

The global financial crisis: Projections of property crime rates

**A report for
Victorian Police Association**



NIEIR

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1. Study objective

As a result of the financial crisis in the USA, the Australian and Victorian economies are now entering a recession which is expected to be at least as severe as the recessions of the early 1980s and the early 1990s. The question arises as to the effect that this will have on police resourcing requirements – here referred to as the demand for police services.

In previous work for TPA, NIEIR has divided policing requirements into four main groups: police presence, crime-related demand, traffic-related demand and the manning of cells and courts. The requirements for police presence were seen to be driven mainly by population and employment while those for traffic were related to vehicle ownership and usage. Because recessions depress both employment and traffic, it is arguable that these demands will fall off. Police presence constitutes a little over 40 per cent of the demand for police services, and employment is responsible for around a third of this demand: reduce employment by 10 per cent and it can be argued that the demand for police services will fall by a little over 1 per cent. Similarly traffic is responsible for around 10 per cent of the demand for police services; reduce traffic by 10 per cent and the overall demand for police services is arguably reduced by 1 per cent. The present study is not concerned with these reductions in demand, but merely concedes that they are possible.

It is quite otherwise with crime control, and also with cells and courts. These latter will not be further considered, since they are responsible for around 5 per cent of the demand for police services and, overall, relate to crime. The demand for police to serve cells and courts may be expected to increase if the crime rate rises and leads an increase in arrests and charges.

The reasons for expecting the crime rate to increase relate particularly to the effect of recessions on the crime-prone population – chiefly young males. Reduced incomes and disappointed expectations increase the incentive to crime, particularly crime against property. Unemployment increases the time available for criminal activity. Heightened levels of stress and mental illness are also conducive to crime, particularly violent crime. The only factor working for reduced crime is that reduced income may result in reduced purchases of drugs, hence fewer offences involving illegal drugs and perhaps a reduction in alcohol-related violence.

The present study concentrates on robbery, breaking and entering and larceny. The study thus omits a number of important categories of crime.

- Sexual offences are excluded because it is believed that reporting rates have changed as community attitudes have changed. Offences are also often reported in arrears, which makes analysis difficult. Despite this exclusion, it is likely that underlying sexual offence rates increase during recessions, particularly illegal prostitution.
- As a result of financial stress, assault rates (and other non-robbery violent crime) may be expected to increase during recessions. However, recent changes in community attitudes to assault, particularly domestic violence, have changed the crime reporting rate, so that it is not possible to compare the reported assault rates over time.
- Drug offences are omitted because reporting rates depend heavily on police activity. The effect of recession on underlying drug offence rates could go either way: less money to buy drugs, but greater desperation to sell and perhaps also to buy.

With these exclusions, the study estimated the increase in crime, compared to what would otherwise have been the case, as a result of the period of negative and low growth that the

Australian and Victorian economies are now entering. The three segments of crime predicted are:

- (i) robbery;
- (ii) breaking and entering; and
- (iii) larceny.

Using the indicator developed in previous NIEIR reports, by which offences are weighted by their seriousness, these offences cover around 60 per cent of the total burden of crime. Strictly speaking, our results apply only to this portion of the total burden; however it should be remembered that there is a high probability that offence rates in the other categories of crime will also increase with recession.

2. The study methodology

The study methodology involved three main steps.

- (i) A consistent set of crime time series was estimated by State going back to the mid 1970s so as to include the recessions of the early 1980s and early 1990s.
- (ii) Equations were estimated linking the crime categories to unemployment data.
- (iii) These estimated regression equations were used, in conjunction with economic projections, to predict crime rates in the Victorian jurisdiction.

For three States, namely Victoria, Queensland and South Australia, reasonably consistent time series data were compiled. The parameters were estimated from pooled cross section time series data for these three States.

There were a number of statistical breaks in the time series. The series were adjusted for whatever best overlapping data was available, such as conviction rates, etc.

It was decided to pool the data rather than just simply use Victorian data because crime statistics are notoriously unstable statistically. There can be changes to recording practices and subtle changes to definitions. The more the estimates are pooled, the less the probability that this instability will impact significantly on the quantitative estimates.

3. The time series

Figures 1 to 3 show selected crime rates and the unemployment rate for the three States. The crime rate is the annual incidence of crime divided by the male population aged 15 to 34. The unemployment rate is the unemployment rate for males aged 15 to 34. The demographic and unemployment data is sourced from the Australian Bureau of Statistics (ABS).

The figures indicate that there is a correlation between crime rates and the unemployment rate, although it varies between the States. However, the series indicate that:

- (i) the increase in crime rates is a lagged response to an increase in the unemployment rate; and
- (ii) whatever the increase in the crime rate from an increase in the unemployment rate, it takes a number of years to drive the crime rates back down after the unemployment rates have significantly declined from recession level peaks.



Figure 2: Unemployment and crime rates - Queensland

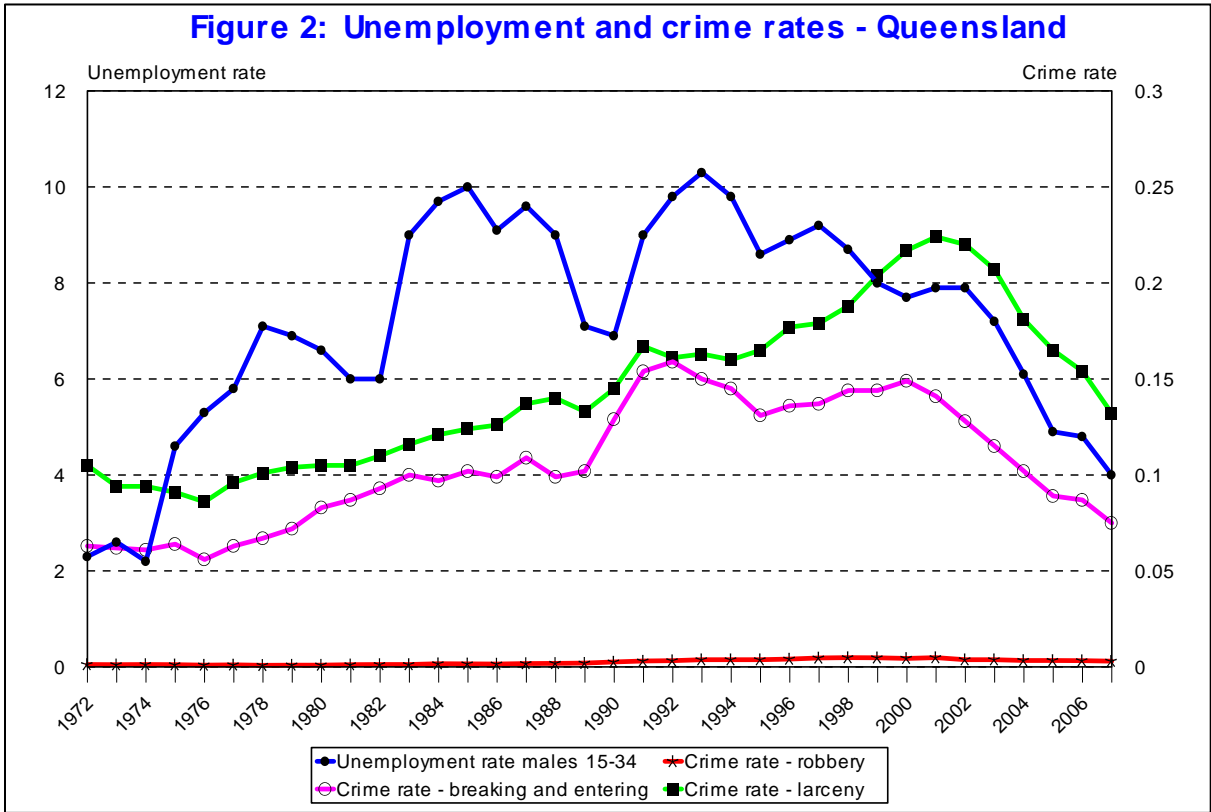
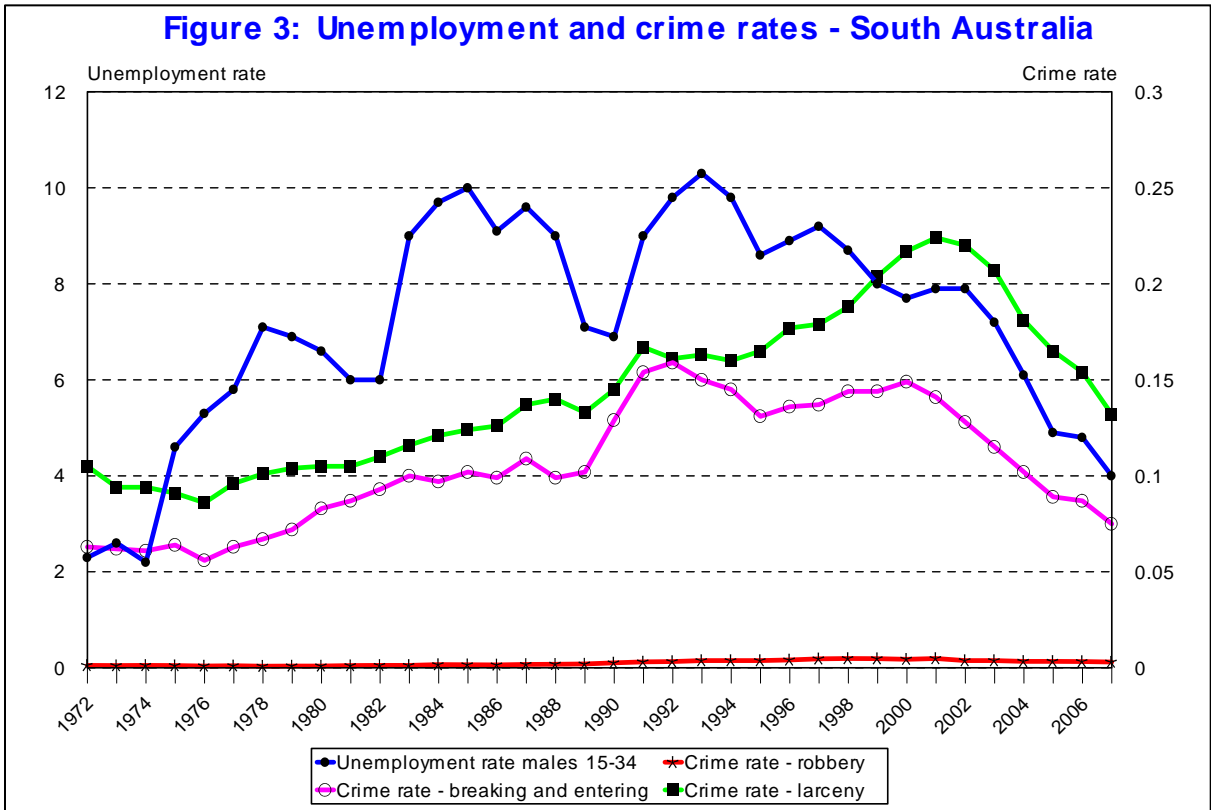


Figure 3: Unemployment and crime rates - South Australia



4. The quantitative results

The equation estimated was:

$$\frac{C_{i,j}}{POP_{15-34,j}} = \alpha_{ij}^0 + \alpha_i^1 U_{15-34,j} + \alpha_{i3}^2 (C_{i,j}/POP_{15-34,i})_{t-1} + \alpha_i^3 Time$$

$$i = \begin{cases} 1. \text{ Robbery} \\ 2. \text{ Breaking and entering} \\ 3. \text{ Larceny} \end{cases}$$

$$j = \begin{cases} 1. \text{ Victoria} \\ 2. \text{ Queensland} \\ 3. \text{ South Australia} \end{cases}$$

Where:

$C_{i,j}$ = crime (number) of category i in State j ;

$POP_{15-34,j}$ = male population 15 to 34 in State j ;

$U_{15-34,j}$ = male unemployment rate aged 15 to 34;

$Time$ = time.

The coefficient estimates are given in Table 1.

The relationship is similar in each of the three states, as shown by the low value and lack of statistical significance of the state 'dummies'. (Lack of statistical significance: t-statistics of less than around 2 indicate that any relationship that may appear from the data is unreliable, with a high probability that it is due to chance.)

The relationship between unemployment and robbery and larceny crime rates is positive and statistically significant – an increase in unemployment is associated with an increase in robbery and larceny. These relationships have not changed over time.

The position as regards breaking and entering is less clear-cut, since it appears that there has been a trend over time, perhaps due to changing definitions in one or more jurisdictions (the jurisdiction dummies are relatively significant). However, there is a positive if not highly significant association between increasing unemployment and an increase in the break and enter crime rate.

The high lagged dependent variable coefficient for each of the three crime rates, and its high statistical significance, indicates that once an increase in unemployment has pushed up crime rates it will take a long time for crime rates to return to previous levels, even if unemployment rates promptly return to their previous level. This suggests a hypothesis that, once a generation of young men have taken to crime, the crime rate will remain high until the young men concerned have reached middle age.

The reported values of the R^2 statistic indicate that the changes in the unemployment rate, including lagged changes, account for a high proportion of the variation in each of the crime rate series analysed. The lowest level of explanation is for larceny in SA (53 per cent) and the highest is for larceny in Victoria (95 per cent). As the figures of the actual versus predicted values (Figure 4.1(a) etc) show, it is possible to predict the three analysed crime rates with quite reasonable accuracy from the unemployment rate. The diagrams of residuals

(Figure 4.1(b) etc) do not show any particular pattern, indicating that little is to be gained by searching round for other time-related variables to include in the analysis.

Table 1 Estimated coefficients		
Robbery	Coefficient	t-statistic
Victorian constant	-0.000117	-0.449965
Queensland constant	-0.000210	-0.784994
South Australian constant	-0.000021	-0.067502
Unemployment rate	0.000050	2.294540
Lagged dependant variable	0.899427	16.360100
Time	0.000002	0.197646
	R2	DW statistic
Victoria	0.725835	2.105560
Queensland	0.946211	2.037560
South Australia	0.910457	2.003600
Breaking and entering	Coefficient	t-statistic
Victorian constant	0.012850	2.330810
Queensland constant	0.015244	2.334920
South Australian constant	0.017847	2.313300
Unemployment rate	0.000776	1.875940
Lagged dependant variable	0.849071	15.322300
Time	-0.000366	-2.845530
	R2	DW statistic
Victoria	0.783546	2.096120
Queensland	0.875959	1.138010
South Australia	0.804699	1.762440
Larceny	Coefficient	t-statistic
Victorian constant	-0.006685	-1.222520
Queensland constant	-0.009833	-1.604880
South Australian constant	-0.006528	-0.496846
Unemployment rate	0.002046	4.966630
Lagged dependant variable	0.942045	18.298500
Time	-0.000131	-0.444226
	R2	DW statistic
Victoria	0.958875	1.213490
Queensland	0.941269	1.136250
South Australia	0.536140	1.455880

Figure 4.1(a): Robbery crime rate - actual and predicted - Victoria

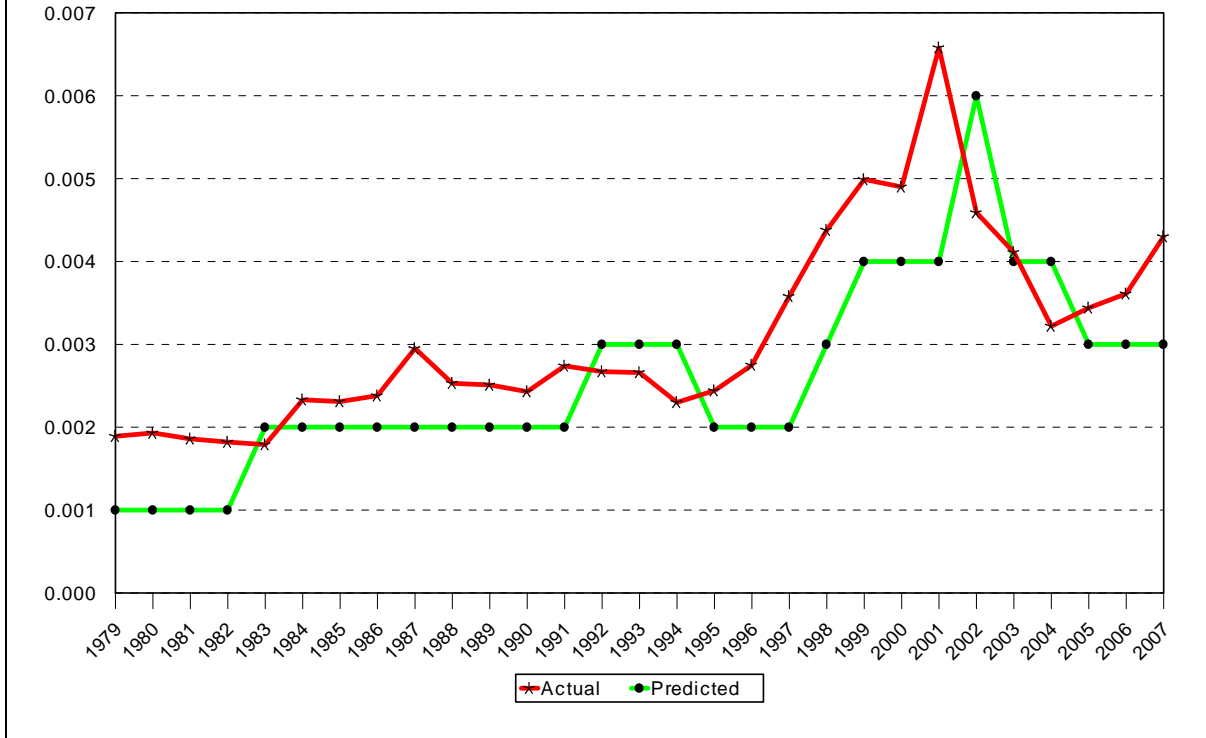


Figure 4.1(b): Robbery crime rate - residual - Victoria

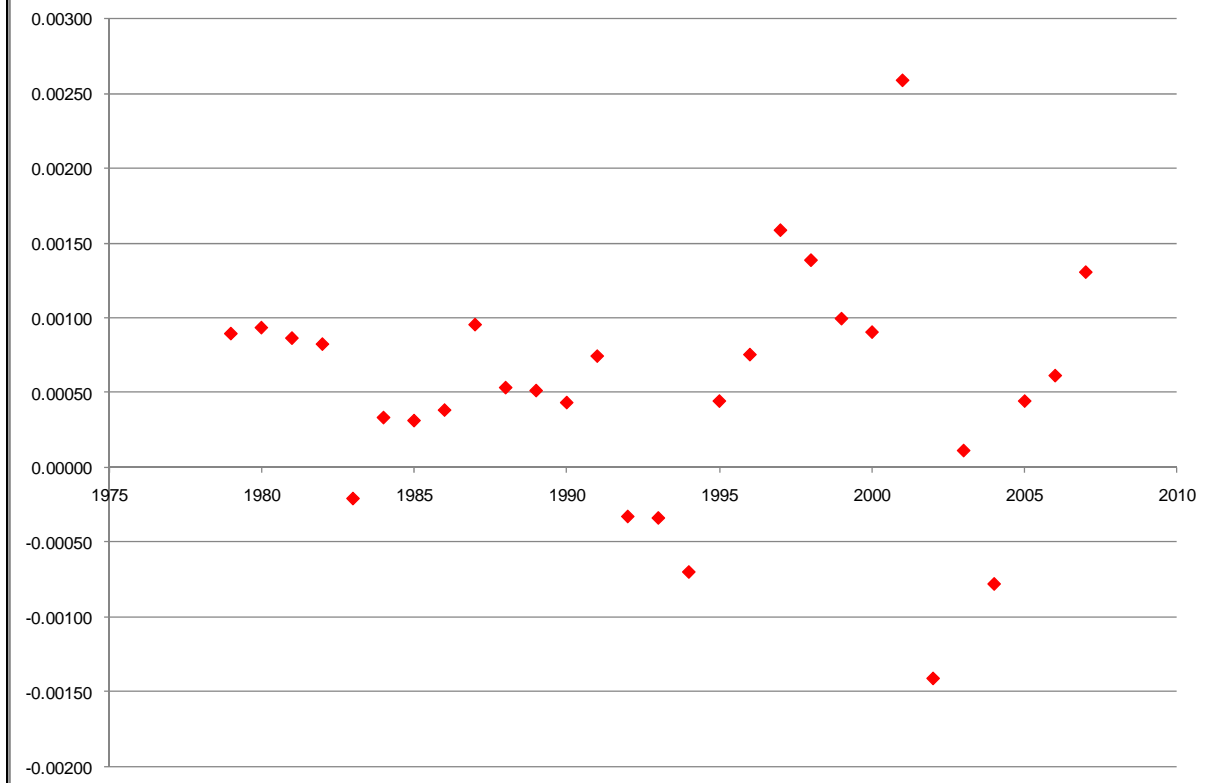


Figure 4.2(a): Robbery crime rate - actual and predicted - Queensland

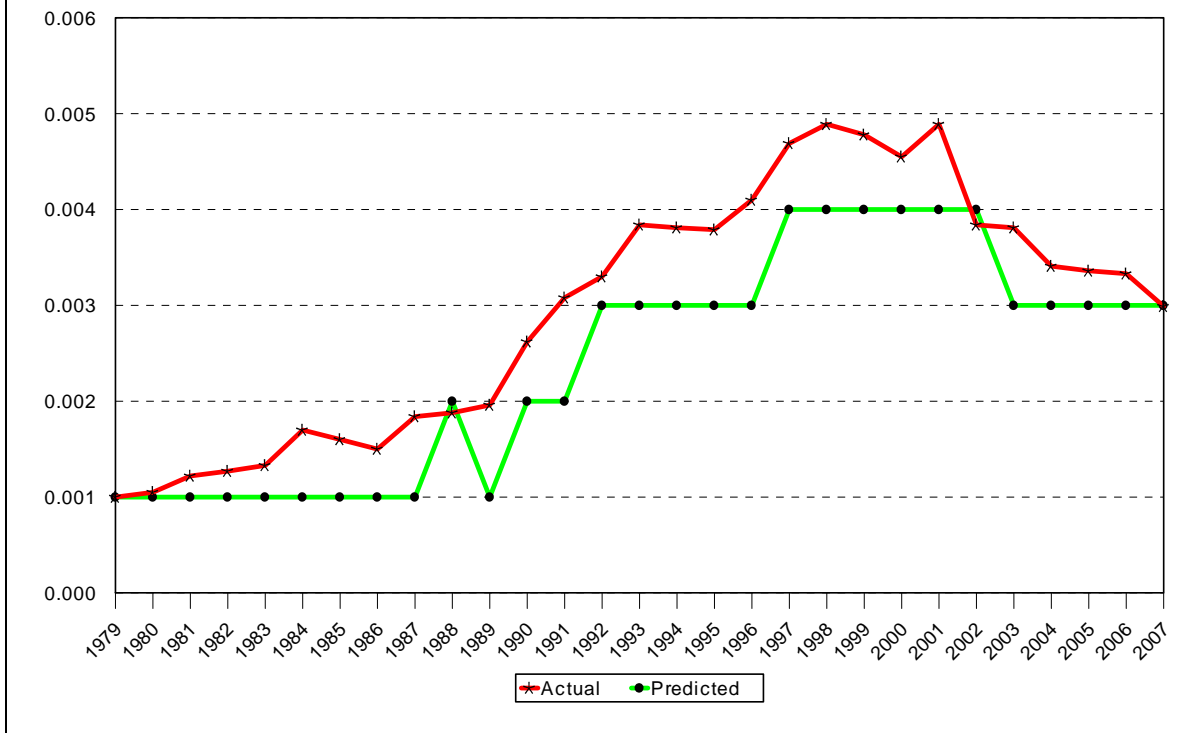


Figure 4.2(b): Robbery crime rate - residual - Queensland

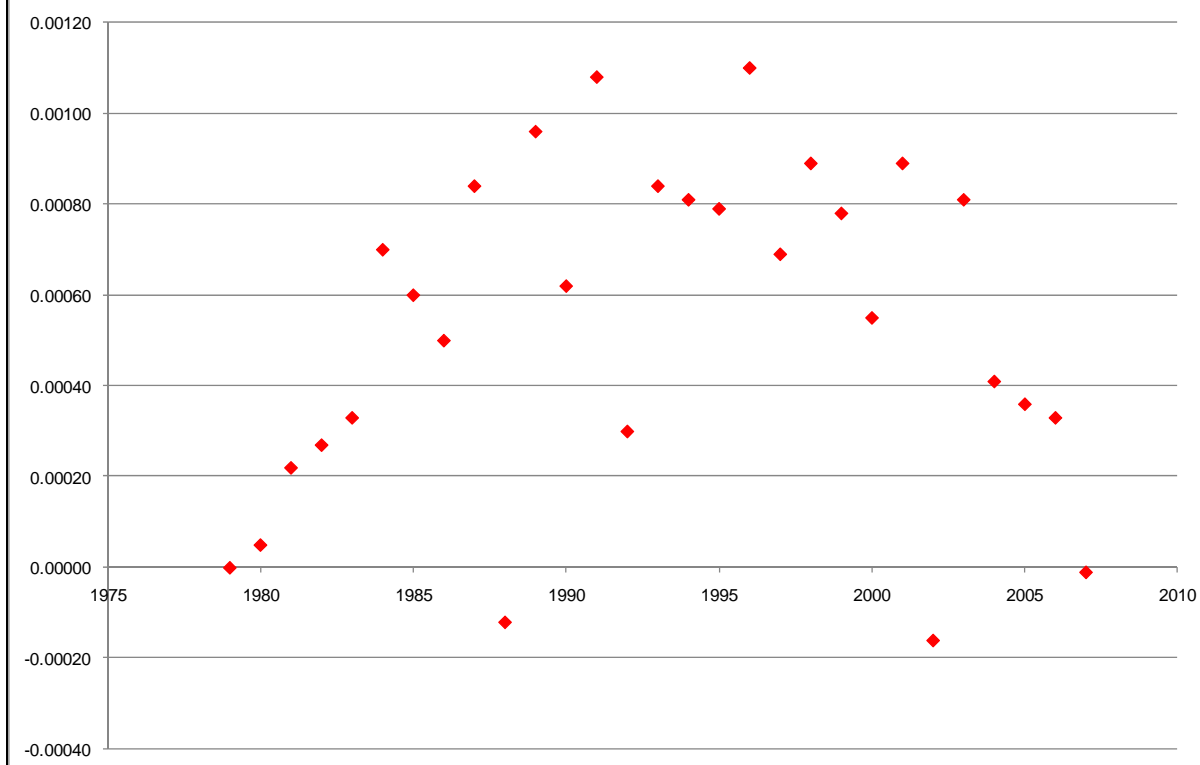


Figure 4.3(a): Robbery crime rate - actual and predicted - South Australia

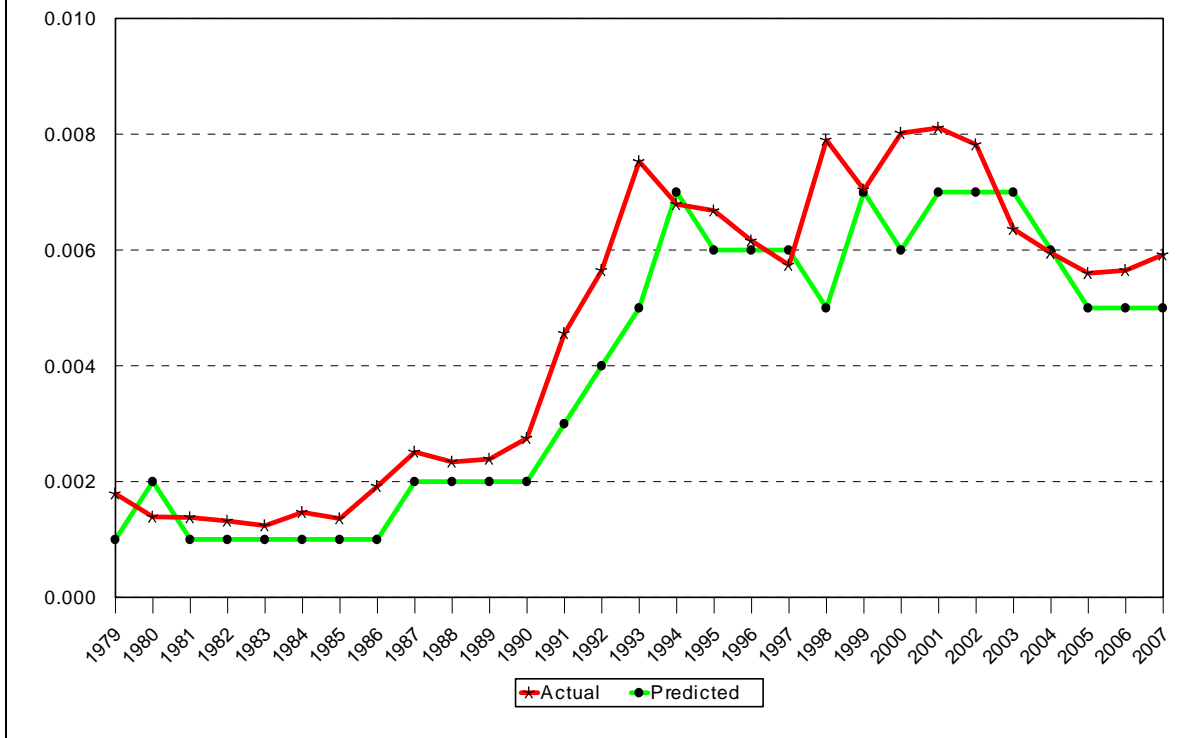


Figure 4.3(b): Robbery crime rate - residual - South Australia

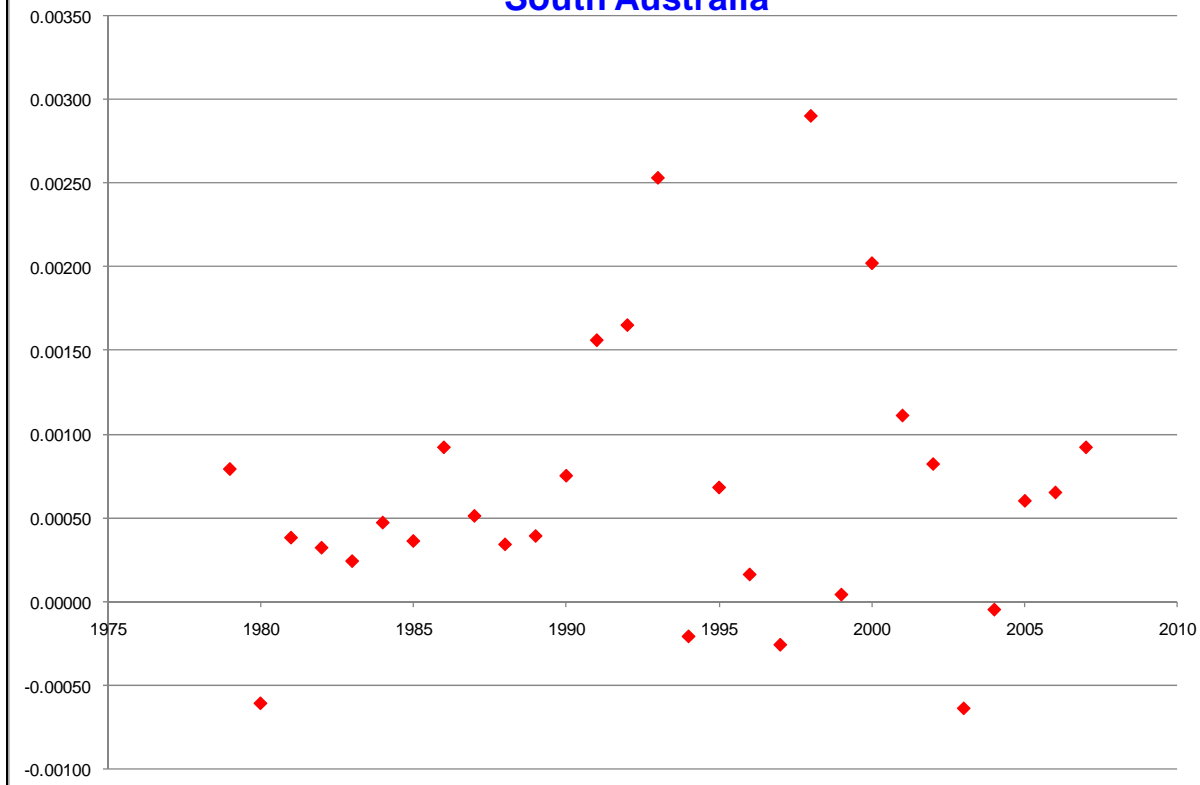


Figure 5.1(a): Breaking and entering crime rate - actual and predicted - Victoria

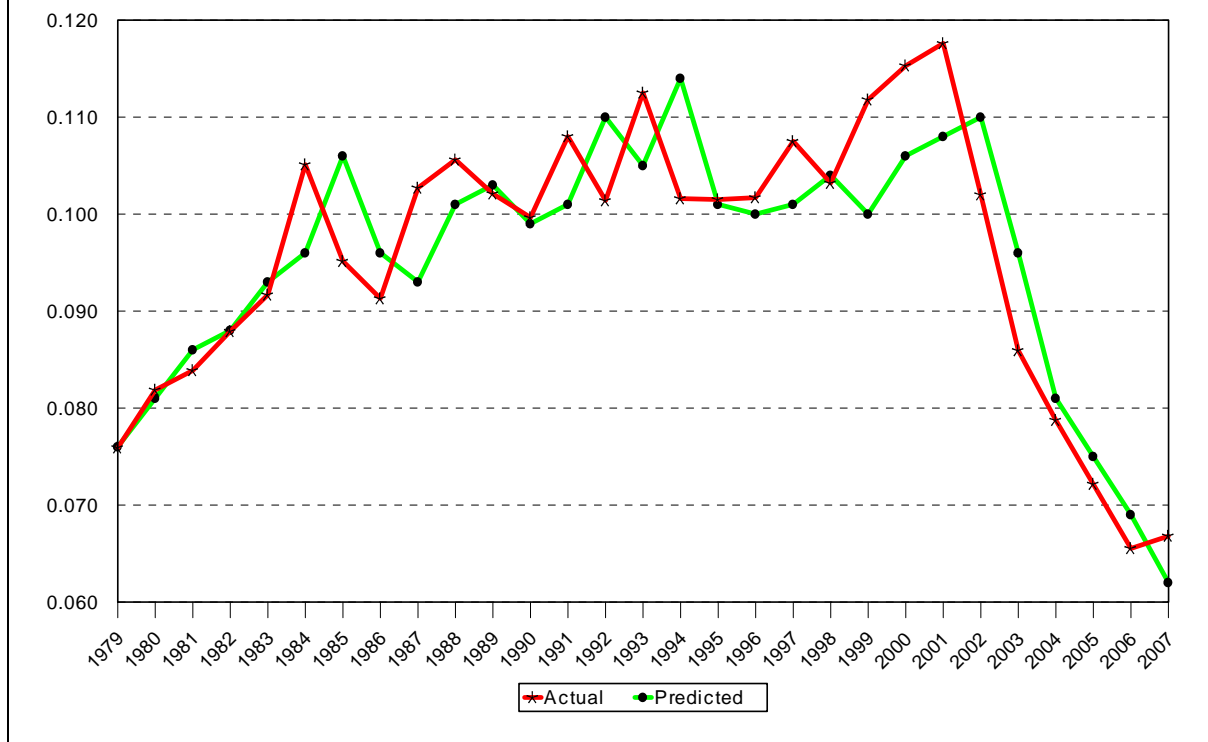


Figure 5.1(b): Breaking and entering crime rate - residual - Victoria

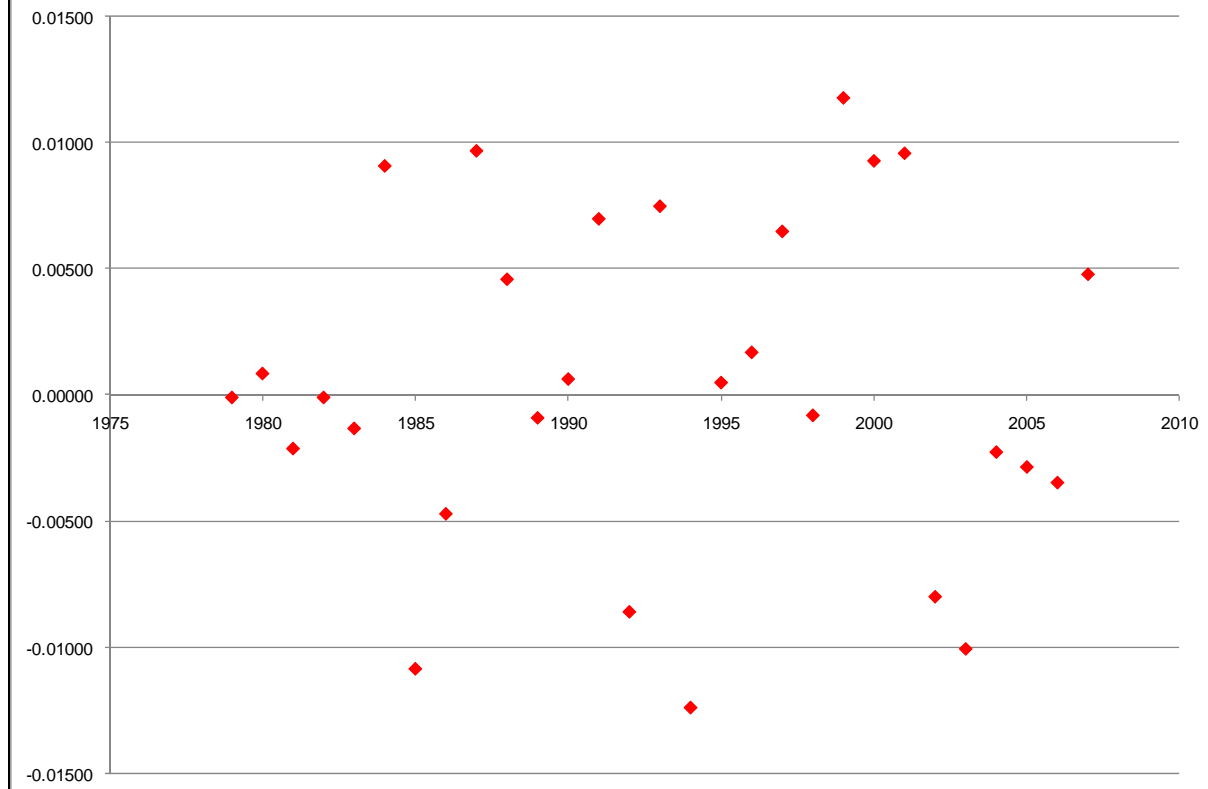


Figure 5.2(a): Breaking and entering crime rate - actual and predicted - Queensland

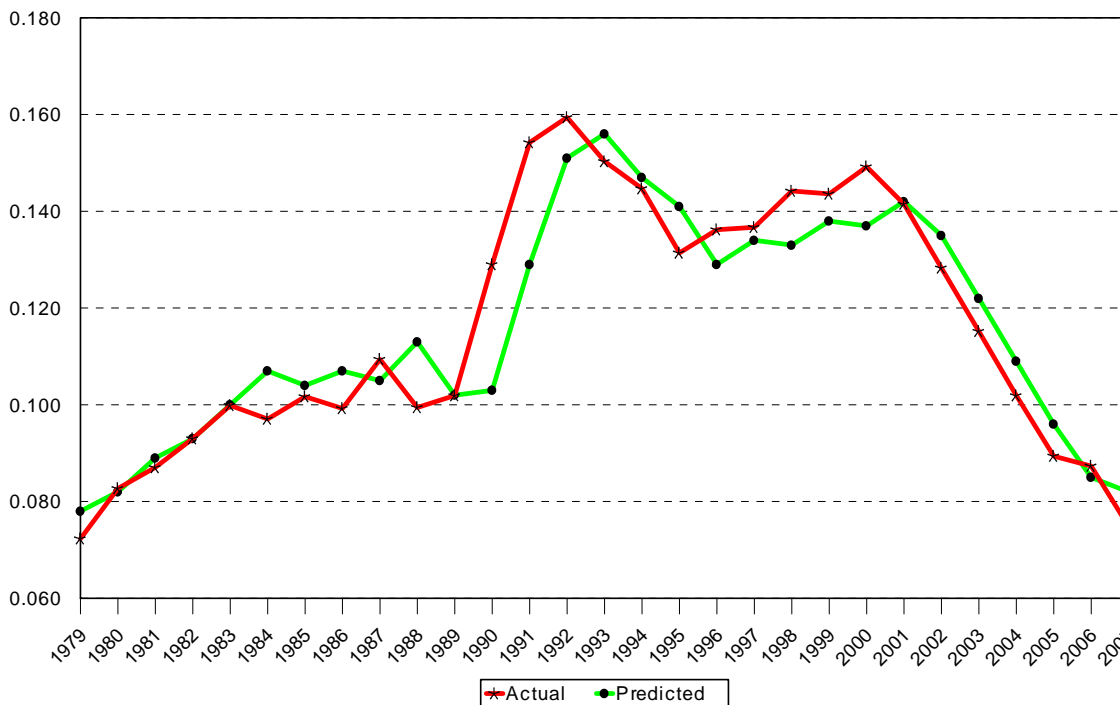


Figure 5.2(b): Breaking and entering crime rate - residual - Queensland

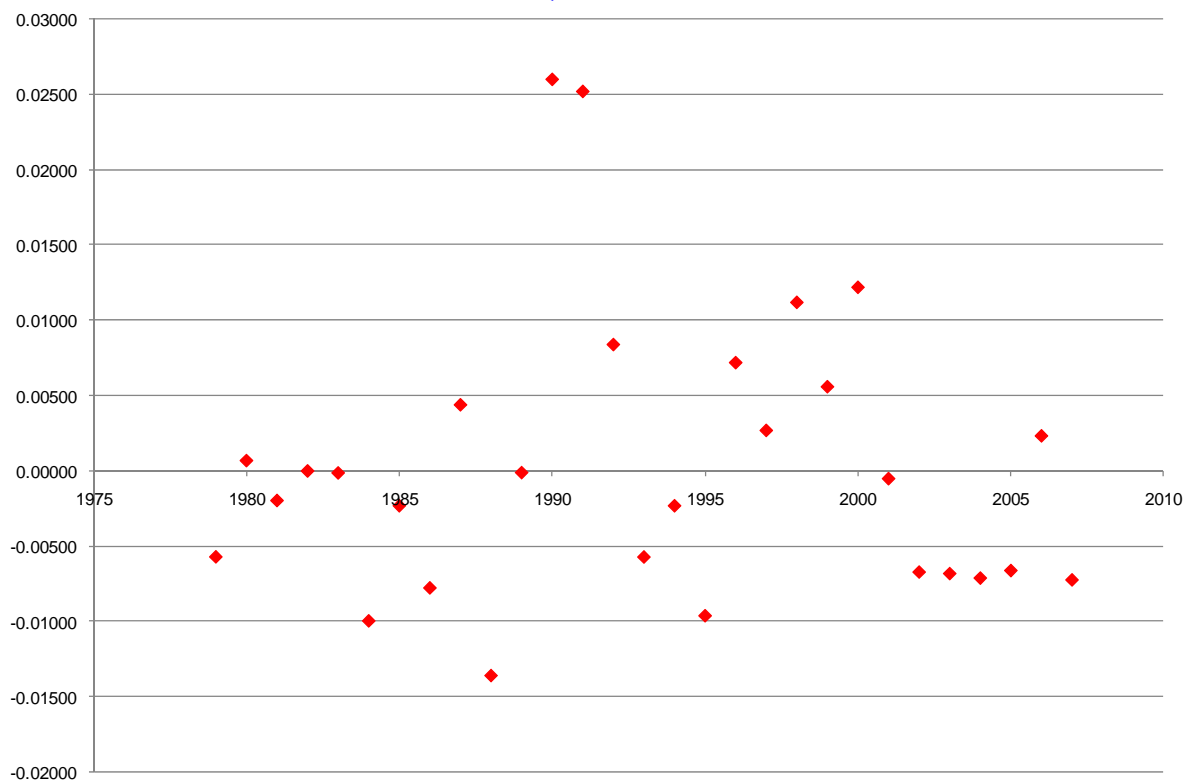


Figure 5.3(a): Breaking and entering crime rate - actual and predicted - South Australia

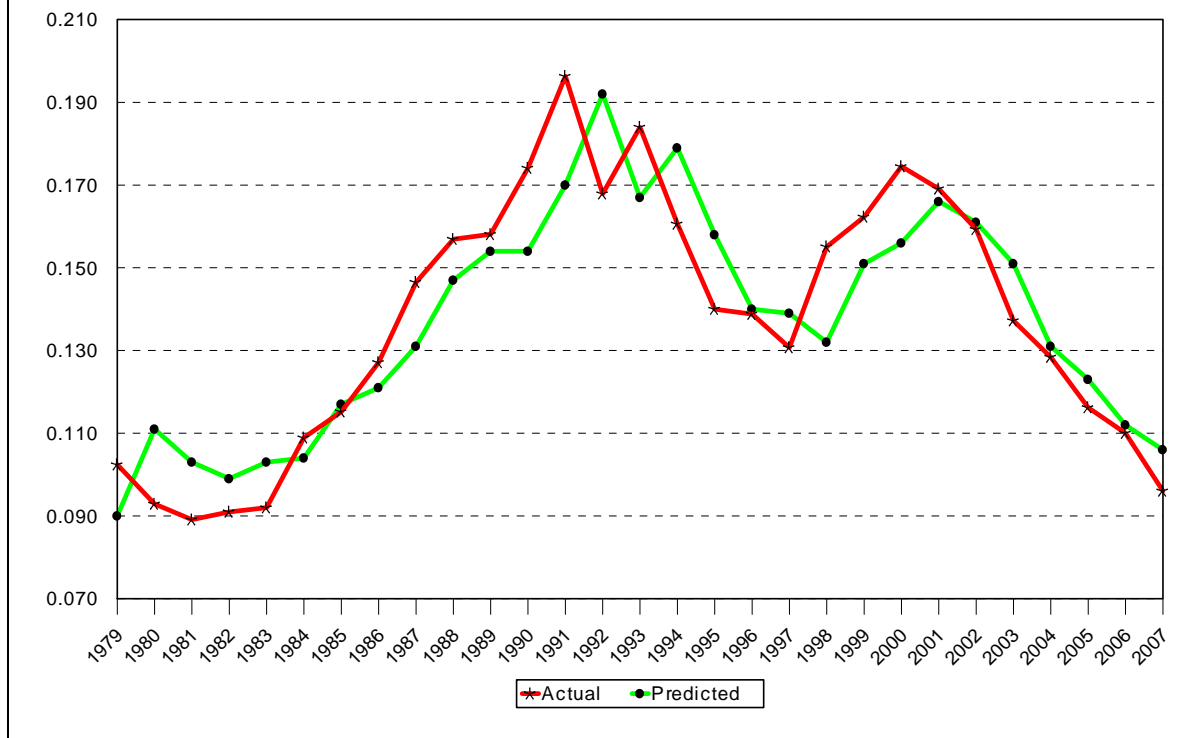


Figure 5.3(b): Breaking and entering crime rate - residual - South Australia

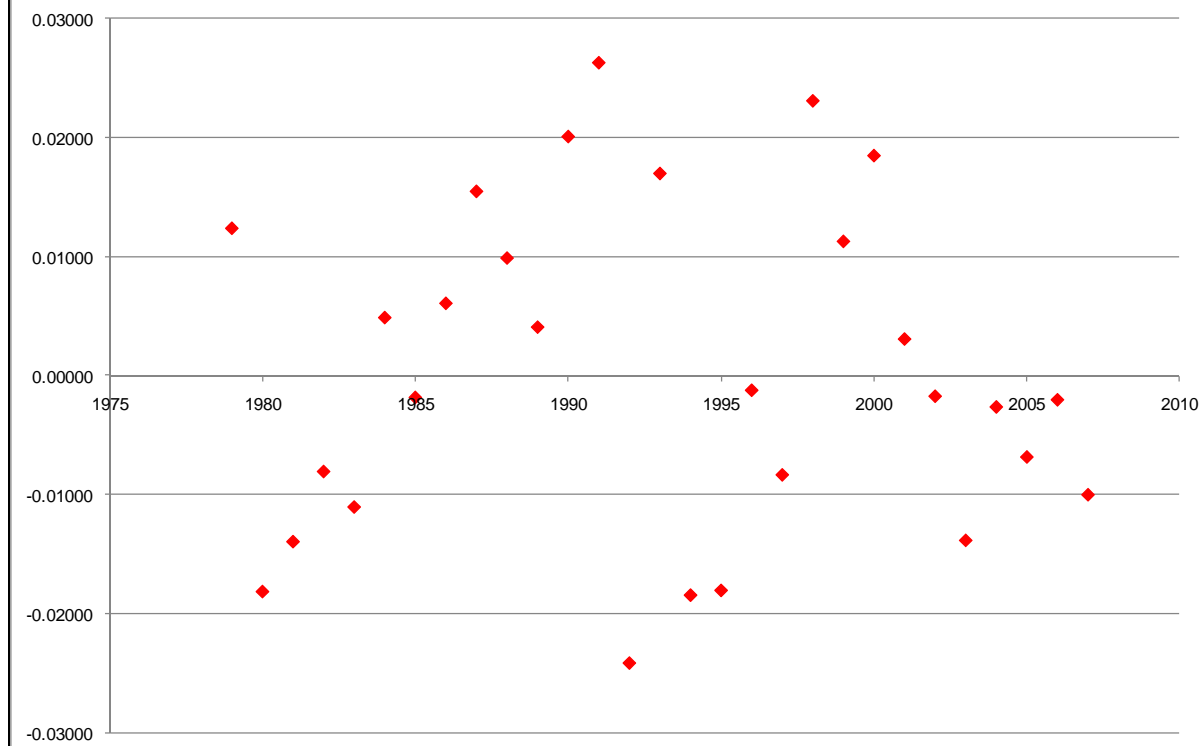


Figure 6.1(a): Larceny crime rate - actual and predicted - Victoria

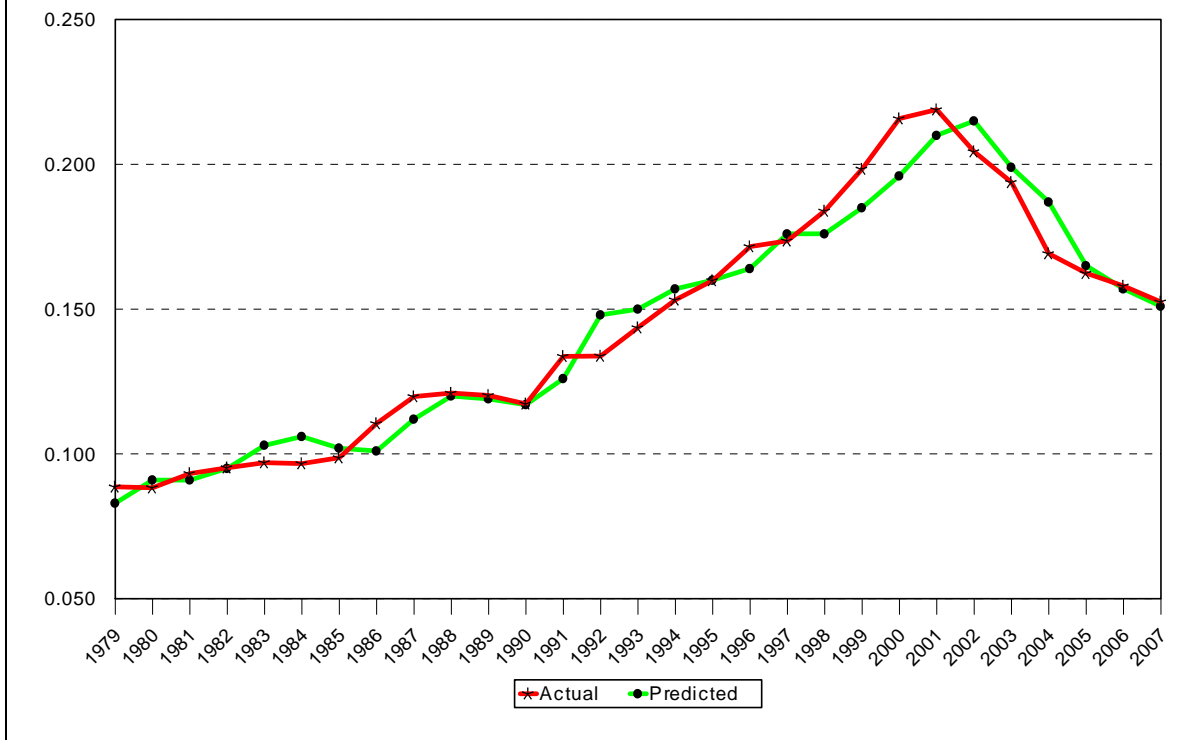


Figure 6.1(b): Larceny crime rate - residual - Victoria

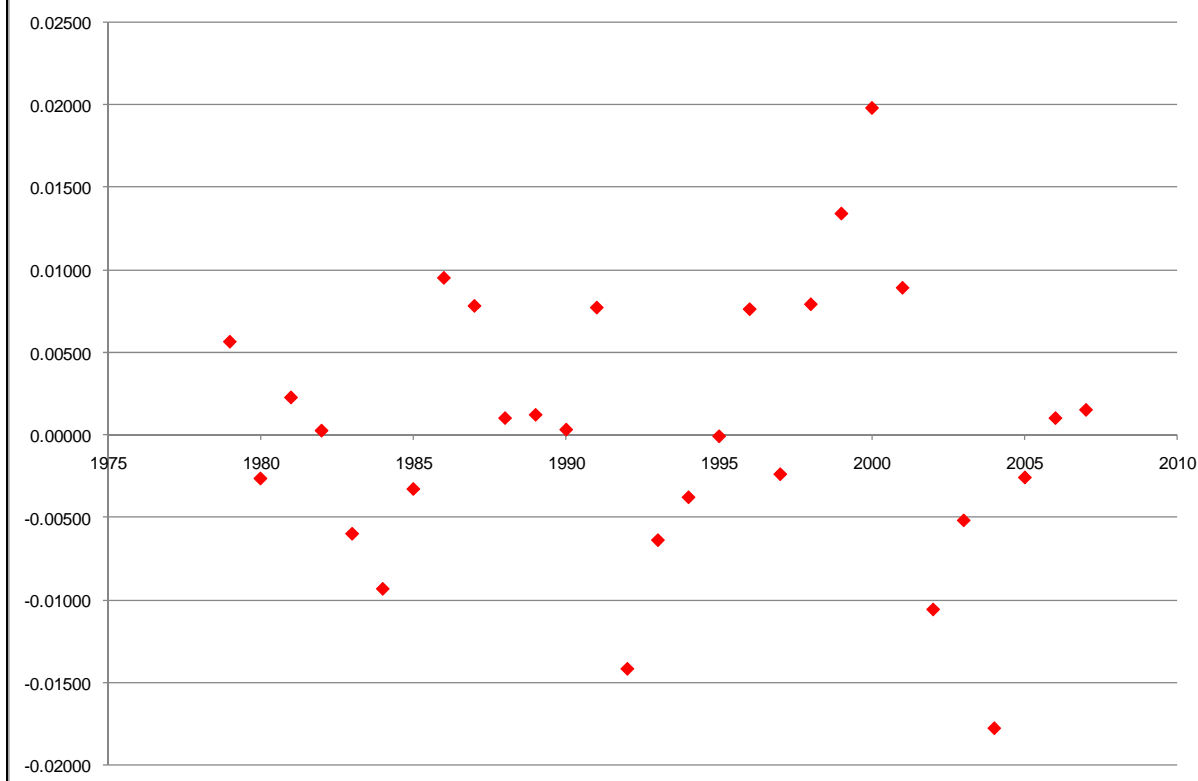


Figure 6.2(a): Larceny crime rate - actual and predicted - Queensland

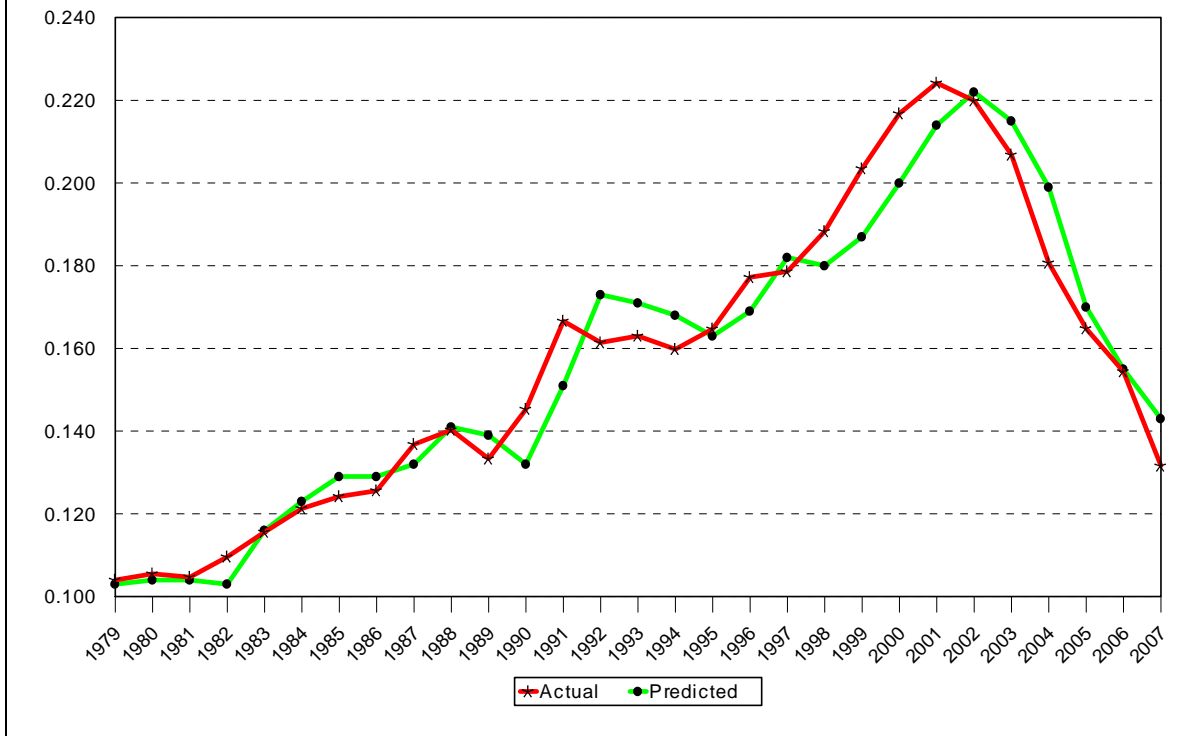


Figure 6.2(b): Larceny crime rate - residual - Queensland

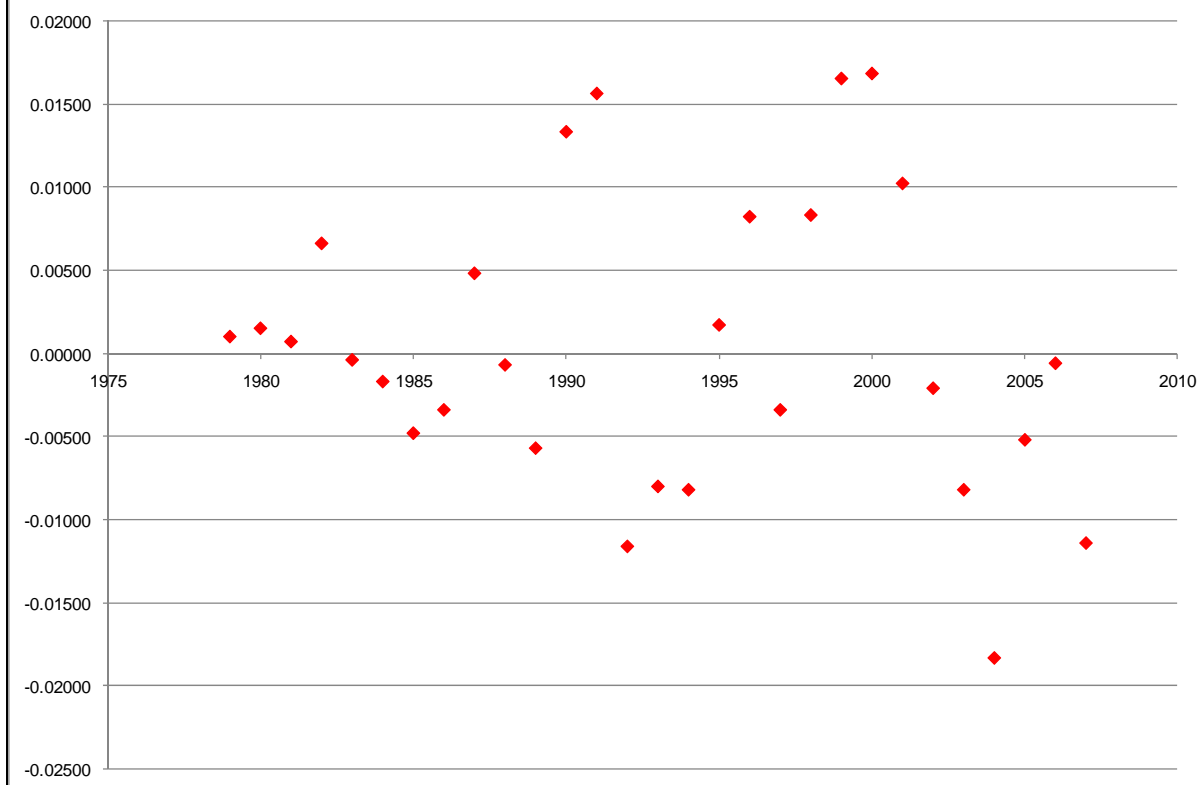


Figure 6.3(a): Larceny crime rate - actual and predicted - South Australia

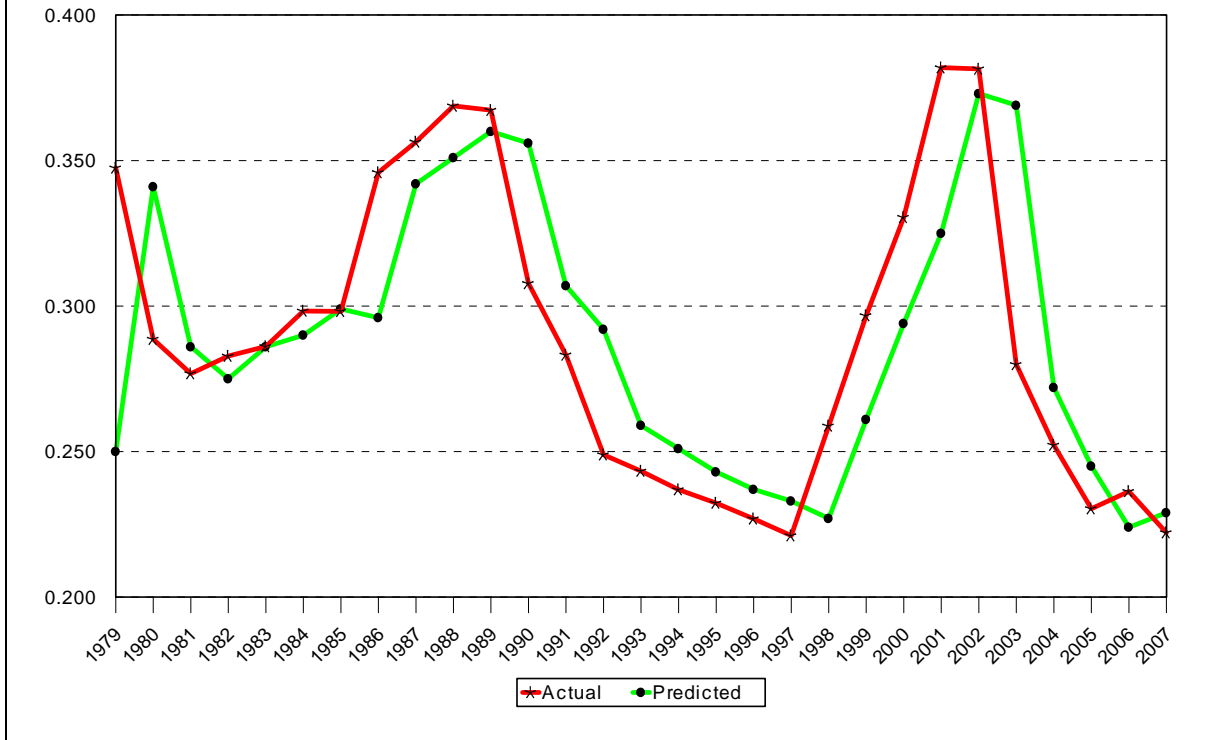
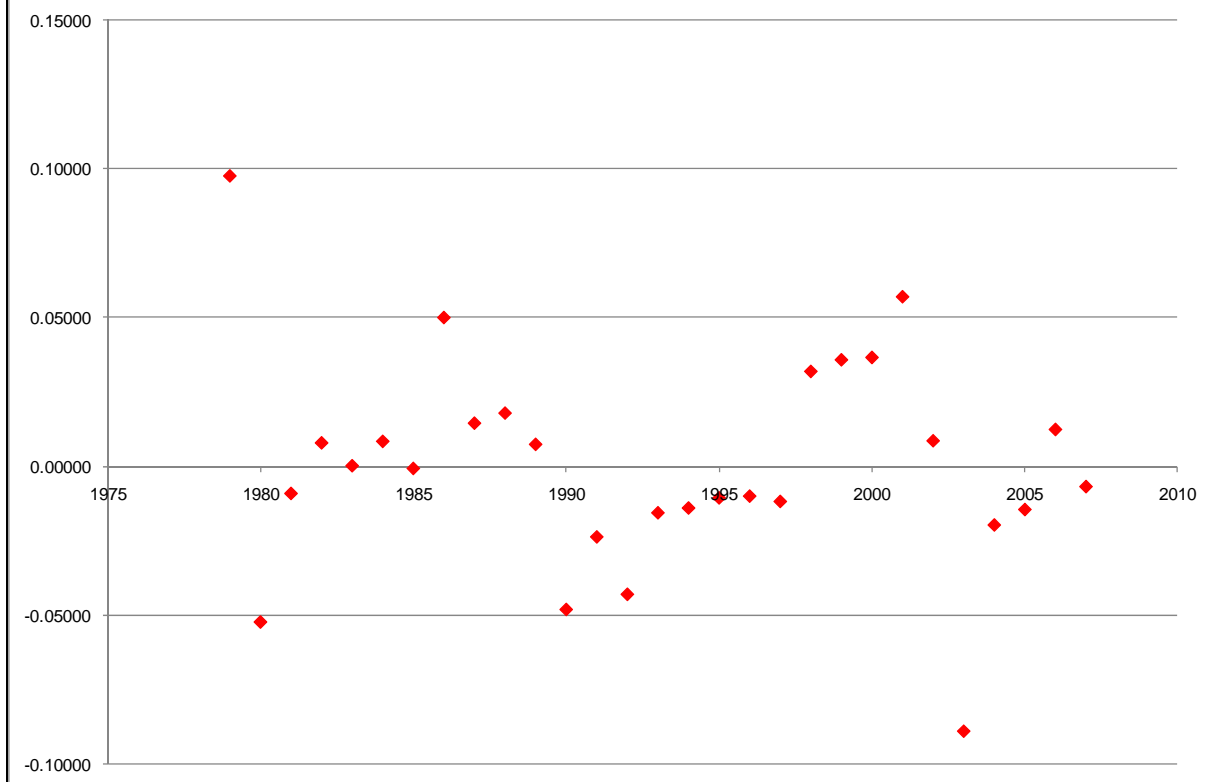


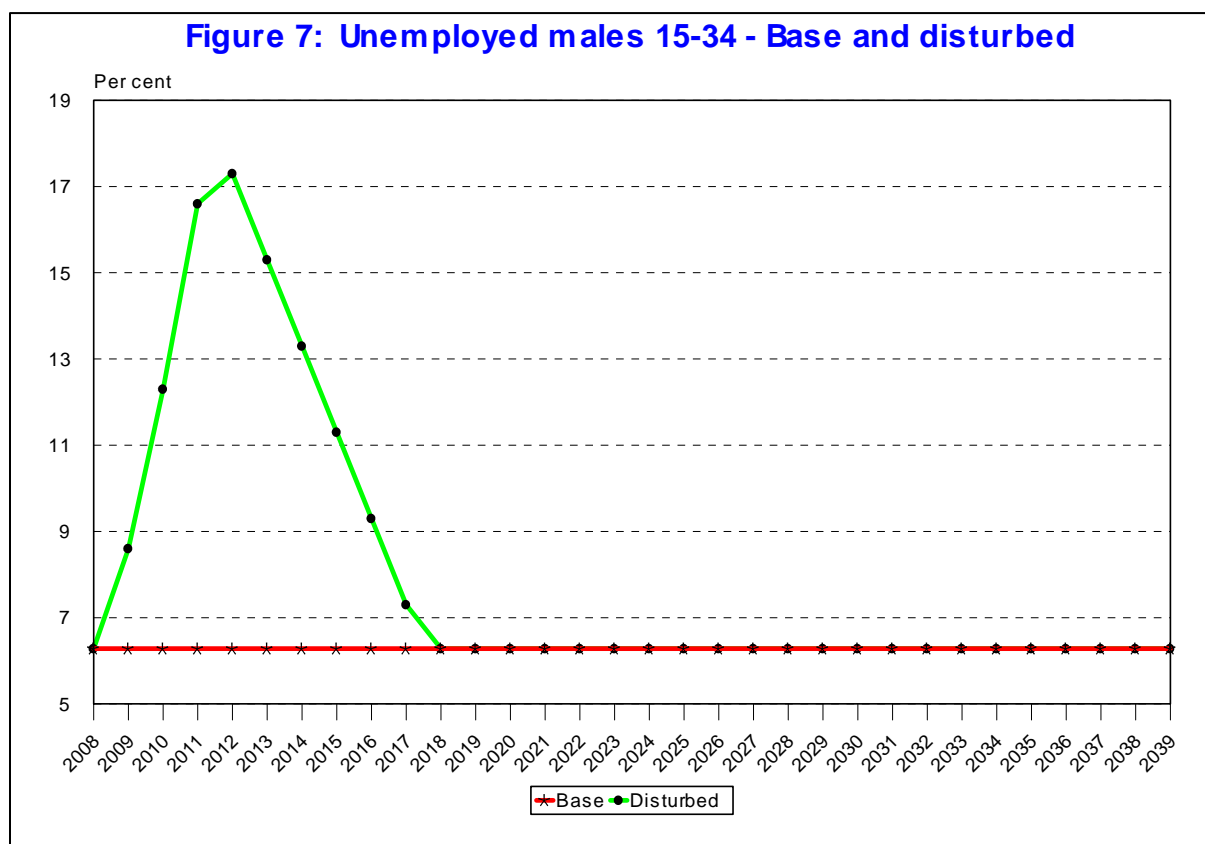
Figure 6.3(b): Larceny crime rate - residual - South Australia

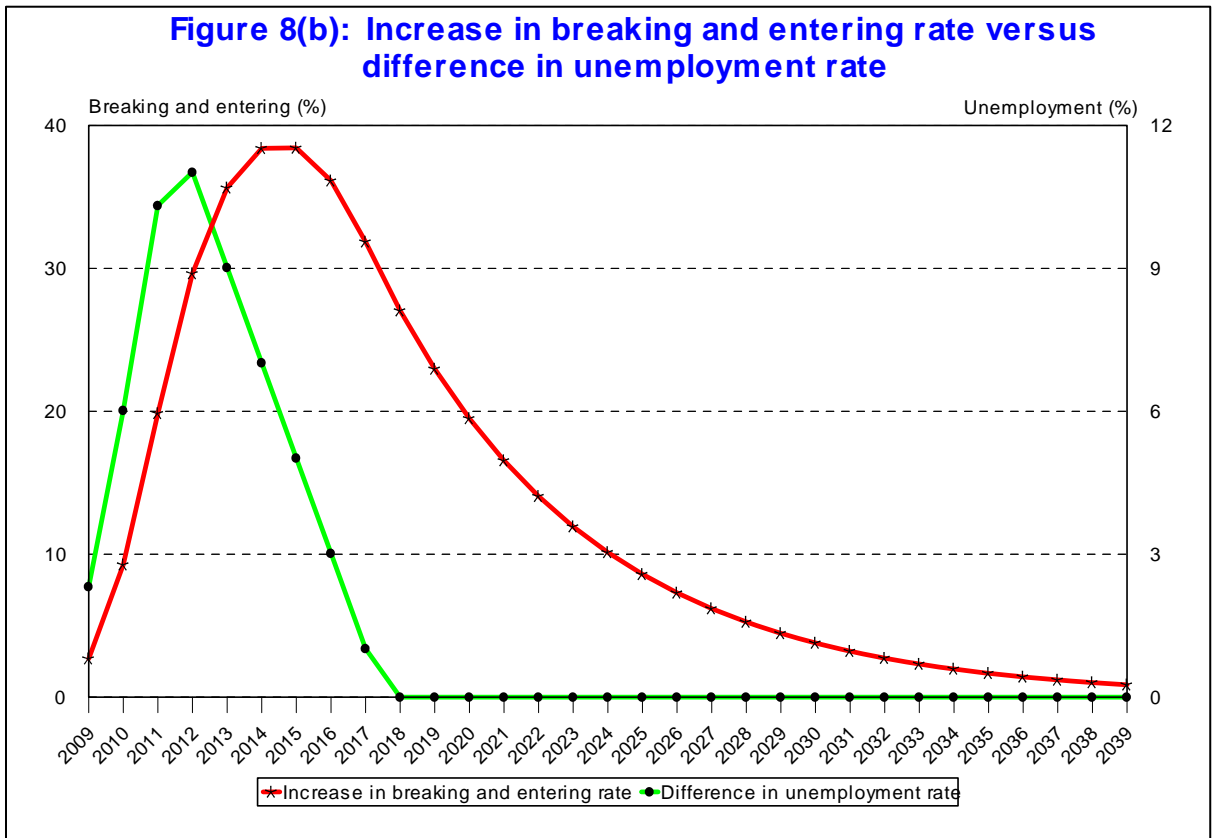
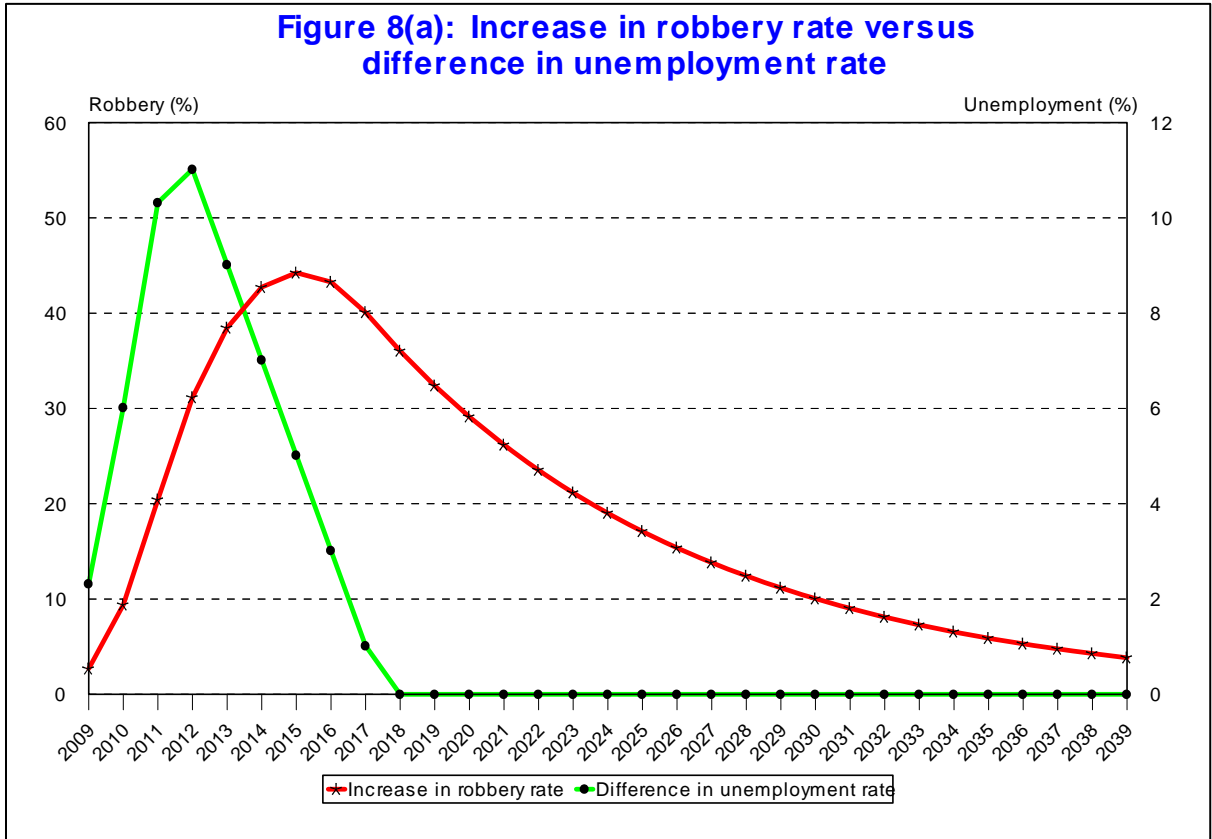


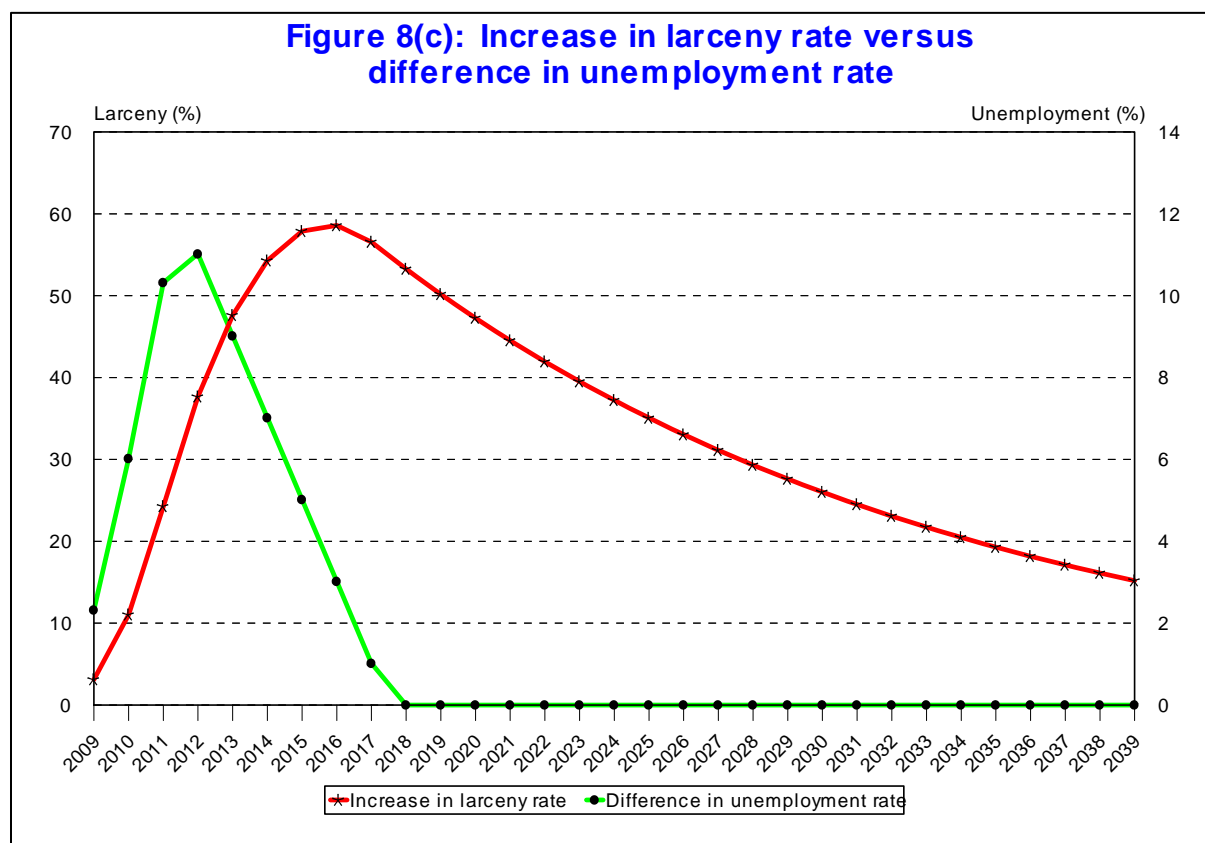
5. Projected crime rates

Figure 7 shows the unemployment rates expected from the 2009-2010 recession compared to the rates expected in the absence of a recession. The recession will be at least as bad as the 1991 recession. This assumption is detailed in Figure 7, which shows the unemployment rate for young men peaking at 17 per cent. In the absence of a recession it is assumed that the unemployment rate for young men will be constant at 6.5 per cent.

The resulting increase in the crime rates from what would otherwise have been the case are shown in Figure 8. At the peak years 2013 to 2015 crime rates increase by between 40 and 60 per cent. Bringing the crime rate back to within 10 per cent of the no-recession case could take another decade after the peak.







In assessing the significance of these findings for police resourcing, it is important to remember that they have been calibrated according to what happened in the early 1980s and early 1990s recessions in three states. Data has not been assembled on crime-related police resourcing in the three states over this period; we therefore do not know whether the increase in crime rates which followed the increase in unemployment rates occurred despite appropriate increases in police resourcing, or occurred with roughly constant police resourcing. However, the Productivity Commission's *Report on Government Services 1995* gives estimates of inflation-adjusted expenditure on police services from 1981-2 (in the middle of the early 1980s recession) to 1992-93 (after the turning point of the 1990s recession). In NSW expenditure on police peaked just before the 1990 recession and was then cut back. Queensland showed the opposite pattern, with a slow increase in expenditure from 1982 to 1991, and then an increase of around 10 per cent. In Victoria expenditure increased slowly with no relationship to the unemployment rate. On this evidence, there does not appear to have been any effort in the two previous recessions to counter the increase in crime rates with an increase in police resources. Police resources were roughly constant. (The slow increase in expenditure is common to all labour-intensive services like policing, education and hospitals, since the way expenditure is measured productivity increases are limited by the labour-intensive nature of the service.)

Assuming, then, that an increase in police resources is effective in controlling crime, what sort of increase is indicated? Strictly speaking, our increase of 40-60 per cent in the crime rate applies to around 60 per cent of the burden of crime. If we take the increase at 50 per cent, the implied increase in police resources is of the order of 13 per cent (50 per cent of 60 per cent of the crime workload, which is 43 per cent of the total workload of operational police). However, we should remember the following.

- Though the increase in workload of 50 per cent applies strictly to robbery, breaking and entering and larceny, it is likely that the rates for a number of other crime areas

will also increase, for example domestic assaults related to financial hardship. Even if the increase in the incidence of crime in these areas is but half of the estimated increase for the areas studied, the implied increase in resourcing requirements is a further 4 per cent.

- Though the increase in workload applies strictly to crime-related policing, there will be a flow-on to the staffing of cells and courts. Though the area is small (5 per cent of resources) it will be considerably affected, accounting for a further 2 per cent or so on total resources.
- On the other hand, as indicated in Chapter 1, staff requirements for police presence and traffic may diminish, reducing the total resource requirement by about 2 per cent.

Taking these factors together, we estimate an additional resource requirement of 17 per cent ($13 + 4 + 2 - 2$) above 2008 requirements. At a minimum, this is required to prevent an increase in police workloads, and, if policing is effective, should succeed in reducing the number of young people who turn to crime and continue in criminal activity for years after full employment has returned. The study has demonstrated the considerable importance of prompt action to prevent high unemployment from casting a long shadow of increased crime.