

Australian Cities at Risk: Approaches to Urban Economic Risk Management

Brian H Roberts

University of Canberra

Email: Brian.Roberts@canberra.edu.au

ABSTRACT

Improving the management of risk in Australian cities is important to long term sustainability of urban economies. As our urban and regional economies become more integrated into the global economy, the management of risk will become more complex. As a society, we face difficult choices about what types of risks to our urban economies to manage, who should be responsible determining an acceptable level of risk exposure, and the most appropriate strategies and measures to manage risk. The challenge to us all is to decide which risks we need to manage and which risks we should disregard. This paper examines the nature of risks affecting Australian cities and describes a technique to Multi sector Risk Attribute Analysis used to measure and evaluate multiple risks which have the potential to impact on cities. Two case studies applying the technique: Cairns and ACT regional economies are presented, followed by a framework used to develop sector industry risk management plans. Critical issues for improving urban economic risk management in Australian Cities are discussed.

INTRODUCTION

The recent devastating impacts of hurricanes and floods in the southern United States, China and Europe have increased our awareness of the potential impact major disasters can have on the economies cities and regions. The impact of Cyclone Tracey on Darwin in 1975 and the 2003 Canberra bushfires are reminders of how vulnerable Australian cities are to natural disaster.

However, it is not just the threat of natural disaster that one must be concerned about in the future management of our cities. There are many other potential dangers that pose very significant threats to urban economies and our way of life. Events like SARS had far reaching effects on the economy of cities in many Asian countries and regional economies in Australia dependent on international tourism and food exports to Asian markets. The threat of the avian flu virus, if it mutates to transmission between humans, would have a devastating impact on Australian cities, especially in those economies with a high dependence on tourism.

Improving the management of risk in Australian cities is important to the long term sustainability of urban economies. As our urban and regional economies become more integrated into the global economy, the management of risk will become more complex. As a society, we face difficult choices about what types of risks to manage, who should be responsible determining an acceptable level of risk exposure, and the most appropriate strategies and measures to manage risk. The challenge to us all is to decide which risks we need to manage and which risks we should disregard.

Governments play a central role in managing sovereign and major risks associated with disasters, health and the stability of business. Increasingly, however, governments are transferring responsibility for risk to business and individuals. As individuals or businesses we can act relatively independently in making choices about appropriate strategies to avoid or reduce the impact of known or perceived risks. However, as a society our ability to manage risks which affect our

economy is becoming much more difficult to manage. Our response to risks that impact on urban economies in the future must be more collective and coordinated and involve the public, private business and community sectors.

The need to improve the risk management of urban economies raises many questions. How exposed are our urban economies to risk? What are these risks and their potential impacts? Are we adequately informed and prepared to manage them? These are important questions that those of us responsible for planning and managing our nation's cities need to know more about if we are to make them more secure and stable places to live in the future.

Despite the enormous volume of literature on the subject of risk (See Reason, 1998), little has been written about managing risks associated with urban economies (Yaro, R., Hiss, T. & Regional Plan Association 1998). Theories about the analysis of the multiplicity of risks that impact on urban economies and the sectors of urban economies that are most vulnerable to risk, are scant. This paper outlines a technique for analysing risks that have the potential to impact on urban economies. It has been tested in two Australian cities: Cairns and Canberra. It provides a framework for urban economic risk management, which is currently being considered for implementation in the ACT and offers suggestions about how Australian cities could improve their approaches to urban economic risk management.

RISK AND SOCIETY

Risks are occurrences that we all learn to live with. There are many kinds and causes of risk, understanding the nature of risk and how to manage it can amount to the difference between life and death in some situations. Traditionally, we tend to think of the risks affecting urban economies as being caused by natural hazards, economic eventualities, major accidents, business closures or government policy actions. However, many other risks have the potential to create havoc in our local economy. In a world of instant communication, the behaviour of markets; international terrorism events; business and government attitudes to risk; xenophobia, and parochialism can have a very significant impact on investor confidence and the competitiveness and business friendliness of cities. Rapid changing social, technological and sustainability issues contain new dimensions of risks which will have a major affect on the development and competitiveness of our urban economies in the future.

However, it is not just sudden shocks that have the potential to cause severe damage to local economies. More subtle factors are beginning to emerge which relate to loss of trust in the workplace, skill shortages, increased litigation and rising professional indemnity insurance premiums, all of which undermine the competitiveness, development and efficiency of urban economies. These factors constitute a growing risk to urban and regional businesses or firms that compete in the global economy.

The globalisation of the media, information networks and the immediate nature of communication has significantly increased the perception and level of concern about risk. Tourists, for example, now seek travel advice before making plans to visit foreign countries, and businesses conduct due diligence checks before investing in or developing new markets, nationally or internationally. Sadly, we face a future in which risk management will become a more significant part of our life, and will have a much greater influence on the way governments, business and community organisations manage their business operations.

Risks affect business, government, civil society and individuals in many ways. They have the potential to bring disruption and cause damage or devastation to communities, vital assets, property and the natural environment. For firms, businesses, organisations and communities, risks can

significantly impact on competitiveness and the way they conduct their operations. Unfortunately, the way risks impact on development and investment in regional and local economies is something about which we know very little. The management of external or exogenous risks that have the potential to affect local economies in the future will be a major challenge to us all.

For Australian cities and regional economies to overcome severe shocks resulting from an act of terrorism or disaster such as an earthquake, and to remain competitive afterwards, requires governments, business and communities to give greater priority to risk assessment, monitoring, management and recovery in future. However, there is a tendency to consider all risks as harmful; this is not always the case. Risks are important drivers of innovation, adaptation and change, which help local economies to remain competitive. Risks also generate new business opportunities which local firms and industries can capitalise upon.

An important focus of risk management in the Australian cities therefore is to identify risks, which have the greatest potential to harm local economies and those, which can be turned into opportunities for competitive advantage. Societal perceptions and attitudes towards risks that affect local economies, however, are not clear and are susceptible to change. For this reason risk management will always contain a high degree of uncertainty, and should be considered more of an art than a science. Perceptions about risks are often far more powerful in deciding acceptable levels of risks in society than the models or other forms of evidence derived from empirical evidence.

HOW VULNERABLE ARE AUSTRALIAN CITIES?

Australian cities, like all cities of the world, are susceptible to dangerous risks. Natural disasters have been part of our nation's history and development. The location and geography of many of our cities makes them susceptible to natural disasters. The 1974 Brisbane floods, the 1975 destruction of Darwin, the Canberra and Ash Wednesday bushfires and the Newcastle earthquake are some of the natural disasters which have had very destructive impact on Australian cities. Extensive research has been undertaken by GeoScience Australia and Emergency Services Australia into natural hazards that have the potential to cause significant damage our larger cities and a wide range of disaster management plans have been prepared to deal with future emergencies associated with these events. Other work by Smith & Drinnan (2004) provides a useful framework for analysing environmental risks associated with development.

There are more sinister risks facing Australian cities, many of which have the potential to severely damage our nation's urban economies. Many of these risks will be generated by external events and factors over which we have little control. Terrorism is perceived as a major threat to the nation, and the implication of a dirty bomb in Sydney or Melbourne would have a catastrophic impact on those cities and the nation's economy. However, the possibility of such an event is considered small and the immediate physical impact could be dealt with readily. Risks which pose a major threat to Australian cities are those associated with the outbreak of pandemic diseases in Asia, the growing competitiveness of larger Asian nations undercutting export of services and manufacturing, Green house gas suppositions on rising sea levels in low-lying coastal cities and the potential effects of free trade agreements on small and medium scale business.

The increasing internationalisation of regional and local economies creates a situation where local firms and industries are more vulnerable to exogenous risks. A way to reduce the level of vulnerability and manage external risk threats is to improve the collection and dissemination of knowledge and information about the potential likelihood and impact of different types of risks on local firms and industries. This requires regional firms and organisations to collaborate on the development of risk indicators and better risk management information systems. This task is not

easy, especially given the general unwillingness of firms and business to cooperate and the different characteristics of local economies.

Many economists dismiss the idea of adopting more collective approaches to regional economic risk management. Economic rationalists argue that such things as commodity price falls, labour costs and competition are matters best managed by individual firms and enterprises through established market mechanisms. Alternatively, some claim that urban regional firms and industries can do little to manage exogenous risks, or that the nature of risks is so complicated that it is almost impossible to systematically analyse or develop strategies to manage them.

Globalisation, trade practices, legislation and national competition, have changed the way regional firms, businesses and corporations do business. Removing tariffs, subsidies and other protectionist measures have opened up opportunities for export industries, but left many local service and processing industries more exposed to competition, with no means of defence against external shocks.

Assessing and managing risks is vital if local firms and business are to trade successfully in open competitive economies. Risk management depends on reliable information to reduce the uncertainty related to risk. However, not all firms have equal access to information or the skills needed to analyse risk implications. Furthermore, some firms are less risk prone than others.

In the absence of reliable information, most managers of business enterprises rely on hunches or secondary sources of information gathered through various networks to make decisions about the appropriate risk management measures to adopt for their firm or organisation. If a firm or organisation cannot manage a known risk, it either ignores the risk or takes out insurance, when available and affordable, to cover potential losses.

THE NATURE OF RISK

The increasing complexity and changing nature of risks affecting regional and local economic development is challenging governments, businesses and communities to find improved ways to identify measure and manage risk. Much of the literature on risk management related to the economic development of cities and regions focuses on business and government responsibilities for managing different types of natural hazards, environmental and accident risks. Australia is a leader in the area of disaster risk management. However, as mentioned earlier, little research has been done to examine how other types of risks impact on urban and regional economies and, in particular, how cities should go about post shock or economic disaster recovery management. The ACT bushfires and Hurricane Katrina demonstrate the failure of governments to prepare economies for post disaster recovery.

The Australian and New Zealand Risk Management Standards AS/NZS 4360:1999 and AS/NZS 4360:2004 provide the most useful guide on risk analysis and strategy preparation. The standards define risk as:

“the chance of something happening that will have an impact on objectives. It is measured in terms of a combination of the consequences of an event and their likelihood.”

A good general definition that can be applied to most types of risk is:

“a real, perceived or fabricated event or activity that has the potential to cause uncertainty, harm or disruption to economic, natural, or social systems.”

This definition recognises that risks are both real and perceived phenomena. They can also be fabricated and based on rumour. Factors or occurrences which cause risks range from life threatening situations; natural and environmental disasters; fluctuations in energy prices and exchange rates; civil unrest; competition; changes in consumer behaviour, beliefs and superstitions; and gossip. Managing risk is a significant challenge, as we are largely dealing with uncertainties.

There are two aspects of risk that are important to risk management. These are the likelihood and consequences or impact of risks. The AS/NZS 4360:2004 standards use a classification system to categorise risks according to a scale related to likelihood and consequence. This is shown in Table 1.

Table 1 AS/NZS 4360:2004 Risk Scale

Likelihood Label	Consequences Label				
	I	II	III	IV	V
A	Medium	High	High	Very high	Very high
B	Medium	Medium	High	High	Very high
C	Low	Medium	High	High	High
D	Low	Low	Medium	Medium	High
E	Low	Low	Medium	Medium	High

NOTE: The relationship between consequence and likelihood will differ for each application: the level of risk assigned to each cell needs to reflect this.

The types and causes of risks vary significantly. Risks can be physical and metaphysical. They can be triggered by natural events or accidents that result from human failure or misinformation. Some risks can trigger a chain of events in what are known as cumulative causation risks. SARS was initially triggered by a health problem, but very quickly set in motion a chain of events that impacted upon many economic activities in economies around the world.

The complexity and changing nature of risks affecting our cities in the future will be challenging for government, business and community to assess and manage (Concept Note 2002). It is imperative, therefore, that we know more about how to identify, measure and manage risks to ensure that we have a more secure, robust and sustainable economy in future. The Australian and New Zealand Risk Management Standards AS/NZS 4360:2004 provide the sound bases for analysing and managing business and institutional risks; however, the standards are not helpful when it comes to the measurement and management of risks affecting urban and regional economies. We therefore need some other tool to enable us to measure and evaluate the way multiple types of risks impact on urban economies and to identify which risks and sectors of urban economies are most susceptible to risk. One technique that enables us to do this is Multi-sector attribute risk analysis.

MULTI-SECTOR ATTRIBUTE RISK ANALYSIS

Qualitative/quantitative methods are used widely for risk assessment by business when data or time is limited. One useful technique for conducting sector industry analysis of risk in regional economies using qualitative/quantitative methods is multi-sector attribute analysis (MSAA) (Roberts 2003). MSAA is a technique employed to evaluate sector industry competitiveness and risk in regional economies.

MSAA is used to examine relationships and measures the relative strength of selected variables (or criteria) within and between different industry sectors. The relative strengths of relationships are recorded using numeric scores in a matrix format shown in Table 1. The scores are summed

vertically and horizontally, averaged and then graphed to produce two indexes. The horizontal scores permit an index to be derived for relative impacts of various (risk) attributes across industry sectors in an economy. The average of the vertical scores enables the index of industry sectors with the greatest (risk) impacts to be presented graphically.

Table 1a: Basic Matrix Format used for MSA

	Industry Sectors			
Criteria	A	B	C	Σ
X	0	1	0	1
Y	1	3	0	4
Z	0	0	2	2
Σ	1	4	2	

To develop strategies for regional risk management, it is useful to categorise risks. Seven broad categories are considered important in the management of regional development. These are:

- *Economic Risk*, which relates to the impact of global markets, trade factors, inflation, transportation and communication affecting goods and services.
- *Production Risk*, which relates to access to resources, profits, and production costs, such as labour disruptions, changes in material and energy prices affecting production, and corruption.
- *Governance Risk*, which relates to sovereign risk, government instability and loss of control over economic development processes by government.
- *Environmental Risk*, which relates to resource depletion, pollution, disease, natural and man-made disasters, and quality of life.
- *Societal or Social Risk*, which relates to public liability claims against businesses and community attitudes towards development and pressure groups.
- *Technological Risk*, which relates to risks associated with the applications of technologies used in production processes.
- *Behavioural Risk*, which relates to the behavioural characteristics of people. The level of trust, sense of security and attitudes to work affect the performance and efficiency of firms, organisations and industry sectors.

Other categories of risk can be added to this list. Under each of these categories a more detailed list of risks can be developed.

The first step in conducting a multi-sector analysis of risk involves an assessment of the perceived likelihood (L) of the event described on a business or organisation. The second is a two-part assessment of the perceived impact (I) of this event occurring during the next three or ten years. The technique involves a score system of perception using a scale of 1-5 as shown below.

- 5 = Very strong or very significant, i.e. (total loss of assets or business)
- 4 = Strong or significant, i.e. (prolonged shut/slowdown with setback to profitability)
- 3 = Moderate, i.e. (reduced output or performance for several months)
- 2 = Weak or discernable, i.e. (inconvenience to business for short period)
- 1 = Insignificant, i.e. (minor inconvenience).

Assessment of Risk Impacts and Likelihood

Using the basic matrix structure shown in Table 1, the perceived likelihood (L) and impact (I) of different risk events can be assessed using the above scale (see Tables 2 and 3). Two techniques are used to develop the data for the matrix.

1. The first involves focus groups for each sector developing a consensus on the perceived likelihood and levels of impact for each risk attribute.
2. The second involves conducting a questionnaire with leaders in various industry sectors asking for their responses. The survey forms are collected and processed and the averages for each attribute calculated.

Where MSAA involves a large survey, it is possible to use advanced statistical techniques to identify important inter-relationships between different risk attributes being measured.

The MSA matrix allows us to develop two important measurements of risk. The matrix:

1. Identifies which risks are of greatest concern (risk type)
2. Identifies which sector is most affected (sector risk).

This analysis is undertaken to measure the perceived impact and likelihood of risks.

The two index scores shown in the tables are arrived at by dividing the sum of the columns or rows by the maximum scores for the column (i.e. 35) or row (i.e. 25). This is done for the risk impact and risk likelihood matrices. The scores in the columns and rows are used to develop an index.

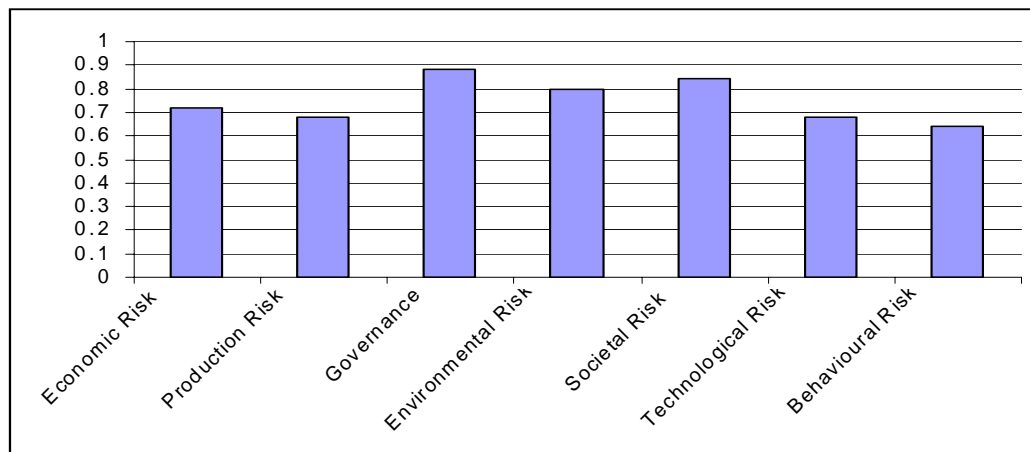
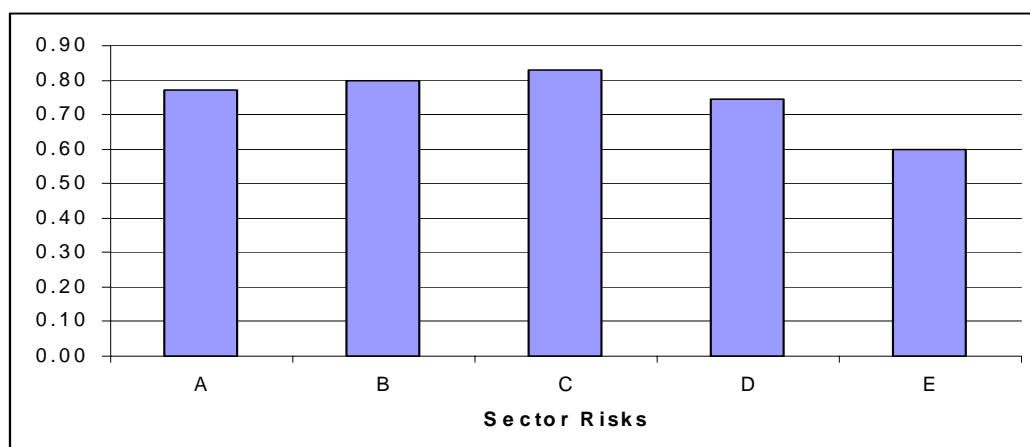
Table 2: Basic MSA Risk Matrix of Impacts (I)

	Industry Sectors						
Risk Categories	A	B	C	D	E	<i>Sum</i>	<i>Index</i>
Economic Risk	5	4	4	3	2	18	0.72
Production Risk	4	3	5	2	3	17	0.68
Governance Risk	4	5	5	5	3	22	0.88
Environmental Risk	5	4	2	4	5	20	0.80
Social/Societal Risk	4	5	5	4	3	21	0.84
Technological Risk	3	4	3	5	2	17	0.68
Behavioural Risk	2	3	5	3	3	16	0.64
<i>Sum</i>	27	28	29	26	21		
<i>Index</i>	0.77	0.80	0.83	0.74	0.60		

In the case of Table 2 governance risk would be the most significant risk impact type, while industry sector C would be the most vulnerable. MSAA allows us to identify which sectors of the economy are most susceptible to risk and which are the most significant risks across all sectors of the economy. The indexes can be presented in simple graphic form as shown in Figure 1 and 2.

Table 3: Basic MSA Risk Matrix of Likelihood (L)

	Industry Sectors						
Risk Categories	A	B	C	D	E	<i>Sum</i>	<i>Index</i>
Economic Risk	5	4	4	5	4	22	0.88
Production Risk	4	3	5	4	5	21	0.84
Governance Risk	4	5	5	2	5	21	0.84
Environmental Risk	3	2	5	4	4	18	0.72
Social/Societal Risk	2	3	3	5	3	16	0.64
Technological Risk	2	5	3	4	2	16	0.64
Behavioural Risk	3	3	5	3	2	16	0.64
<i>Sum</i>	23	25	30	27	25		
<i>Index</i>	0.66	0.71	0.86	0.77	0.71		

**Figure 1: Graph Showing Index of Risk Type****Figure 2: Graph Showing Index of Sector Risk****Developing a Weighted Risk Impact Matrix**

The raw scores for risk impact developed in the matrix assume that the impacts fall equally across industry sector. This is not true, as some sectors of a city's economy are more important than others. It is necessary, therefore, to weigh each impact score by some measure of economic activity. Normally weights are applied in proportion to the significance of each industry sector to gross

regional product (GRP) or proportion of employment. This gives a better indication of sectors in the economy which will be most affected by the impact of different types of risk.

Table 4 shows a weighted risk impact assessment. The weights applied (see bottom of table) may relate to the proportion of GDP, exports or employment represented by the sector. The weighted risk impact is calculated by multiplying the raw impact score by the weight. The advantage of the weighted scores is that it enables a better assessment to be made in regard to the risks, which should receive precedence. The method of developing the index is the same as that described above for the impact and likelihood matrix except the total maximum score for the risk column is multiplied by the average weights applied across all sectors, e.g. if there are five sectors the maximum score would be multiplied by 1.2.

Table 4: Weighted Risk Impact Matrix

Risk Categories	Industry Sectors					Sum	Index
	A	B	C	D	E		
Economic Risk	6	5	5.2	3.45	2.2	21.85	0.73
Production Risk	4.8	3.75	6.5	2.3	3.3	20.65	0.69
Governance Risk	4.8	6.25	6.5	5.75	3.3	26.6	0.89
Environmental Risk	6	5	2.6	4.6	5.5	23.7	0.79
Social/Societal Risk	4.8	6.25	6.5	4.6	3.3	25.45	0.85
Technological Risk	3.6	5	3.9	5.75	2.2	20.45	0.68
Behavioural Risk	2.4	3.75	6.5	3.45	3.3	19.4	0.65
Sum	32.4	35	37.7	29.9	23.1		
Index	0.77	0.83	0.90	0.71	0.55		
Weights	1.2	1.25	1.3	1.15	1.1		

Anticipated Risk

While the measurement of the potential risk impact and likelihood are important, they do not provide us with an indication of which risks should be given priority as far as risk management is concerned. Most regions and industry sectors will be concerned with managing risks that have the greatest potential to cause harm. If the likelihood of a high impact risk event occurring is very low, then it might be better to apply resources to the management of more frequent events that could have moderate impacts.

The intention of risk management is to apply resources to those risks that have the greatest potential impact and likelihood of occurring. To do this we need to develop another measurement of risk referred to as *Anticipated Risk*. This is an assessment of how prepared a region or industry sector should be to manage specific types of risk. The technique involves multiplying the weighted impact by the likelihood of the risk $I_w \times L = I_w L$ to give the measure of Anticipated Risk Matrix, with weights. The table reveals governance is the highest risk priority and industry sector C is the highest risk management concern.

Table 5: Anticipated (Weighted) Risk Matrix

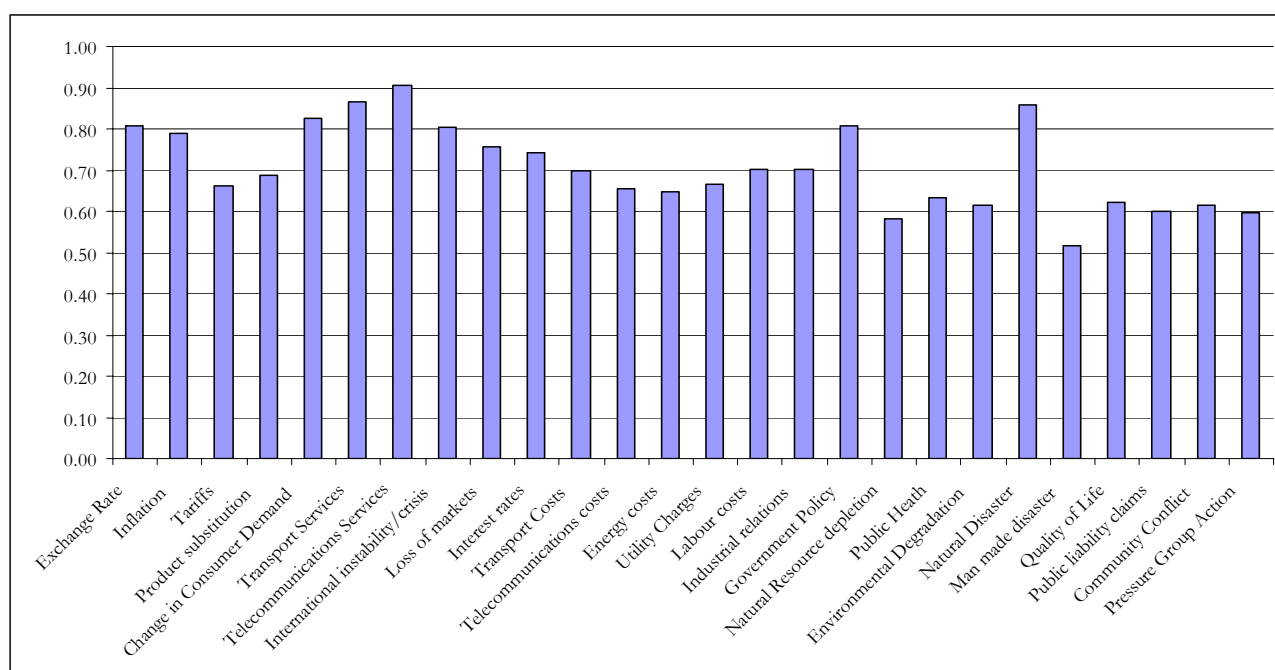
	Industry Sectors						
Risk Categories	A	B	C	D	E	Sum	Index
Economic Risk	30	20	20.8	17.25	8.8	96.85	0.77
Production Risk	19.2	11.25	32.5	9.2	16.5	88.65	0.71
Governance Risk	19.2	31.25	32.5	11.5	16.5	110.95	0.89
Environmental Risk	18	10	13	18.4	22	81.4	0.65
Social/Societal Risk	9.6	18.75	19.5	23	9.9	80.75	0.65
Technological Risk	7.2	25	11.7	23	4.4	71.3	0.57
Behavioural Risk	7.2	11.25	32.5	10.35	6.6	67.9	0.54
Sum	110.4	127.5	162.5	112.7	84.7		
Index	0.63	0.73	0.93	0.64	0.48		
Weights							

TWO CASE STUDIES APPLYING MULTI-SECTOR ATTRIBUTE RISK ANALYSIS

Cairns Region Economy

Using Multi-Sector Attribute Analysis (MSAA) a survey was conducted in 1998 of regional risk in the Cairns economy (Roberts 2003). An analysis was undertaken of 25 risk attributes across 16 industries using a survey of 202 firms together with inputs from focus groups comprising managers of regional organisations. The results were used to develop regional risk management strategies for several export industry clusters in the region.

Figure 3 shows that a loss of telecommunication services, natural disaster, transport cuts, changes in consumer demand and government policy would have the highest impact upon the region's economy. Other high levels of perceived risks to the Far North Queensland (FNQ) economy are rise in production costs, exchange rate, inflation, and international crises. The results suggest that the highest risk factors tend to be concentrated in the export trade sectors. Anecdotal evidence suggests

**Figure 3: Weighted Risk Impact Index of Cairns Region Economy**

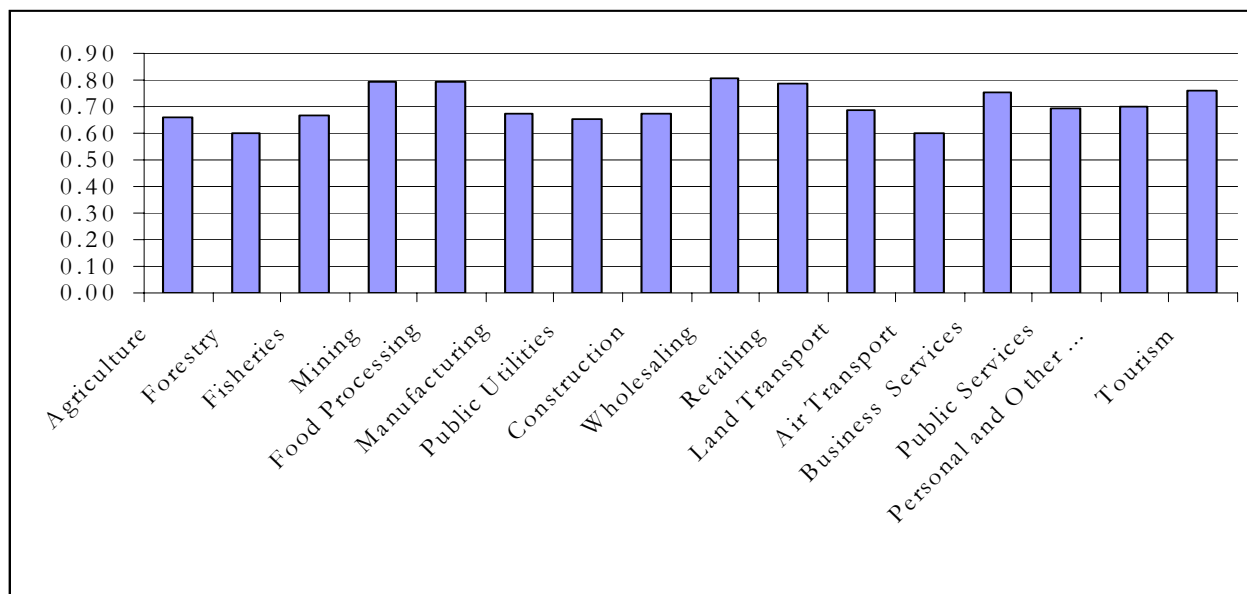


Figure 4: Weighted Industry Risk Impact

many businesses in the region in these sectors operate on very low profit margins and do not manage regional risk well. Consultation with industry groups suggests there is a low level of risk awareness in many industries or knowledge on how to manage risk.

Figure 4 shows the weighted industry risk impact index for 16 industry sectors of the FNQ economy. Food processing, mining, wholesaling and retailing are industry sectors perceived to have the highest risk impact attached to them. Other sectors of the economy with high levels of risk exposure are - tourism, business services, general manufacturing, land transport and fishing.

Risk Possibilities Analysis

The second regional risks assessment was about risk possibility. Table 6 shows the risk possibilities of the 25 risk attributes that have the potential to impact upon the FNQ economy. The table was derived from the average score of 202 responses for each risk category¹. Exchange rate risk is the highest risk possibility factor, followed by natural disaster and changes to government policy affecting economic policy. These risk factors are perceived to have more than 80 percent possibility of occurring in the region over the next 10 years. Other risk factors that have high possibilities of occurrence include: major international crises, inflation, rapidly rising interest rates, disruption to transport systems and loss of markets.

Risk factors perceived by respondents to have a low possibility of occurrence are wide spread actions by pressure groups, natural resource depletion, racial conflict, public liability claims, community unrest and manmade disaster. These findings suggest survey respondents perceived relatively high levels of social stability and sound management practice of the region's resources and infrastructure. This suggests that there is a very favourable climate for long-term investment in the region's economy.

Table 6 provides a useful indicator of the likelihood of certain events occurring that will impact upon the local economy. Some risks, such as natural disaster, can be measured more precisely. Historical analysis of Chamber of Commerce data indicates there are risk patterns for business related to cyclone activity in the region. For example, major destructive cyclones have hit FNQ at

¹ An ANOVA comparison of means test show a high level of significance between means for 16 of the 25 risk factors for the industry sectors evaluated.

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intervals of 10 to 12 years. This suggests an 81 percent likelihood of a natural disaster occurring in the region in the next 10 years is reasonably reliable. Other factors such as exchange-rate, changes in government policy, international crises etc. are far less predictable, but developing some estimate of the possibilities of these occurring is important in formulating strategies for regional economic risk management.

Since the survey was conducted in 1998, the exchange rate has moved unfavourably for the tourism industry, government policy has introduced greater competition in the airline industry and the region has lost some carriers. International instability created by the war in Iraq and terrorism has affected Cairns as a destination and transport costs have increased sharply.

Table 6: Risk Possibilities

Risk Factor	Risk Possibility< 10 years
Exchange Rate	0.86
Natural Disaster	0.81
Tariffs	0.77
Government Policy	0.76
International instability/crisis	0.75
Inflation	0.74
Loss of markets	0.71
Interest rates	0.70
Transport Services	0.70
Labour costs	0.66
Industrial relations	0.66
Transport Costs	0.66
Change in Consumer Demand	0.64
Telecommunications Services	0.64
Public Health	0.63
Utility Charges	0.63
Telecommunications costs	0.62
Energy costs	0.61
Product substitution	0.61
Quality of Life	0.59
Environmental Degradation	0.58
Community Conflict	0.58
Natural Resource depletion	0.58
Public liability claims	0.57
Pressure Group Action	0.56
Major Man made disaster	0.48

Anticipated Risk

Table 4 and figure 6 show the index of anticipated risk factors for the FNQ region economy. Table A3 shows full Anticipated Risk. Exchange rate risk and natural disasters are the two highest anticipated risk factors affecting the region. Over 40 percent of the FNQ economy is linked to the use of its natural resources and capital assets. The impact of a natural disaster on the economy would, therefore, be very significant. The internationalisation of the economy makes the region very susceptible to fluctuations in exchange rates, especially in the mining, agriculture and tourism sectors.

The highly anticipated risks associated with disruption to transport systems, loss of markets and telecommunication services are factors that are a product of location. FNQ is not densely populated and is geographically isolated; consequently many consumer goods and services must be imported. Disruption to the communication and distribution networks would have a significant impact upon these and most other sectors of the economy. Other anticipated risk factors impacting upon the

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economy are inflation, international crisis, interest rates, labour costs and changes in consumer demand. The low level of anticipated social risks suggests the region, is relatively stable and free of factors that may cause concern about long term investment. Environmental risks too, are perceived as low overall; however, some sectors of the economy have high anticipated environmental risk.

Table 7: Ranking of Anticipated Risk Factors

Anticipated Risks	Anticipated Risk Index
Exchange Rate	0.70
Natural Disaster	0.69
Government Policy	0.61
Transport Services	0.61
International instability/crisis	0.60
Inflation	0.58
Telecommunications Services	0.58
Loss of markets	0.54
Change in Consumer Demand	0.53
Interest rates	0.52
Tariffs	0.51
Labour costs	0.46
Industrial relations	0.46
Transport Costs	0.46
Product substitution	0.42
Utility Charges	0.42
Telecommunications costs	0.40
Public Health	0.40
Energy costs	0.39
Quality of Life	0.37
Environmental Degradation	0.35
Community Conflict	0.35
Public liability claims	0.34
Natural Resource depletion	0.34
Pressure Group Action	0.33
Man made disaster	0.25

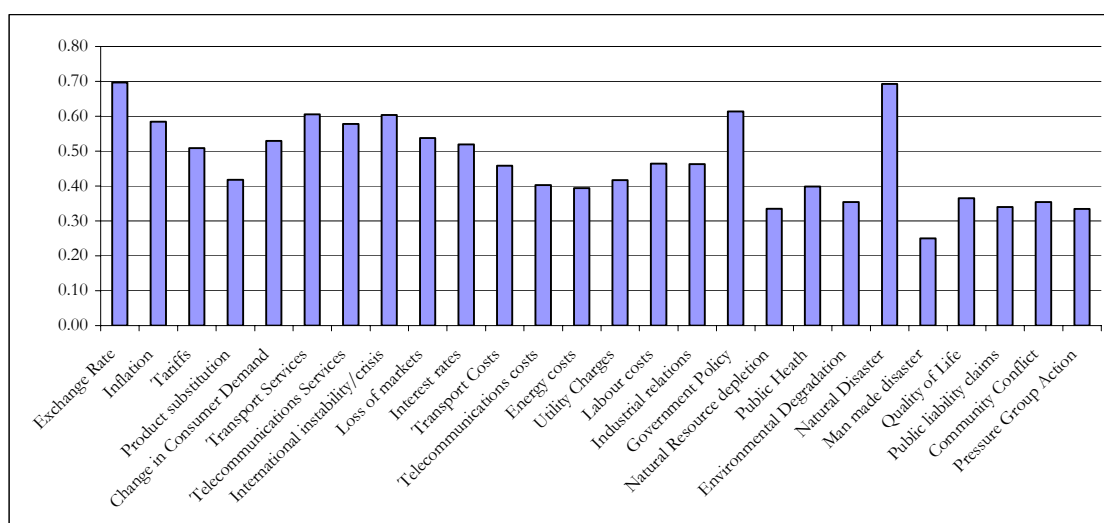


Figure 5: Anticipated Risk Index

Figure 6 shows the anticipated industry risk index for the FNQ economy. The wholesale trade industry has the highest anticipated risk exposure level in the region. Wholesaling has a high degree of interaction with other industry sectors, supplying a wide range of goods to the retail, tourism, construction, manufacturing and process industry sectors. The wholesale trade industry sector has both primary and secondary risk impacts. Rapid changes in exchange rates, changing markets in other industry sectors will trigger a major impact in the wholesale trade sector, so will secondary risk factors such as disruption to transportation. Retailing, manufacturing and business services will have similar effects. Food processing is the second highest anticipated risk industry, followed by general manufacturing, retailing and mining. The high level of risk exposure in general manufacturing is due to the greatly increased competitiveness of this sector resulting from tariff reduction, competitive labour costs and economies of scale and product change and substitution.

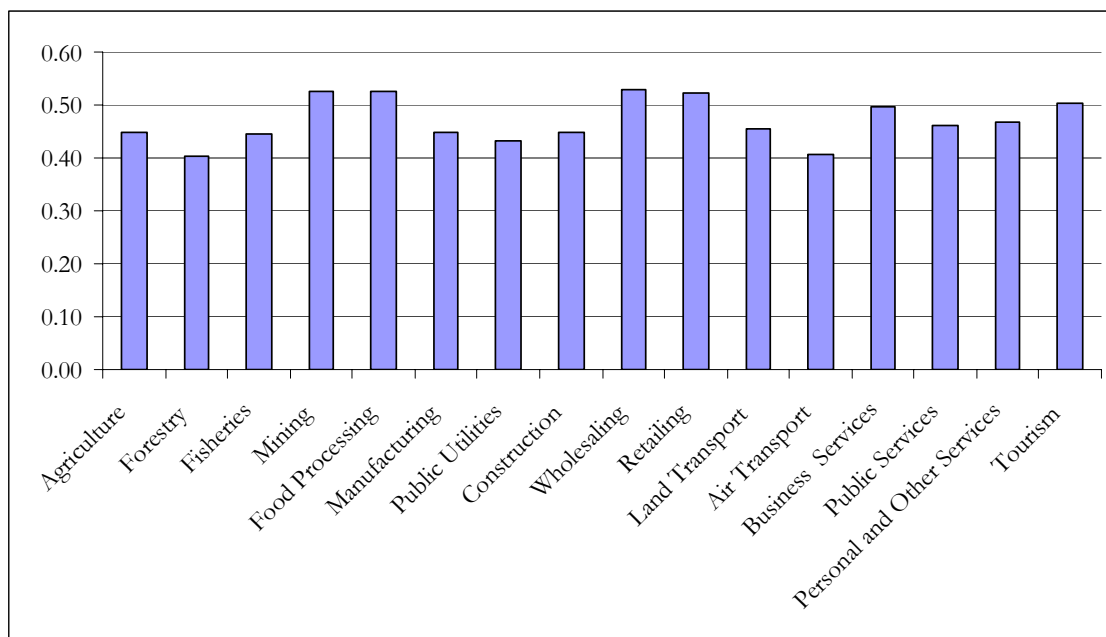


Figure 6: Anticipated Industry Risk Index

Most sectors of the FNQ economy have a low potential exposure to anticipated risk. They are predominantly endogenous industries including construction, community needs or small-scale enterprises. These sectors are not highly exposed to competition and trade – except where major construction is involved.

The economy of FNQ has diversified rapidly over the past 20 years and this has had the effect of reducing the dependency upon one or two industries to support regional development. However, the high performance of the region's economy has been driven by the export sector – especially tourism and mining, which are high-risk industries subject to international market forces and competition. The region is thus much more vulnerable to risk, and this will increase in the future as the economy becomes more internationalised. This suggests that risk anticipation will increase in those sectors of the economy which are most exposed to production and international economic factors in future. These include exchange rate exposure, changing markets, product competition and substitution. This will call for a greater awareness of risk exposure to industry, and strategies to monitor and manage regional risk more effectively in future.

The Australian Capital Territory Economy

In December 2003, the ACT government prepared an Economic White Paper, which recommended a study to analyse the risks affecting the ACT economy using a survey and focus groups of local and regional businesses and public institutions. An extensive study was undertaken of the ACT region economy using a survey of ACT businesses and institutions in June/July 2004 to measure the perception of different aspects of risks affecting the economy (Roberts and Tabart 2005). The survey findings were presented to seven sector industry focus groups in order to seek confirmation, elaboration and clarification of the results and to provide additional information on risks affecting specific industry sectors of the economy.

The e-survey involved a qualitative assessment of 40 risk variables using a ranking assessment scale of 1-5. The e-survey was designed to measure the following three attributes of risk: *impact* (assuming a worst case development) and *likelihood* – from which a measure of *anticipated* risk was derived. Anticipated risk is a measure of the importance that should be placed on the management of specific types of risk. It was hoped the survey sample would allow for a detailed analysis of 25 sectors of the economy.

The results of the analysis of the e-survey were tabulated to show a risk index rating for each risk type. The risk indexes are for the economy as a whole. It was not possible to develop risk indexes for individual sectors because of the small sample size. Using a combination of survey results and focus group feedback an indication of the sectors considered most vulnerable to risk has been determined.

For convenience and ease of reporting the results of the survey, the 40 risks types are grouped and discussed in the report under six broad risk categories: Macro Economic; Micro Economic; Governance; Environmental; Social and Personal

Table 8 shows the 10 highest risk impact factors measured by the survey. Section 5.1.2 of the study provides information on the score and rating system. The results of the analysis were discussed with focus groups. The focus groups considered other risk factors such as skill shortages, liability insurance costs and streamlining government procedures, were additional factors that should be considered high risks to the ACT economy. The explanation for these factors ranking lower in the survey is possibly due to the structure of the sample size, which contained a large number of small businesses.

Table 9 shows the 10 risks with the highest perceived likelihood of occurrence. The analysis was conducted for 3 and 10 year time horizons. Many long-term risks have a lower index rating suggesting that some risks will be less of a problem in future.

Table 8: Risk with the Highest Perceived Impacts

Risk Type	Impact
Trade Barriers	VH
Greenhouse Gas Measures	H
Mergers and Acquisitions	H
Skill Shortages*	H
Increased Job Insecurity	H
International Political Events	H
Changes in Currency Exchange Rates	H
Climate Change Impacts	H
Social Disharmony and Intolerance	H
Transparency and Accountability	H

VH = Very High; H = High. * Focus Group Ranking

Table 9: Likelihood of Twenty Highest Risks in the Short and Medium-term

Risk Type	Likelihood (S)	Rank	Likelihood (M)	Rank
Mergers and Acquisitions	VH	1	H	2
Trade Barriers	VH	2	H	1
Skill Shortages*	VH	2=	H	2=
Rise in Crime	H	3	H	3
Environmental Quality Loss	H	4	H	8
Social Disharmony and Intolerance	H	4	H	4
Transparency and Accountability	H	6	H	5
Changes in Currency Exchange Rates	H	7	H	14
International Political Events	H	8	H	9
Increased Job Insecurity	H	9	H	11

VH = Very High; H = High. * Focus Group Ranking. (S) = 3-year time horizon; (M) = 10-year time horizon.

Table 10 shows the 10 highest anticipated risks. The focus groups generally concurred with the survey rankings, except in the areas of skill shortages and indemnity insurances. Social disharmony risks were considered to have a lower ranking than measured in the survey.

Table E.3: 10 Highest Anticipated Risk Factors

	Anticipated (S)	Rank	Anticipated (M)	Rank
Trade Barriers	VH	1	H	1
Mergers and Acquisitions	VH	2	H	2
Skill Shortages*	H	2=	H	2=
Changes in Currency Exchange Rates	H	3	H	6
International Political Events	H	4	H	3
Increased Job Insecurity	H	5	H	4
Greenhouse Gas Measures	H	6	H	9
Social Disharmony and Intolerance	H	7	H	5
Rise in Crime	H	8	H	7
Transparency and Accountability	H	9	H	8

VH = Very High; H = High. * Focus Group Ranking. (S) = 3-year time horizon; (M) = 10-year time horizon.

The e-survey and subsequent critique by focus groups have enabled some prioritising of risks affecting the economy. The issue of the Australia-United States Free Trade Agreement (AUSFTA), mergers and acquisitions, changes in currency exchange rates, international political events, job insecurity, skill shortages, costs of professional indemnity insurance, risk averse business and public sector culture, and uncertainty over greenhouse gas issues are significant risks that will need to be managed carefully in future. Identifying strategies and measures to control some of the potential impacts that may result from these risks will be a challenge especially given the poor risk intelligence systems in place in the ACT at present.

It is inevitable that surveys involving the measurement of perceptions about risk will be questioned for their reliability. Indeed, the survey results indicated that there are significant differences in perception about risks affecting the ACT. Regardless of whether the risks measured are perceived or real, all have the potential to impact on decisions about investment, development, recruitment and the attractiveness of the ACT as a place for business. Overcoming negative perceptions about the risks of doing business in the ACT are significant challenges facing the development of the economy.

While a larger survey of business and public agencies would have provided a deeper insight into sector industry risks, the overall results have provided a basis to develop a framework for better risk management of the industry sectors which make up the ACT economy. To improve sector industry

risk management it is essential that these sectors conduct more detailed investigations themselves using qualitative and semi-quantitative research techniques.

As a means of gaining a deeper understanding of the way risks affect different sectors of the ACT economy and to verify the results of the e-survey, seven industry focus groups activities were conducted during October and November 2004. The focus groups comprised the following key sector industries: IT, education, tourism, environment, construction, business services and defence. They ranged in size from four to nine experts representing different interests within the sectors. The groups were run as a semi-structured bodies involved in a presentation of the survey, followed by a discussion of risks affecting the sector and possible strategies for sector industry risk management.

The focus groups provided an opportunity for the seven industry sectors to express concerns about risks that have the potential to impact on future business. While some of the risk matters raised might be seen as opportunities to 'knock' government for inaction or conservatism relating to risk, the focus groups acknowledged that all industry sectors have their own difficulties which need addressing if they are to be better equipped to manage risk in future. The general consensus of the groups was that risks were of increasing concern to business competitiveness and viability and that most sector industries were not particularly informed or prepared to manage risks. There was a strong consensus that government and business must work more closely to develop a better understanding of regional risks and to identify ways to cooperate to improve risk management in the ACT.

From the analysis and discussions a report and discussion paper (ACT Business 2005) was prepared to raise public awareness of risks to the economy and to encourage industry groups to work more collaboratively on strategies to manage regional economic risk. The discussion paper and the report outlined a broad framework for industry groups to develop sector industry risk management strategies. The broad framework for developing industries strategies is presented below.

FRAMEWORKS FOR URBAN ECONOMIC RISK MANAGEMENT

Framework for Risk Management Plans

Figure 1 shows a framework developed for improved regional economic risk management in the ACT. The framework builds on the approaches to risk management analysis described above. It develops a mechanism for selecting strategies and measures for risk management plans which can be applied at the Territory and industry sector level. The framework (see Figure 6 below) provides a basis for industry sectors to determine the types of risks to manage; the principles underpinning a risk management plan; basic strategies and options which can be adopted for addressing the likelihood and impact of risks; and responsibilities for risk management. The final section of the chapter describes how this framework can be applied to the seven sector industries investigated.

There are five elements to the risk management plan framework:

- Risk Analysis
- Determination of Acceptable Risk
- Principles Guiding Risk Management Plans
- Multi-sector Risk Management Plans
- Regional Economic Risk Intelligence System.

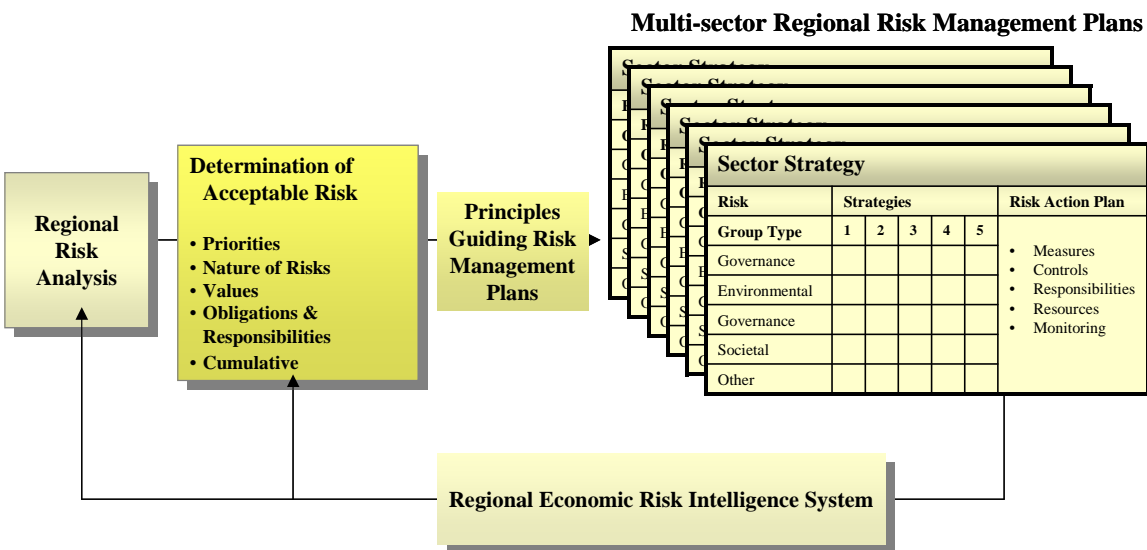


Figure 7 Risk Management Plan Framework

Six Basic Strategies for Regional Economic Risk Management

AS/NZS 4360:1999 suggests six basic strategies for risk management that involve avoiding or reducing the likelihood and consequences, and transferring and retaining risks. These standards provide a useful basis from which to begin to develop a risk management framework and mechanisms to minimise and manage regional economic risks.

A problem that emerged with Risk Management 4360:1999 was that risks were treated as threats. This has subsequently been redressed in the Risk Management 4360:2004. Most of the strategies proposed by the 1999 Standards aim to minimise or lessen the impact of specific risks. However, as was noted in Chapter 1 risks can create opportunities for business. They also hone competitiveness skills, which are important in order to maintain competitive advantage as they spur on regional innovation, adaptation, responsiveness, entrepreneurship and inventiveness. It is necessary, therefore, that risk management plans incorporate strategies that capture opportunities for competitive advantage while, at the same time, ensuring that exposure or the consequences of risk events are minimised as far as possible.

To understand how to manage risks, we need to think of them as having a life cycle. There are many causes and types of risk, which have the potential to impact on regional and local economies. Few risks ever develop to the level where they cause catastrophic loss or irreparable damage. Many risks can be allayed before they eventuate. Even after an event has occurred there is a need for strategies to help restore economic systems.

There are six basic types of strategies which we might apply to the risk lifecycle for regional economic or sector industry risk management plans. These apply in a pre, real time and post-risk event (see Figure.7). The strategies act like filters. Some risks will pass through all the filters, assuming there are filters in place. At the pre-risk phase we might apply strategies to capitalise on, minimise or dismiss risks. At the real time of a risk event, measures may need to be taken to address the situation. At the post-risk stage, recovery and compensation/ insurance strategies are needed. Some risks will pass through all filters and the net result will be a loss situation.

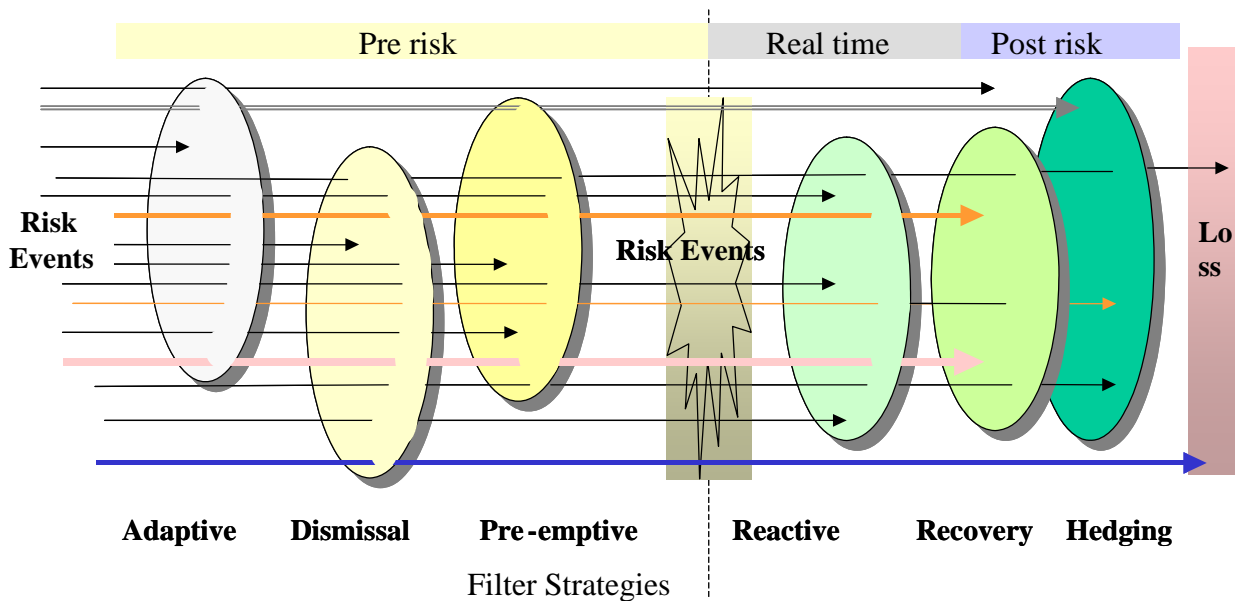


Figure 8: The Risk Lifecycle Strategies Process

Adaptive risk strategies accept the premise that not all risks are bad or harmful occurrences. There is an assumption that certain types of risks occurring and impacting on regional economies are inevitable, but some of these are important in engendering change or innovation to replace existing systems or practices.

Dismissive strategy involves a deliberate decision to ignore or dismiss a risk. It assumes the possibility of certain types of risk is so small or large that it is not worth developing a strategy to address them.

Pre-emptive strategy involves laying out a path to minimise risks before they cause major harm. The aim is to confine risks within an acceptable range and path.

Responsive strategies are designed to reduce collateral damage. The strategy is to mount a carefully orchestrated defence against risks in order to stabilise situations as quickly as possible and to return systems to the status quo.

Recovery strategies involve developing measures to assist recovery after a major risk event or shock to an economy. One of the least-developed areas of risk management planning is post-risk event recovery.

Hedging strategies involve the use of insurance or other financial instruments in order to receive compensation or payment for loss. Hedging strategies are designed to transfer the responsibility for costs or liabilities that may be associated risk away from government, business and/or individuals. Careful assessment is needed in developing and selecting a strategy to deal with a specific type of risk. In some cases more than one strategy may be applied depending on the nature, likelihood, impact, duration, frequency or opportunity costs.

CRITICAL ISSUES FOR RISK MANAGEMENT IN AUSTRALIAN CITIES

Urban and Regional economic risk is a new field of risk management. It has developed as the result of major economic and industry reforms, the increasing influence of globalisation on the local economies, and other change factors, which are driving the need for greater business competitiveness, and improved public administration to achieve more sustainable regional economic development outcomes. These changes have fundamentally increased the level of risk facing urban and regional development and have changed the way firms; organisations and public institutions do business.

Other changes, too, have affected the way we do business. Social and legislative changes have introduced greater transparency, accountability and the need for wider consultation on decisions that affect business, governments, communities and special interest groups. Management theory, new technology and civic rights have introduced dynamics that will continue to change the way societies function and the level and quality of services expected from business and government.

Collectively these changes are seen to improve our society; but they also create a paradox. Developing a more open and competitive society increases the level of uncertainty and subsequent risks to business, governments and communities that are inextricably affected by events that occur outside their area or jurisdiction and control. Learning how to anticipate and manage these 'externalities' is a challenge, which will require firms, governments and organisations to develop new risk management competencies in future.

The management of urban sector industry risk is not easy, as we are dealing extensively with many unknown or unpredictable factors. One of the most important skills for risk managers involved in local economic development activities in future is learning to manage uncertainty. The more certain and knowledgeable we are about risks, the less likelihood there is that they will impact upon our lives and communities, provided we take appropriate measures to minimise them whenever possible.

To improve risk management in Australian cities it is essential that we improve our urban risk intelligence systems and develop more collective industry approaches to risk management. We must also understand that risks create opportunities for cities to innovate and capitalise upon the opportunities that risks can create. Risks provide important catalysts for changes in our approach to planning, urban management and development practices.

One of the most critical risk management issues facing Australian cities is post disaster recovery. Australian cities have one of the best developed disaster management systems in place in the world; however, with few exceptions no state or city has post disaster strategies in place to deal with economic recovery. The massive cuts to Commonwealth government employment in the ACT in 1996 left the territory economy struggling for more than two years while the rest of the nation boomed. The lack of a post disaster strategy following Hurricane Katrina in the southern US is a reminder of how important it is for Australian cities to consider carefully post disaster economic recovery.

Understanding the nature and consequences of regional economic risks is inherently difficult. The field of risk analysis and management is an immensely complex subject. Predicting and managing risk is prone to substantial error. It is impossible to completely insulate economies against risk, but we must learn new skills to develop strategies and measures to minimise the level of risk local economies face to ensure that their future is more sustainable.

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