economic aggregates between the scenarios are calculated to determine the economic impacts stemming from the shutting down of the ACT racing industry.

A convenient way of reporting these deviations is as percentage changes from where the MMRF projects the economy would otherwise have been (i.e. the 'baseline') if there was no ACT racing industry. Additionally, the results from the economic analysis described below are based on the size of the economy in 2009-10.

When assessing the impacts of industrial or policy changes on the ACT economy, there are a range of key macroeconomic variables that are commonly evaluated, these include:

- *Gross State Product (GSP)* — GSP is a measure of a state's economic activity. GSP is the sum of consumption, government spending, investment and net exports. Therefore, changes in GDP largely reflect changes in these economic variables, particularly those of investment and consumption;
- *consumption* — consumption is typically the largest component of GSP and measures private consumption expenditure. This variable is an indicator of living standards. An increase in private consumption indicates an increase in welfare of Australians;
- *investment* — investment is another component of GSP that measures demand by private firms and individuals for capital, including factories, machinery, computer software, etc. This variable is an indicator of the future productive capacity of the ACT economy; and
- *employment* — the number of jobs that are available in the economy.

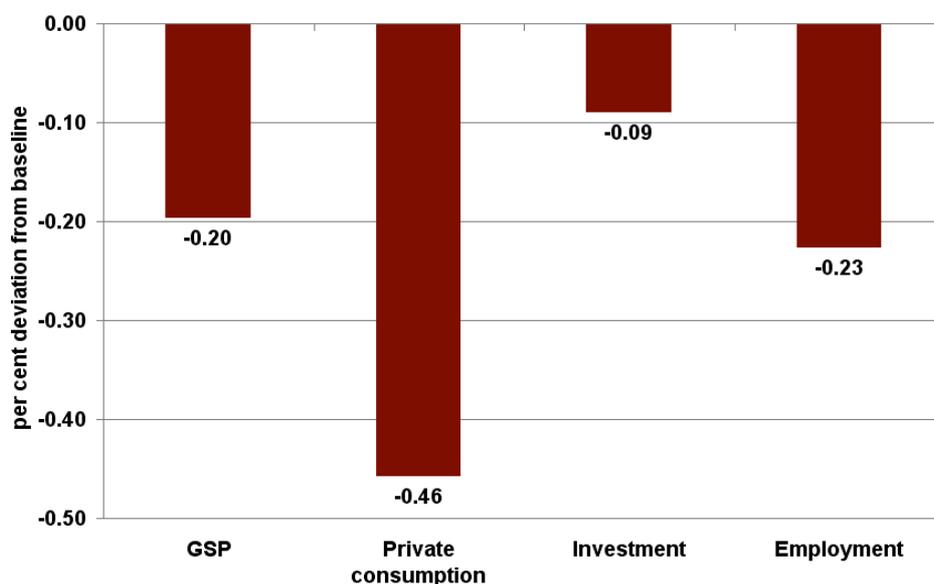
Impacts on key economic variables

Figure 4.3 and Table 4.1 highlight the estimated impacts on the ACT economy stemming from the closure of the local racing industry. Figure 4.3 shows the impacts in terms of per cent deviation from the baseline while Table 4.1 shows absolute deviation from the baseline.

Shutting down the ACT racing industry would cause economic activity in the ACT (as measured by GSP) to be lower by 0.2 per cent compared with the baseline. While the impacts on economic activity may look small in percentage terms, this represents a reduction of \$54 million relative to the baseline scenario in 2009-10.

GSP is the sum of private consumption, government spending, investment and net exports. Therefore, changes in GDP largely reflect changes in these economic variables, particularly those of investment and consumption. Indeed, private consumption is expected to be lower by 0.46 per cent under the *alternate* scenario. Importantly, it represents around \$62 million reduction on private consumption.

Figure 4.3

IMPACTS OF THE CLOSURE OF THE ACT RACING INDUSTRY (PER CENT DEVIATION FROM BASELINE)

Source: Allen Consulting Group analysis, 2011.

Table 4.1

IMPACTS OF THE CLOSURE OF THE ACT RACING INDUSTRY (LEVELS)

Key economic indicators	\$ million
Gross State Product (economic activity)	-54
Private consumption (welfare)	-62
Investment (business outlook)	-7
Employment (jobs)	-451

Source: Allen Consulting Group analysis, 2011.

Before analysing these results further, an important step is to question whether the results appear to make sense. As mentioned earlier, 500 people are directly employed by the racing industry. The flow on impacts of the closure of the ACT racing industry will likely have pressures in upstream and downstream industries – such as veterinarians and horse breeders. So there may be further losses in these sectors. However, some industries will benefit from the lower rental price of capital out of the racing sector – and these will absorb labour.

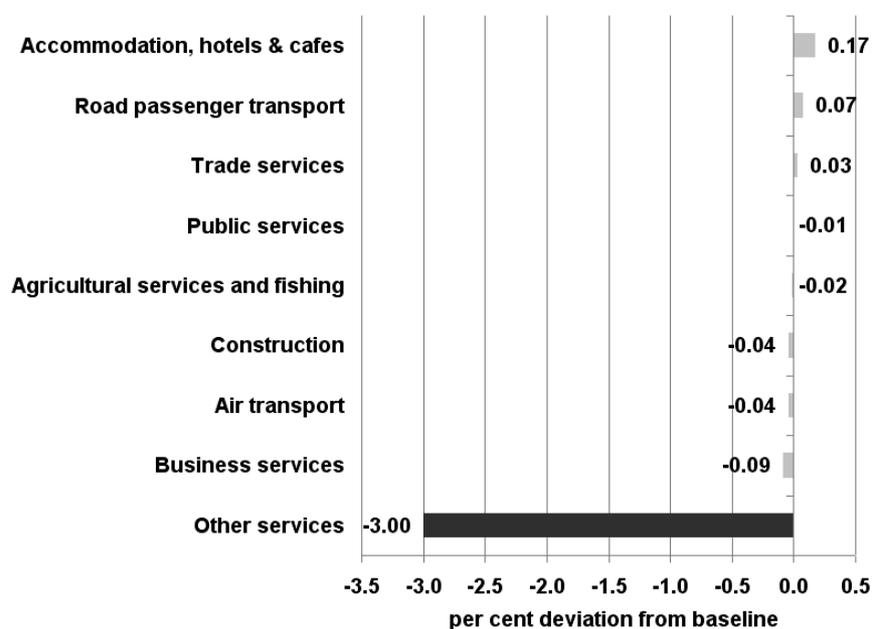
Australian GDP per member of the labour force is around 110,000.⁴ As such these numbers – where a decline in the labour force of 451 leads to a decline in GSP of \$54 million – seem to make sense as they imply that the additional labour add around \$120,000 per capita. The ICRC estimate of value add of around 5 – 8 million implies that an additional unit of labour adds significantly less – between \$10,000 and \$20,000.

There are some key factors which lead to the reduction in consumption. First, the racing industry largely supplies to final consumers. Hence, the closure of the racing industry would imply a reduction in consumption, although some of the consumption would be diverted to other goods and services, such as retail, accommodation and food.

Second, the closure of the racing industry is expected to lead to flow on impacts on other industries. As shown in Figure 4.4, the closure of racing industry (represented by the fall of output in the ‘Other services’ sector) results in the lower output in its upstream and downstream industries. For instance, upstream industries such as the construction sector and the agriculture services & fishing industry (whose activities include breeding of horses and dogs) are expected to experience a slight reduction in their output due to fall in demand of their services. Similarly, downstream industries, such as business services are expected to have a reduction in their output.

Figure 4.4

IMPACT ON OUTPUT OF SELECTED SECTORS IN THE ACT (PER CENT DEVIATION FROM BASELINE)



Source: Allen Consulting Group analysis, 2011. Note: The ‘Other services’ industries consist of the Arts and Recreation Services and the Other Services sectors as defined under the ANZSIC 2006.

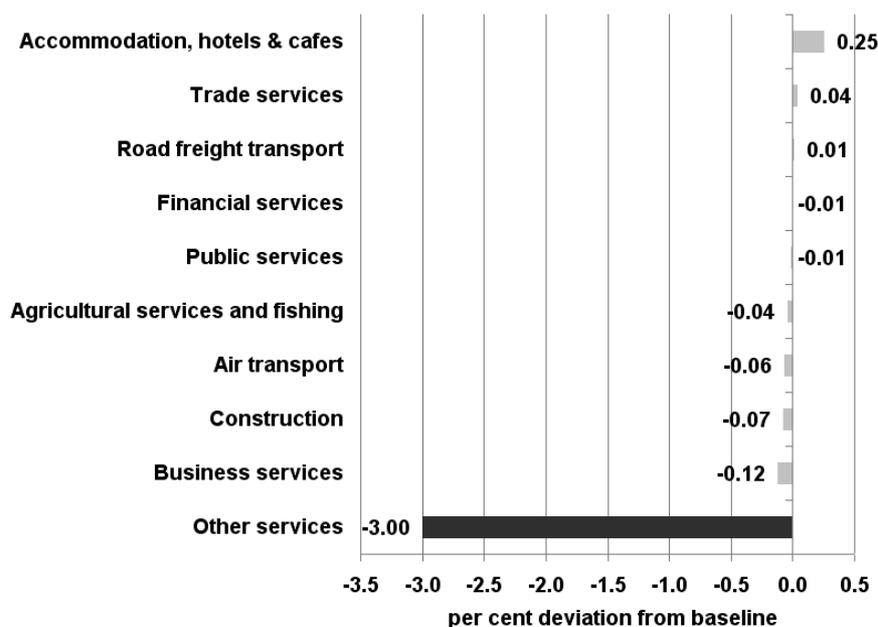
⁴ Allen Consulting Group Analysis of the Federal Budget

The decline in these industries' outputs leads to a reduction in their demand for labour (see Figure 4.5). Some of these workers are absorbed into other service industries. In particular, employment in the accommodation, hotels and cafes industry is expected to be higher by 0.25 per cent.

On balance, the closure of the racing industry would lead to losses in jobs and employment. Although some of the displaced workers are expected to be gain employment in other sector, the economy wide modelling indicates that around 450 jobs are lost with the closure of the racing industry. The lower employment opportunities would lower total consumption, implying a general reduction in the welfare of those staying/working in the ACT.

Figure 4.5

IMPACT ON EMPLOYMENT OF SELECTED SECTORS IN THE ACT (PER CENT DEVIATION FROM BASELINE)



Source: Allen Consulting Group analysis, 2011. Note: The 'Other services' industries consist of the Arts and Recreation Services and the Other Services sectors as defined under the ANZSIC 2006.

The closure of the ACT racing industry causes investment in the ACT to fall slightly by 0.09 per cent, compared to the baseline scenario. This largely reflects the elimination of investment in the ACT racing industry. Note that investments in other industries are unchanged from the baseline.

Impacts on government revenue

Apart from its linkages toward the upstream and downstream industries, the racing industry also contributes to the ACT government revenue collection through its contribution of state taxes.

In 2008-09, the ACT government collected around \$1 billion in taxes (ABS 2010c). The modelling results shows that the closure of the ACT racing industry lowers ACT tax revenue, largely due to a fall in gambling taxes. Indeed, gambling tax revenue is estimated to be lower by around \$1 million, compared to the baseline scenario (Table 4.2). Importantly, the lower economic activity in the ACT causes total state revenue to fall by around \$4 million, compared to the baseline scenario.

Table 4.2

IMPACT ON ACT GOVERNMENT REVENUE (\$ MILLION)

Revenue category	\$ million
Total government revenue	-3.5

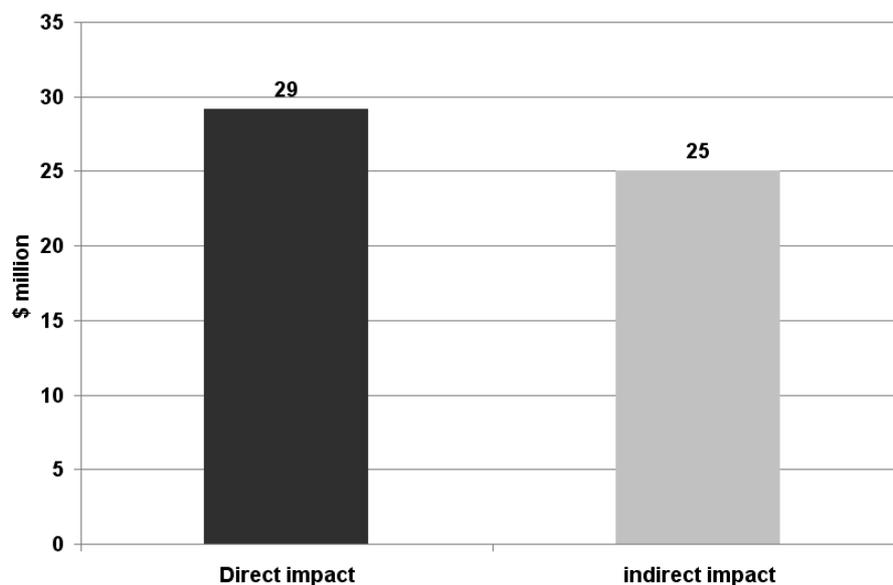
Source: Allen Consulting Group analysis, 2011.

Significant indirect (or flow on) impacts from the racing industry

The ACT racing industry represents 3 per cent of the Arts and Recreation Services and the Other Services sectors (as defined in the ANZSIC), which is around \$29 million. The modelling results show that the closure of the ACT racing industry would cause total economic activity in the ACT economy to fall by \$54 million.

This implies that the ACT racing industry has an indirect impact of \$25 million on the economy (Figure 4.6). In other words, for every \$1 dollar reduction in the racing industry, the ACT economy's economic output would fall by \$1.86.

Figure 4.6

DIRECT AND INDIRECT IMPACT (\$ MILLION)

Source: Allen Consulting Group analysis, 2011.

Extension to gambling

If the analysis shocks ACT gambling in the same fashion (carving out the gambling by ACT punters on ACT racing), the size of the impacts on the economy increases in significance. The impacts on the ACT economy are summarised in Table 4.3

Table 4.3

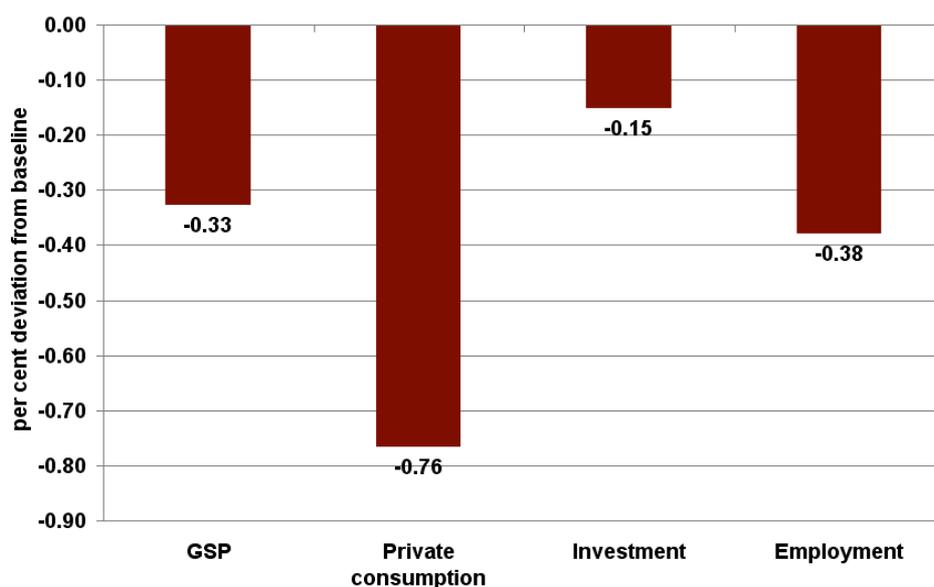
IMPACTS OF THE CLOSURE OF THE ACT RACING INDUSTRY AND REDUCTION IN THE GAMBLING INDUSTRY

Key economic indicators	
Gross State Product (economic activity) (\$m)	-90
Private consumption (welfare) (\$m)	-104
Investment (business outlook) (\$m)	-12
Employment (jobs)	-754

Source: Allen Consulting Group analysis, 2011.

As demonstrated in Table 4.3, the impact on GSP increases to around a \$90 million reduction as the impact is compounded further. The impacts on welfare and jobs increase by a similar magnitude. Figure 4.7 demonstrates the deviation from the baseline scenario.

Figure 4.7

IMPACTS OF THE CLOSURE OF THE ACT RACING INDUSTRY AND REDUCTION IN THE GAMBLING INDUSTRY (PER CENT DEVIATION FROM BASELINE)

Source: Allen Consulting Group analysis, 2011.

4.6 Key Points

When economy wide impacts are considered, the impacts on the ACT economy of the racing industry amount to a reduction of around \$50 million in GSP without considering gambling. When the synergies between racing and gambling are considered the impacts are significantly larger, amounting to a reduction in GSP of \$90 million. This amounts to a loss of income of \$720 per ACT household, every year.

Appendix A

The MMRF Model

A.1 The MMRF model

The Monash Multi-Regional Forecasting (MMRF) model is a Computable General Equilibrium (CGE) model of Australia's regional economies developed by the Centre of Policy Studies (CoPS) at Monash University (CoPS, 2008). It is a model of the entire Australian economy and it captures the interactions between different regions and sectors. For a detailed description of the theoretical structure of the model see Peter et. al., 1996.

The MMRF model is used for a wide range of policy studies, including the analysis of state tax reforms and the potential benefits of the National Reform Agenda. More recently, the Department of the Treasury and the *Garnaut Climate Change Review* applied the MMRF model to the national climate change modelling to assess the impacts of the proposed CPRS on the Australian economy.

Appendix A provides an overview of the MMRF model, detailing its modelling capabilities, core structure and economic principles.

A.2 Introduction to the MMRF model

The MMRF is a dynamic model of the Australian economy that models the behaviour of economic agents within each of Australia's eight states and territories. Each region is modelled as an economy in its own right, with region-specific commodities, prices and industries. The model contains explicit representations of intra-regional, inter-regional and international trade flows.

Each sector produces capital that is specific to the region in which it is located. In each region, there is a single representative household and a regional government. At the national level, the Commonwealth Government is also represented. Finally, the rest of the world is represented as a single agent, whose behaviour is driven by regional international exports and imports. The regions are linked through inter-regional trade, labour and capital mobility, and the taxing and spending of the federal government.

A.3 The database

There are many versions of the MMRF model. The version of MMRF used for this project provides a representation of the Australian economy as it was in 2005-06.

The model allows for joint production — where one industry can produce a number of different commodities. Specifically, the model contains 58 industrial sectors, which produce 63 commodities. The industries and their related commodities are detailed in Table A.1 and Table A.2 respectively.

Table A.1

MMRF: INDUSTRIES

Industry	
Agriculture, Forestry and fishing	30. Motor vehicles and parts
1. Sheep and beef cattle (high emissions)	31. Other manufacturing
2. Dairy cattle	Utilities
3. Other livestock (low emissions)	32. Electricity generation: Coal
4. Broadacre agriculture except for animal	33. Electricity generation: Gas
5. Other agriculture	34. Electricity generation: Oil products
6. Agricultural services and fishing	35. Electricity generation: Nuclear
7. Forestry	36. Electricity generation: Hydro
Mining	37. Electricity generation: Other
8. Coal mining	38. Electricity supply
9. Oil mining	39. Gas supply
10. Gas mining	40. Water supply
11. Iron ore mining	Services
12. Non-ferrous ore mining	41. Construction services
13. Other mining	42. Trade services
Manufacturing	51. Financial services
14. Meat and meat products	52. Business services
15. Other food, beverages and tobacco	53. Dwelling services
16. Textiles, clothing and footwear	54. Public services
17. Wood products	50. Communication services
18. Paper products	43. Accommodation, hotels and cafes
19. Printing and publishing	55. Other services
20. Petroleum and coal products	56. Private transport services
21. Chemicals	57. Private electricity equipment services
22. Rubber and plastic products	58. Private heating services
23. Non-metal construction products	Transport
24. Cement	44. Road passenger transport
25. Iron and steel	45. Road freight transport
26. Alumina	46. Rail passenger transport
27. Aluminium	47. Rail freight transport
28. Other non-ferrous metals	48. Water, pipeline and transport services
29. Metal products	49. Air transport

Source: CoPS, MMRF database.

Table A.2

MMRF: COMMODITIES

Commodities	
1. Sheep and beef cattle (high emissions)	33. Other non-ferrous metals
2. Dairy cattle	34. Metal products
3. Other livestock (low emissions)	35. Motor vehicles and parts
4. Broadacre agriculture except for animal	36. Other manufacturing
5. Bio fuel	37. Electricity generation: Coal
6. Other agriculture	38. Electricity generation: Gas
7. Agricultural services and fishing	39. Electricity generation: Oil products
8. Forestry	40. Electricity generation: Nuclear
9. Coal mining	41. Electricity generation: Hydro
10. Oil mining	42. Electricity generation: Other
11. Gas mining	43. Electricity supply
12. Iron ore mining	44. Gas supply
13. Non-ferrous ore mining	45. Water supply
14. Other mining	46. Construction services
15. Meat and meat products	47. Trade services
16. Other food, beverages and tobacco	48. Accommodation, hotels and cafes
17. Textiles, clothing and footwear	49. Road passenger transport
18. Wood products	50. Road freight transport
19. Paper products	51. Rail passenger transport
20. Printing and publishing	52. Rail freight transport
21. Petrol	53. Water, pipeline and transport services
22. Diesel	54. Air transport
23. LPG	55. Communication services
24. Aviation fuel	56. Financial services
25. Petroleum and coal products nec	57. Business services
26. Chemicals	58. Dwelling services
27. Rubber and plastic products	59. Public services
28. Non-metal construction products	60. Other services
29. Cement	61. Private transport services
30. Iron and steel	62. Private electricity equipment services
31. Alumina	63. Private heating services
32. Aluminium	—

Source: CoPS, MMRF database.

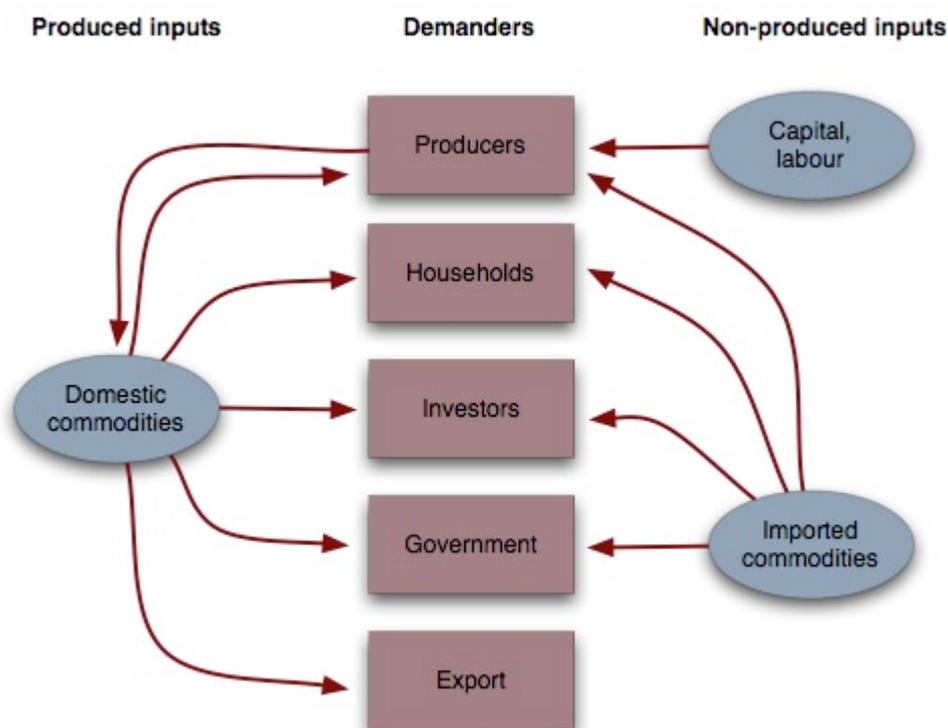
The MMRF database is comprised of detailed input-output tables for each state and territory as well as a set of government fiscal accounts. Each of the eight input-output tables details the core cost structure of each region specific industry and how each industry in each state economy is linked to other industries within that state and other states. Further, they show the flow of goods through the economy and the final demands of the principal economic agents.

A.4 Structure of the model

The core structure of the MMRF model is illustrated in Figure A.1. Producers use primary factors (labour, land and capital), region specific intermediate goods, and imports to produce domestic commodities. Domestic commodities and imported commodities flow to households, investors, and governments. In addition a proportion of domestic commodities flow to foreigners as exports. As well as demand schedules, the MMRF model has a detailed government budget and a set of regional labour markets.

Figure A.1

STRUCTURE OF THE MMRF MODEL



Source: Allen Consulting Group analysis, 2010, adapted from Monash.

The MMRF model is built on the core assumptions of neoclassical economics. Consumers aim to maximise utility within a fixed budget constraint, while firms select the mix of inputs that minimises costs for their level of output. This optimising behaviour determines the regional supplies and demands of commodities and the demand for primary factors within the model. Labour supply at the national level is governed by demographic factors and national capital supply is determined by rates of return. Both labour and capital can cross regional borders such that each region's stock of productive resources reflects relative employment opportunities and relative rates of return.

Assumptions regarding the economic behaviour of agents together with detailed input-output tables for each of the eight regions are linked by mathematical equations. This allows for second round impacts or feedback responses to be accounted for in the modelling framework. For instance, it allows for price response adjustments across all industries and factors. In this way, the results detail the actual effect of a change on the entire economy, not just within the region or industry that is directly affected. This allows a more sophisticated insight into policy analysis than is possible from partial equilibrium analysis or input-output analysis.

The model is driven by the assumption of competitive markets. That is, all markets clear and there exists equality between the producer's price and marginal cost for each sector in each region (all markets clear with the exception of the labour market). The purchasers price and producers price differs by the size of any government taxes and associated margins. All government taxes are levied as ad valorem sales taxes on commodities. Margins are additional costs associated with transport or retail trade required for market transactions.

Aggregate demand

Demand for goods from households, investors, governments and foreigners together comprise aggregate demand as represented in the equation below.

$$Y = C + I + G + (X - M)$$

Where:

- Y is aggregate demand;
- C is household consumption;
- I is investment;
- G is government spending;
- X is exports; and
- M is imports.

The components of aggregated demand and how they are represented within the model are discussed below.

Household demand

There exists a utility maximising representative household in each of the eight regions. Households consume bundles of goods from either domestically produced or imported commodities. Domestically consumed goods are a combination of goods from the eight regions. Total household demand is disaggregated into essential goods and luxury goods, as represented in the equation below.

$$X_i = X_i^{Sub} + X_i^{Lux}$$

Where:

- X_i is total household demand;
- X_i^{Sub} is essential consumption; and
- X_i^{Lux} is luxury consumption.

In MMRF it is assumed that a household will first purchase all essential goods before purchasing any luxury goods such that disposable income for luxury goods is a function of total income and the summed value of essential consumption.

$$Y^{Lux} = Y - \sum P_i X_i^{Sub}$$

Where:

- Y^{Lux} is income for luxury goods;
- Y is total disposable income
- P_i is price of good i; and
- X_i^{Sub} is quantity of essential good X.

MMRF assumes a non-homothetic utility function (MMRF applies a Klein-Rubin utility function), which allows both income and relative prices to affect consumption.

Capital creation

Investors in each regional sector combine inputs to generate capital. Investors are limited to the technology set that is available for production in that regional sector. Rates of return are used as a signal for capital investment or disinvestment.

Government demands

There are nine governments represented in MMRF — the eight regional governments and a federal government — each demanding commodities. Government demands are either imposed on the model or determined endogenously by setting government expenditure rules. For example, government expenditure could be linked to aggregate consumption.

Foreign demand

Most exports can be categorised as either traditional exports, non-traditional exports or tourism exports. Demand for traditional exports is characterised by a downward sloping demand curve and associated assumptions regarding foreigners' preferences for Australian goods. Each regional sector has an associated export market, which faces a downward sloping foreign demand curve. It is assumed that the foreign demand schedules are specific to the regional sector; as such movement in world prices can differ across different regions.

The demand for non-traditional export goods is driven by the average price of the collective non-traditional export bundle. In the MMRF database, non-traditional exports account for two per cent of total national exports and include: electricity generation, gas and water, construction, trade services, rail transport and dwellings.

Within MMRF, it is assumed that the tourism sectors — hotels and cafes, road transport, air transport and other services — do not face their own individual demand schedules. Rather, foreigners purchase a holiday bundle, the quantity of which is determined by the average price of the tourism goods.

Demands for inputs used in production

Producers in each region utilise primary factors — land, labour and capital — intermediate goods and imported goods to produce domestic commodities. Producers are assumed to choose the mix of inputs that minimises costs for a given level of production. The MMRF model assumes a multi-stage nested structure of production. At the first stage the optimal combination of region specific intermediate goods and the optimal combination of occupational specific labour is selected. At the second stage, producers make decisions regarding the optimal combination of the three primary factors and the combination of imported and domestically sourced goods. Finally, producers combine primary inputs and intermediate goods to produce a level of output at minimum cost.

A.5 Government finances

MMRF contains a set of equations detailing government revenues and government expenditures for each government. Government revenues are comprised of income taxes, sales taxes, excise taxes, taxes on interregional trade and receipts from government assets. Government expenditures include — as detailed above — expenditure on commodities as well as transfer payments to households. In addition, for the Federal government there is a set of equations describing fiscal transfers to the states.

A.6 MMRF dynamics

There are two main types of inter-temporal links incorporated into MMRF: physical capital accumulation and lagged adjustment processes.

Physical capital accumulation

It is assumed that investment undertaken in year t becomes operational at the start of year $t+1$. Thus, given a starting point value for capital in $t=0$, and with a mechanism for explaining investment through time, the model can be used to trace out the time paths of industry capital stocks.

Capital stock in industry i in state/territory s in year $t+1$ is determined by the equation below.

$$K_{i,s}(t+1) = (1 - DEP_{i,s}) * K_{i,s}(t) + INV_{i,s}(t)$$

Where:

- $K_{i,s}(t)$ is the quantity of capital available in industry i located in state/territory s at the start of year t ;
- $INV_{i,s}(t)$ is the quantity of new capital created through investment for industry i in state/territory s during year t ; and
- $DEP_{i,s}$ is the rate of capital depreciation in industry i , treated as a fixed parameter.

Investment in industry i in state/territory s in year t is explained via a mechanism that relates investment to expected rates of return. The expected rate of return in year t can be specified in a variety of ways. In MMRF two possibilities are allowed: static expectations and forward-looking model-consistent expectations. Under static expectations, it is assumed that investors take account only of current rentals and asset prices when forming current expectations about rates of return. Under rational expectations the expected rate of return is set equal to the present value in year t of investing \$1 in industry i in state/territory s , taking account of both the rental earnings and depreciated asset value of this investment in year $t+1$ as calculated in the model.

Lagged adjustment processes

One lagged adjustment process is included in MMRF. This relates to the operation of the labour market in year-to-year simulations.

In comparative static analysis, one of the following two assumptions is made about the national real wage rate and national employment:

- the national real wage rate adjusts so that any policy shock has no effect on aggregate employment; or
- the national real wage rate is unaffected by the shock and employment adjusts.

MMRF's treatment of the labour market allows for a third, intermediate position, in which real wages can be sticky in the short-run but flexible in the long run and employment can be flexible in the short-run but sticky in the long run. For year-to-year simulations, it is assumed that the deviation in the national real wage rate increases through time in proportion to the deviation in aggregate employment from its baseline-forecast level. The coefficient of adjustment is chosen so that the employment effects of a shock are largely eliminated after about ten years. This is consistent with macroeconomic modelling in which the Non Accelerating Inflation Rate of Unemployment (NAIRU) is exogenous.

A.7 Closure assumptions of MMRF

In MMRF, there are more endogenous variables than the number of equations. For the model to generate a solution, the number of endogenous variables must match the number of equations. Hence, some endogenous variables are set to be exogenous to ensure the number of endogenous variables matches the number of equations.

The desired economic environment/assumption for the policy scenario determines the choice of exogenous variables. These choices are also known as the closure assumptions. The most common closure assumptions are the long run, short-run economic closure and fiscal closure.

Short-run closure

In the short-run, the economy is less able to respond to policy changes, as prices and wages are sticky (or fixed). Labour market (in terms of employment) is flexible and unemployment rate can be above or under its natural rate. Capital stock is fixed in the short-run, and investment responds to changes in rates of return.

Long run closure

The key elements of a typical long run economic environment are:

- At the national level, long run employment is determined by demographic factors (birth and death rates, the level of international migration, etc.). Additionally, the unemployment rate reverts to its natural rate or NAIRU in the long run. Therefore, the national employment figure is fixed. However, labour is perfectly mobile across industry and states, thus there can be changes in industry and state employment.
- Labour market adjusts via changes in real wages.
- Capital stock in each industry adjusts to equilibrate its expected and actual rates of return on capital. The baseline expected rates of return are determined by values in the MMRF database. Industries' demands for investment goods are linked by an exogenous investment/capital ratio to changes in their capital stock.
- Nominal household consumption in each region is a constant share of post-tax household disposable income.

Fiscal closure

The role of government also plays a part in determining the impacts of a simulation. A typical fiscal closure will have the following assumptions:

- real government consumption (Commonwealth and States) is fixed; and
- government budget balances (Commonwealth and States) are fixed, via changes in the fiscal item 'Government transfers to households'.

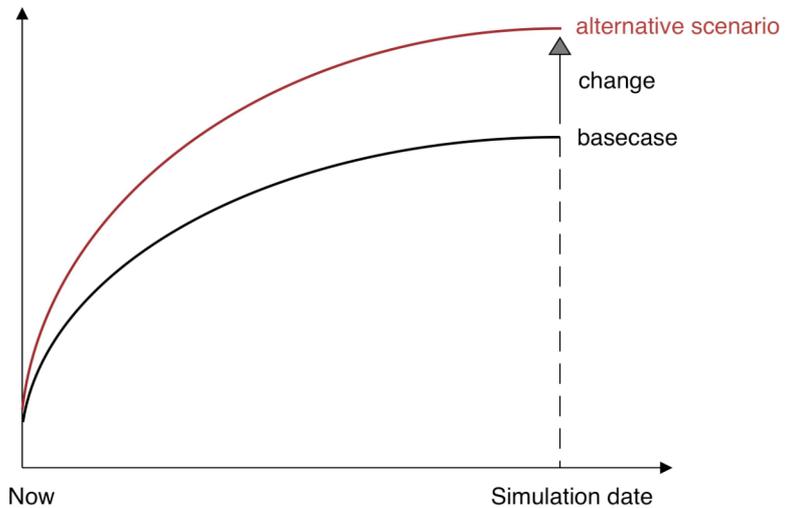
A.8 Interpretation of MMRF simulations

The MMRF can be solved in comparative static or recursive dynamic modes. Comparative static modelling shows the effect of a policy shock only. That is, it answers ‘what happens when this happens?’ without stating the adjustment process.

A dynamic CGE model would provide answers on the forecast structure of the economy under the baseline and the alternative case. It provides an explicit baseline over time against which the impact of a policy change can be compared. The model could incorporate more up to date data and the timing and policy paths are clear.

Figure A.2

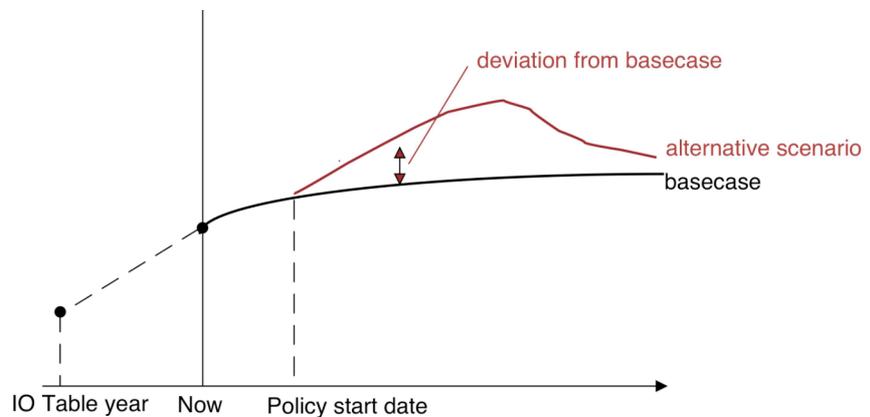
COMPARATIVE STATIC INTERPRETATION OF RESULTS



Source: Allen Consulting Group analysis, 2010.

Figure A.3

DYNAMIC INTERPRETATION OF RESULTS



Source: Allen Consulting Group analysis, 2010.

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