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Hanging Down Under: Capital Punishment and Deterrence in Australia

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Abstract: Variation in executions and abolition of the death penalty by year and state in Australia was used to examine the deterrent effect of the death penalty on homicides. A dataset covering 1910-2010 was collected comprising homicide rates and controls for demographic and criminal justice features. Using OLS, there was no evidence that executions have a deterrent effect. There is some evidence of a deterrent effect of capital punishment laws, but the effect is no longer significant once demographic and criminal justice variables were added to the model. However, when using exogenous variation in party-political representation to address endogeneity issues, no evidence of a deterrent effect of capital punishment was found.

JEL Code: K42 Illegal Behavior and the Enforcement of Law

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INTRODUCTION

In Australia, the last judicial hanging took place just over fifty years ago. Although capital punishment has receded into Australia's past, we can examine history to help answer a question that is still being asked today: does the death penalty deter potential murderers? Although some potential murderers might prefer death to a long prison sentence, for most people the existence of capital punishment raises the price of murder. On the other hand, perhaps people kill precisely because they are not acting rationally; and, instead, they surrender to violent impulses. Because the death penalty was used and abolished at different times in different Australian states, the case of Australian capital punishment is pertinent to today's debate about the death penalty.

For this study, a dataset covering 1910-2010 was collected comprising homicide rates and controls for demographic and criminal justice features. The identification strategy of this study was to exploit year- and state-variation in executions and abolition of the death penalty to examine the deterrent effect of the death penalty on homicides.

This study makes a number of contributions to the literature. This study is a rare analysis of non-American data. Nearly all research on the deterrent effect of the death penalty has been about the United States. That most studies have been American is not necessarily a bad thing, but examining other countries allows one to address issues that cannot be addressed in the American context.

First, executions were relatively more frequent in Australia. In the USA, since the reintroduction of the death penalty in the late 1970s, there has been about one execution for

every 500 homicides.¹ In Australia, when the death penalty was used, there was about one execution per 100 homicides.

Second, because of the considerable variation in the delay between convictions and executions in the US, there has been much debate in the literature about the correct lag lengths to include in econometric models. In the USA since the 1970s, prisoners have waited over eleven years, on average (with standard deviation of around five years), between trial and execution.² The situation in Australia was more straightforward. There was a much more immediate threat of being executed in Australia than is the case in the USA. And there was much less variation in how long prisoners would spend on death row. In Australia, about half of those executed were hanged during the same calendar year as the crime they were convicted of.³ Nearly all of the remaining convicts were executed during the following year.

Third, the capital and non-capital sanction regimes were relatively homogenous across Australian states. The US Academy of Science has criticised American studies because they do not adequately account for the different systems of sanctions that exist in different US states (National Research Council, 2012). Certain murders are punishable by the death penalty in some US states whereas not in other states because different criteria are used to define capital murders; for example, whether the victim was a child, the motive of the murderer, and whether the victim was a police officer. However, in Australia, the definition of capital murder was much more homogenous across states. Furthermore, the US Academy had a concern that the non-capital sanctions regime might be correlated with retention of the death penalty. For example, US states that execute prisoners might also impose lengthier

¹ Stevenson, Betsy & Wolfers, Justin. "The Death Penalty Debate Represents a Market Failure." *Bloomberg* June 11 2012.

² Death Penalty Information Centre <https://deathpenaltyinfo.org/files/deathpenaltystats.xls> accessed December 5th 2017

³ <http://www.capitalpunishmentuk.org/aus1900.html> accessed December 5th 2017

sentences on other offenders. Across Australian states, non-capital sanctions were very similar regardless of the status of the death penalty.

Fourth, a central argument of this paper's identification strategy is that abolition of the death penalty in Australia would have happened sooner if not for how long it took for each state's upper house of parliament to be reformed. Bills to abolish the death penalty needed to pass both houses of each state's parliament. The electoral systems, or lack thereof, for upper houses disadvantaged those seeking to abolish the death penalty. IV estimation that uses this exogenous variation in the abolition of the death penalty indicates that there was no causal effect of capital punishment on homicide.

LITERATURE REVIEW

MacDonald (1910, 93), one of the first empirical analysis of the death penalty, concluded that "whether the death penalty lessens crime (especially murder) or not, cannot as yet be demonstrated by statistics". Over one hundred years later, the National Academies of Science, Engineering and Medicine came to a similar conclusion (National Research Council, 2012).

In the previous decade, a number of studies that used US panel data to examine the deterrent effect of capital punishment were published. Mocan and Gittings (2003) found a significant deterrent effect of executions and existence of death penalty laws although the level of statistical significance is at either the 5% level or the 10% level depending on how variables are included in their estimated models. Zimmerman (2004) found a significant deterrent effect of executions when using Two-Stage Least Squares. Dezhbakhsh, Rubin and Shepherd (2003) found a that executions had a large and statistically significant deterrent effect.

These studies were criticised by Donohue and Wolfers (2005 & 2009) who reanalysed the previous researchers' data, and showed that the estimated effect of the death penalty varied significantly when changes were made to the econometric models. The authors of the original studies wrote replies: Zimmermann (2009); Mocan and Gittings (2010); Dezhbakhsh and Rubin (2011). The researchers debated issues such as the methods for constructing standard errors to address correlation within clusters; the construction of the deterrent variable; the validity of instrumental variables; the inclusion of influential outliers in the analysis; the distinction and coding of de jure versus de facto abolition; coding errors; and the sensitivity of results due to varying the lag lengths of different variables.

The National Research Council (2012), while noting the discrepancies in findings between the different studies, critiqued the literature from a different angle. The NRC emphasised that the existing studies did not account for the variation of non-capital sanction regimes nor did they account for how criminals perceive risks. In the Results Section of this paper, the issue of non-capital sanctions will be discussed.

The question of how criminals perceive apprehension and punishment is difficult to answer. Are criminals' perceptions of the risk of apprehension and punishment the same as the objective probability of being caught and punished? Given a lack of data, all that can be said is that, in Australia, while potential murderers might not have known the exact probability of being caught, convicted and executed, it is likely that they knew execution was at least a possibility if they committed murder. Although executions in Australia during the 20th century were carried out in prisons and not in public, they were reported on by newspapers.

Another notable aspect of the literature on the death penalty, is that very few studies in this field examined non-American data. An example is Zimring, Fagan, and Johnson (2010) who compared Singapore and Hong Kong. In many ways, as the authors demonstrate,

these two places are very similar. However, the authorities in Singapore suddenly increased the number of executions in the early 1990s and then gradually decreased the number of execution; while in Hong Kong nobody was executed, and the death penalty was abolished in 1993. Yet both places have had very similar levels and trends of homicide rates over the last half century or so.

The other non-American studies published in the economics literature have been analyses of national time series. Avio (1979) did not find a statistically significant effect of executions on murders when examining a national time series for Canada covering 1926-1960. However, Layson (1983) found a significant deterrent effect of executions using data from 1927-1977. Donohue and Wolfers (2005) show that the homicide rates in Canada and the United States, although differing in their level, followed a very similar trend since the 1950s despite having different capital punishment regimes.

Wolpin (1978) found a statistically significant effect of executions on homicide using aggregate data from England and Wales from 1929 to 1968. However, given that the time-series covered a single jurisdiction, the estimated effect of executions could have been due to unobserved factors that varied over time.

CONTEXT

Australia is a rare example of a country where the death penalty was used and abolished in different places in different years. Initially, when Australia was founded, all six of its states regularly hanged convicts; but, over the course of the twentieth century, all states gradually stopped executing prisoners. Eventually, the death penalty was abolished in all states. Table 1

shows the date of the last execution in each state and the date that the death penalty was abolished for murder. From 1910 to 1967, 71 people were hanged in Australia.⁴

Examining Table 1, one can see that the average homicide rate is quite similar when comparing states. Western Australia had the lowest average annual homicide rate, but it had the most hangings despite being a smaller state, and it also was the last state to abolish hanging. On the other hand, Queensland was the first state to abolish the death penalty, and it had the fewest executions during the twentieth century. Yet, Queensland's average annual homicide rate was the second lowest over the hundred-year period covered by the data. New South Wales and Victoria are the two most populous states. The two states had very similar homicide rates despite Victoria's last execution taking place nearly thirty years after New South Wales's and Victoria abolishing the death penalty about twenty years later than New South Wales.

Figures 1a to 1f show the homicide rate plotted for each year in each state. Executions are indicated by the light grey vertical lines, and the dates of abolition are shown by the orange vertical lines. In New South Wales, Victoria, South Australia and Tasmania, there were high homicide rates at the start of the series, a decline during the 1930s and 1940s, followed by a rise in the 1950s that continued until the 1990s. In Queensland, the homicide rate fluctuated with no trend until after the Second World War when there was an upward trend that continued until the 1990s. In Western Australia, the homicide rate was highly variable before the Second World War. Then there was a slight upward trend that lasted until the 1990s.

⁴ The US military executed one of their own personnel on Australian soil during 1943, but that execution has been excluded from the analysis.

Based on the plots in Figure 1a-1f, it does not seem that use of the death penalty had any effect on the homicide rate. There were hangings in all states except Queensland during the 1930s. During that time, the homicide rate declined in most states. After the Second World War, homicide rates rose for the next few decades in all states. By that time, New South Wales and Queensland had already abolished the death penalty; Tasmania and Victoria executed people very rarely but still had the death penalty in law; and South Australia and Western Australia continued to execute until the mid-1960s and did not abolish the death penalty until the 1970s and 1980s.

However, an analysis of homicide rates just before and after the abolition of the death penalty suggests that homicide rates may have risen in New South Wales, South Australia, Western Australia and Tasmania. In Queensland and Victoria, the annual homicide rate five years after abolition was lower than it had been during the previous five years. In the other states, homicide rates rose after abolition.

A difference-in-difference analysis shows that homicide rates rose in states when they abolished the death penalty by more than the change in homicide rates in the states that retained the death penalty, except in the case of Victoria. However, other variables might have explain the correlation.

Australian Capital Territory and the Northern Territory

In this analysis, the Australian Capital Territory (ACT) and the Northern Territory (NT) were excluded. There were no executions in the ACT and just five in the NT. Both territories abolished the death penalty in 1973.

The ACT and NT are excluded from the analysis for a number of reasons. First, these territories have much smaller populations than the rest of Australia (less so for the ACT in recent years). Currently the ACT and NT make up about 5% and 3% of the Australian

population; but for much of the period covered by the historical time series, these territories had less than 2% of the Australian population. Second, the demographic characteristics of these territories are much different from the rest of Australia. The ACT's population is, by design, entirely urbanised and disproportionately comprises public sector workers. The Northern Territory's population is far more rural than the rest of Australia.

Third, some of the variables used in this analysis were either not recorded for the Territories or are not applicable. For example, it is difficult to ascertain the prison population of the ACT given that convicts from the ACT are usually sent to prisons in New South Wales. Last, as will be discussed below, the Indigenous population was not measured accurately for most of Australia's history, and this measurement problem will particularly affect data relating to the Northern Territory where Indigenous Australians make up a much larger share of the population than in the rest of Australia.

METHOD & DATA

The definition and source of each variable used in the analysis is shown in Table 2. The dependent variable in these regressions is the homicide rate per 100,000 in a state in a given year.⁵ Homicide is defined by the International Classification of Deaths as "injuries inflicted by another person with intent to injure or kill, by any means". The definition excludes suicides, war, executions, and motor vehicle accidents.

The death penalty indicator variables are whether there were any executions during the previous year and whether the death penalty had been abolished in a given state and year.

Ehrlich's pioneering study of 1975 (Ehrlich, 1975) specified that homicide rates were a function of arrest rates for murder, the probability of a death sentence given conviction for

⁵ Results robust to including/excluding homicides due to Port Arthur Massacre of 1996 in Tasmania where 35 people were killed by a lone gunman.

murder, and the probability of being executed conditional on being given a death sentence. These ratios have been used in Mocan and Gittings (2003) and Zimmerman (2004).

It was not possible to construct these ratios for each Australian state in each year. In the statistical yearbooks of each state, different systems for recording crime and the outcomes of the criminal trials have been used. In most states, arrest data was not collected until after the Second World War. While the number of murder convictions was usually recorded, the number of acquittals was usually not recorded. Also, after the 1970s, the data were only recorded sporadically in the state yearbooks.

In any case, the deterrence ratios have been criticised by Donohue and Wolfers (2006 and 2009). For example, arrest rates do not adequately summarize murders where there are multiple victims or perpetrators or where the perpetrator commits suicide. A murder incident clearance rate would be a better summary of the effectiveness of police in solving crimes. Unfortunately, it was not possible to construct crime clearance rates using the historical data.

The share of young males in the state population was included in the model because young men are more likely to commit violent crime. Figure 2a shows the male share of the population in each state as estimated by the Australian Bureau of Statistics. At the start of the twentieth century, Western Australia and Queensland had a higher percentage of young men, perhaps because of the importance of mining and ranching in those states.

Australia's Indigenous population are extremely disadvantaged socio-economically, so it is important to control for their share of the population. Unfortunately, the size of the Indigenous population was measured with error, especially for the first half of the twentieth century. This measurement problem is probably not too serious for most states because Indigenous Australians were likely to have been less than five per cent of the population even during the first half of the twentieth century. However, in the Northern Territory, the Indigenous share of population was likely to have been far greater than the rest of Australia.

So, the problem of counting the Indigenous population is yet another reason for excluding the Northern Territory from the analysis.

Prior to 1967, the Australia constitution explicitly prohibited Indigenous Australians being enumerated in the Census. Pre-1967 period, Smith's (1980) estimates of the size of the Indigenous population are used. Even after the successful referendum to change the constitution, it is likely that the authorities took some time to accurately count the Indigenous population given that many of them live in isolated places. Also, people might have changed their attitudes to identifying as Indigenous Australians. So, even the Census data collected after the 1967 referendum might not accurately record the number of Indigenous Australians. Figure 2b shows the indigenous share of the overall population in each state based on the ABS estimates. The share of the population in Queensland and Western Australia is much higher than in other states, but Indigenous Australians are still a small minority in these states. Only one of the people executed after 1910 was an Indigenous Australian.⁶

Whether people live in cities or the countryside might affect the homicide rate. The opportunities for crime, in particular violent crime, are greater in urban areas where people live in close proximity. On the other hand, licensed weapons might be easier to obtain in rural areas where weapons are used on farms. Thus, it is important to control for the level of urbanisation when modelling murder rates. Figure 2c shows the proportion of Australians living in rural areas. At the start of the twentieth century, Australia was a country where nearly half the population lived in the countryside. Currently, nearly 90% of Australian live in urban areas, a percentage that is higher than the average urbanisation rate of high income countries.⁷

⁶ <http://www.capitalpunishmentuk.org/aus1900.html> accessed December 5th 2017

⁷ <https://data.worldbank.org/indicator/SP.URB.TOTLIN.ZS>

Immigration might create social unrest and perhaps violence, either between native born and immigrants, or within the immigrant community if that community is difficult to police due to language and cultural differences, etc. Figure 2d shows the percentage of foreign born people in each state. During the first half of the twentieth century, there was a gradual decline in the percentage of foreign born Australians, but this was followed by an influx of immigrants after the Second World War. Tasmania has always had the fewest immigrants; Western Australia has always had the largest number of foreign born.

Economic conditions might affect the level of homicide. For example, if the economy is doing well, then the demand for alcohol and illegal drugs might increase and, with it, the associated level of violence. On the other hand, unemployment might increase the incentives for property crime which might result in increased levels of violent crime. Figure 2e shows the percentage of unemployed (men) based on interpolations from the census. Unfortunately, more frequently recorded data is unavailable before the Second World War.

Figure 2f and 2e show the marriage and divorce rates. A large proportion of homicides are related to domestic violence, so one should control for the level of family stability. The rate of new marriages peaked during the Second World War; perhaps couples brought forward their marriage because they feared they might not survive the war. Since then, fewer people have married. In relation to divorce rates, it is notable that divorce law changed in the late 1970s to make it easier to divorce.

The level of mental illness is important to control for when modelling the determinants of homicide rates. A proxy variable might be the suicide rate. Figure 2g shows the suicide rate by state over the period. The states followed a similar trend although Western Australia has generally had a higher suicide rate. Suicides peaked during the Depression, fell during the Second World War and have been trending upwards since then.

The likelihood of a potential murderer being apprehended is proxied by state-year number of police officers per capita and the number of prisoners per capita. It could be argued that police and prisoner numbers are correlated with homicide rates and the death penalty. Perhaps, states that took a tough position in relation to fighting crime also took a tough line when it came to punishing crime. Or perhaps, states that removed the death penalty, instead put more resources into their police and prisons. In Figure 2h and 2i show that the levels of policing and incarceration have been very similar across the states.

Unfortunately, there is no historical data relating to the availability of guns. The first study of gun ownership in Australia was Harding (1981). The first legislation to control gun ownership was introduced between the World Wars. The first legislation controlled concealable short barrel guns. The states introduced legislation around the same time: New South Wales in 1920, 1927 and 1936; Victoria in 1921, 1928 and 1932; Queensland in 1927 and 1933; South Australia in 1917, 1919 and 1929; Western Australia in 1931 and 1939; and Tasmania in 1932. Only Western Australia had strict licensing and registration of long-barrel guns (from 1931). The Port Arthur Massacre of 1996 was catalyst for the national “Gun Buy Back” Policy. 600,000 guns were destroyed, semi-automatic and pump-action weapons were banned, and National Firearms Legislation was implemented across all states and territories. Because the gun control legislation was introduced around the same time in the states, the national-level year dummy variables will capture some of the effect of the legislation on homicides.

RESULTS

Tables 3 and Table 4 display the OLS estimates of the effect of executions and the abolition of the death penalty on the homicide rate. Column (1) shows the estimates of the following equation:

$$(1) \text{Homicide Rate}_{it} = \alpha_i + \lambda \text{Decade}_t + \beta \text{Death Penalty Variable}_{it} + \varepsilon_{it}$$

where state “i” is one of the six states and year “t” spans from 1910 to 2010. In Column (2) linear state-specific time trends were added to the model. In Column (3) observable year- and state-varying factors were added to the model. The estimates of the state fixed effects, the decade fixed effects, and state specific time trends are omitted from the tables for the sake of brevity but were included in the models. Different lag lengths for the demographic, justice system and death penalty variables yield similar results to those found in Table 3 and Table 4. Removing states from the analysis does not alter the conclusion of the analysis.

This study follows a difference-in-difference design using variation in policy by state and year. Bertrand, Duflo and Mullainathan (2004) demonstrated the need to account for within-state dependence when carrying out statistical inference with difference-in-difference studies. In this study, the p-value for each coefficient was generated using the CGMWILDBOOT⁸ command which implements the Wild Cluster Bootstrap-t procedure introduced by Cameron, Gelbach and Miller (2008).⁹

In the first row of Table 3, we can see that an execution taking place in the previous year had a negative effect on homicide rates in the following year. The coefficient is very similar across the specifications. An execution reduces the homicide rate by between 0.15 and 0.2 per 100k people. One interpretation of the coefficients is that each execution saved

⁸ The command was written by Judson Caskey. To download the command, access: <https://sites.google.com/site/judsoncaskey/data>

⁹ Cameron, Gelbach and Miller (2008 425) note that “Using the wild cluster bootstrap method, our empirical rejection rates are extremely close to the theoretical values, even with as few as six clusters, and there is no noticeable loss of power after accounting for size.”

around twenty lives given that the average population in Australia was around 11 million between 1910 and 2010. Crucially, however, the p-values for the null hypothesis of no deterrent effect are around 20%, so there was no statistically significant effect of executions on the homicide rate. On the other hand, the marriage rate is found to have a significant and negative effect on homicide. Suicides have a significantly positive effect on homicide.

In Table 4, the effect of abolition on homicide rates is presented. The coefficient is always positive, but it varies from specification to specification. When controlling for just state fixed effects and decade fixed effects, abolition raises the homicide rate by 0.11 homicides per 100k head of population. The coefficient is statistically significant at the 10% level. Adding a linear state specific time trend causes the abolition coefficient to nearly double: abolition is associated with a 0.2 unit increase in the homicide rate. However, when year- and state-varying factors are added, the coefficient falls back to around 0.107, and the effect is no longer statistically significant. As was the case in table 3: the marriage rate has a negative effect on homicides, and the suicide rate has a positive effect on homicides.

Endogeneity of Executions

Perhaps the observed correlation between homicides and capital punishment in some of the research literature is not a causal relationship but rather reflects general attitudes towards violence in society which affect both homicides and executions. For example, an “eye for eye” attitude might prevail in society. Places that have the death penalty might also have other policies that are tough on crime.

In this paper, the number of police and prisoners were included in the models. Also, the non-capital sanctions for murder did not appear to have varied much between states (as

will be discussed below). However, perhaps there still could be an unobserved “toughness on crime” factor that is correlated with use of the death penalty.

Additionally, perhaps feedback between homicide rates and executions might affect the estimates. A rise in murders, or crime in general, might result in juries convicting more often or perhaps state governments would be less likely to exercise their prerogative of mercy. Thus, one might underestimate the deterrent effect of executions.

In Australia, a death sentence was mandatory for murder. The prerogative of mercy rested with the Executive Council (the government) of each state, not with the jury or judge. The Executive Council of each state decided who would hang. Each Australian state is a parliamentary democracy with a Premier who commands the support of the state’s lower house of parliament, known as the Legislative Assembly, who leads an Executive Council to govern the state. Figures 3a-3f shows the relationship between the death penalty and the politics in each state. The blue series shows the percentage of seats held by the Australian Labor Party in the Legislative Assembly. The Australian Labor Party were generally anti-death penalty, but the party did oversee some executions. The centre right parties (the Liberal Party and its predecessors, the United Australia Party and the Nationalist Party) were in favour of retaining the death penalty, but commuted sentences quite often. The smaller, rural-based County Party (now known as the National Party) was in favour of the death penalty and they were often in coalition governments with the Liberals. Jones (1968) gives an account of the role of politics in the use of the death penalty in each state.

Whether the Australian Labor Party were in government was used as an Instrumental Variable to provide exogenous variation in the use of the death penalty. Data about Australian elections were obtained from <http://elections.uwa.edu.au/>.

It could be argued that support for the Australian Labor Party could depend on crime levels, and homicide in particular, given the ALP’s position on the death penalty. And the

ALP's policies could also affect crime and homicides in ways not captured by the other variables in the model (such as the number of police and prisoners). So, the validity of using ALP support as an Instrumental Variable for executions depends on the extent to which people vote for parties because of their position on the death penalty and the extent to which the ALP's effect on homicides is not captured by the other variables in the model. One also must keep in mind that, unlike certain parts of the United States, Australian police officials, judges and prosecutors were, and are, unelected; so support for a political party would not have the same direct effect on the criminal justice system as it might in the USA.

Endogeneity of Abolition

The abolition of the death penalty might also be endogenous. Suppose some unobserved factor caused murders to rise. Governments might have chosen to retain the death penalty because they felt it would deter crime. On the other hand, suppose some unobserved factor caused murder rates to fall, then states might have abolished the death penalty because they thought it was no longer needed. If murder rates then rose back to their previous levels, one might conclude that the abolition of the death penalty caused the rise in murders.

To capture exogenous variation in the abolition of the death penalty, Australian Labor Party representation in the *upper houses*, known as the Legislative Councils, of each state parliament was used as an instrumental variable.¹⁰ While Executive Councils (state governments) could exercise the prerogative of mercy in specific cases, the support of both houses of parliament was needed to abolish the death penalty generally. Abolition of the death penalty did not happen sooner in Australia because often legislation failed to pass the Legislative Councils.

¹⁰ As will be discussed below, Queensland became unicameral after 1921. So in the case of Queensland, ALP representation in the single chamber parliament of Queensland was coded as the instrumental variable from 1922 onwards.

Australian Labor Party Executive Councils, who had the support of their respective popularly elected Legislative Assemblies, regularly faced Legislative Councils which voted down their bills including abolition of the death penalty. Even when (conservative) Liberal Governments ran the state government, they were often opposed by their own members in the Legislative Councils.

Furthermore, ALP support in the Legislative Council was also necessary to ensure that the death penalty was not re-instated. The death penalty has rarely been re-introduced, except in times of war, in democratic countries, but it could have happened. Two examples are the United States which reinstated the death penalty in the late 1970s after a brief hiatus and, perhaps most relevant to this paper, New Zealand which abolished the death penalty in 1941, reinstated it in 1950 and abolished it again in 1961.

State governments faced an uncooperative Legislative Council because the members of the Legislative Councils had terms of office that were longer than that of the Legislative Assembly. Also, by design, the election cycles of the Councils were often asynchronous to the Assemblies'. For a long time, members of the Councils enjoyed considerable security in their positions. In the three mainland Councils with popular election, the percentage of uncontested seats at elections in the years 1930–50 were as follows: Victoria 47%; Western Australia 33%; South Australia 26% (Hughes and Aitkin 1986). In Tasmania, between 1947 and 1993, in just over one fifth of Council elections, the incumbent was returned unopposed (Fewkes, 2011).

Furthermore, the electoral systems for the Legislative Councils led to, the generally anti-death penalty, ALP being under-represented relative to its popular support. So, even if voters supported the Australian Labor Party because of it usually opposed the death penalty, the ALP's ability to abolish the death penalty depended on at least some Councillors from

other parties voting against their own parties' position, and on electoral reforms that increased ALP representation in the Councils.

Table 5 shows the major reforms of each state's Legislative Council. Property-based franchises excluded voters who did not own their homes and, in the case of Western Australia, allowed for plural voting for those owning more than one property. This voting system disadvantaged the ALP because one of its main bases of support was poorer urban voters. Aside from property-based franchises, the electoral apportionment system of the Councils favoured rural voters, who were more likely to support the socially conservative Country Party. During the second half of the twentieth century, states began to use the Proportional Representation Single Transferable Vote and state-wide "At Large" voting districts, and moved away from single member seats that inflated the value of rural votes. These reforms have greatly increased the representation of the ALP in the Legislative Councils. However, the reforms took time to come about because the reforms had to be approved by the existing Legislative Councils who had every incentive to maintain the status quo. The final column of Table 5 lists some of the failed attempts to reform the Legislative Councils.

Chronological Account of the Abolition of the Death Penalty by State

Lennan and Williams (2012) provide an account of the abolition of the death penalty in each Australian state.¹¹ In Queensland, the first attempt at abolition of the death penalty was defeated in the Legislative Council in 1916 (Barber, 1968). Members of Queensland's Council were appointed for life by the Governor on advice of the Premier. The ALP who controlled the Legislative Assembly became frustrated by the Legislative Council blocking

¹¹ Barber (1968) gives a very detailed account of the abolition of the death penalty in Queensland.

their general political agenda (and not just the abolition of the death penalty). The ALP were defeated in a referendum to abolish the Legislative Council in 1917. The ALP then convinced the Governor (the unelected representative of the Crown) to appoint more ALP members to the Council. Having been packed with ALP members, in 1921 the Queensland Legislative Council voted itself out of existence. In 1922, the abolition of the death penalty passed the new unicameral Queensland parliament by a vote of 33-30 (the ALP had 38 seats at the time).

A detailed account of the abolition of the death penalty in New South Wales is given by Curby (2017). Initially, in the case of New South Wales, the membership of the Legislative Council was appointed by the Governor with advice from the Premier. The ALP tried to reform the Council multiple times during the 1920s and early 1930s. The ALP in New South Wales attempted the same ploy as their colleagues in Queensland. The New South Wales ALP convinced the Governor to appoint enough of their members to the Council so that they could vote the Council out of existence. However, the scheme failed in 1926 when some of the appointees defied party orders and voted to save the Council.

At the start of the 1930s, the ALP had a majority in both houses of parliament. Perhaps the death penalty would have been abolished in the 1930s had the then Governor of New South Wales not dismissed the ALP Premier because of a debt crisis. The next administration, a conservative ministry, reformed the Council so that half of the Council would be elected by the Assembly and by the other half of the Council. Thus, both the Assembly and Council would reflect the support of the parties. By 1953, the ALP had a majority of members in both houses; abolition of the death penalty for murder followed in 1955.

The Tasmanian parliament voted by a majority of just one to retain the death penalty in 1924. Ostensibly, independent non-party politicians have always had a large majority on

the Tasmanian Council. However, many of the independents were previously members of the (conservative) Liberal Party which usually did not field candidates for the Council. The ALP often had between one and five seats on the Council. Initially, Tasmania had a property-based franchise for Council elections. But universal franchise was introduced in 1968. Bills to abolish the death penalty failed twelve times in the Legislative Council before finally succeeding in 1968.

In South Australia, an attempt at abolition of the death penalty failed in the Legislative Council in 1971. Only property owners could vote for the South Australian Council until 1975. Furthermore, the boundaries of the voting districts disadvantaged the ALP because it drew its support from urban areas in and around Adelaide. But in 1975, the elections to the Council were held under universal franchise using a single at-large voting district under PRSTV. At the same time, the (conservative) Liberal-Country League split. As a result, the ALP greatly increased its representation in the Council. After the 1975 election, the ALP had a plurality of seats in both houses. In 1976, abolition of the death penalty passed after the Council's recommendation of keeping the death penalty for certain types of murders was ignored.

Except for a few months in 1985, the ALP did not have a majority on the Victoria Council until the 21st century. The property franchise was abolished in 1950, but the main disadvantage for the ALP was that their support was clustered around Melbourne, and the voting system elected members from single member districts that were malapportioned to favour rural areas (until some reform in 2005). In 1929, an attempt to abolish the death penalty failed in the Legislative Council by a vote of 14-4. In 1967, the execution of a prisoner who had murdered a prison guard during an escape galvanised opposition to the death penalty; it was Victoria's first execution in over fifteen years. It turned out to be

Victoria's and Australia's last execution. A bill to abolish the death penalty passed the Legislative Council on a free vote by 20 to 13 (The ALP held ten seats at the time).

Western Australia was the last state to abolish the death penalty, arguably because the local ALP was less abolitionist than in other states – ALP governments sanctioned some executions before the Second World War. In Western Australia until 1965, only property owners could vote, and those who owned more than one property could vote more than once in Legislative Council elections. Urban and rural areas continue to have equal representation despite the overwhelming majority of the population residing in the city of Perth. This voting system disadvantages the ALP, and gave an advantage to the then pro-death penalty Country Party (now known as the National Party) whose share of the seats in the Western Australian Council was often twice as large as their share of the votes. By the 1980s, Western Australia was the only state to still have the death penalty for murder. The Western Australian Council eventually abolished the death penalty in 1984 by a vote of 17-12.

Instrumental Variable Estimates

Table 6 shows the IV estimates of the effect of executions and abolition of the death penalty on homicides. The estimated first stage equations are also shown. An ALP premier being in power in a state in a given year has a negative effect on whether an execution took place. The F-statistic of the instrumental variable was 45.78. The effect of an execution on homicide was negative (and larger in absolute terms than the OLS estimate) but is not statistically significant in the second stage.

The percentage of Legislative Council held by the ALP had a positive effect on abolition of the death penalty for murder. In this equation, the F-statistic of the instrumental

variable was 11.25. In the second stage equation, the coefficient of the abolition variable is positive but not statistically significant.

Currently, STATA programs that implement the Wild Cluster Bootstrap-t procedure do not allow for IV estimation. So, the regular cluster-robust standard errors are shown in Table 6. These standard errors are likely to be too small. However, given that we do not find a statistically significant effect of capital punishment when the standard errors are too small, we would not find an effect if, the presumably larger, correct standard errors could be estimated.

Non-Capital Sanctions

The National Research Council (2012) criticised the lack of research about sanction regimes. Capital and non-capital sanctions might be correlated. For example, states that are tough on crime might have both the death penalty and lengthy sentences for killers who are not executed. Thus, a finding in the literature that the death penalty has a deterrent effect might at least partially reflect a general tough policy against crime that deters potential criminals. On the other hand, states that abolish the death penalty, might replace capital punishment with long prison sentences as a close substitute.

In Australia, the death penalty was the mandatory sentence for murder. Each state government considered the context of each conviction when deciding whether to commute the death sentence. Death sentences were usually commuted to life sentences or to fixed-year sentences. Despite its title, a life sentence did not usually mean the prisoner would die in prison. According to Freiberg and Biles (1975), between 1900 and 1974, about 81% prisoners who had their sentences commuted were eventually released on parole or deported. The percentage of prisoners who were eventually released ranged from 76% in Queensland to 95% in South Australia. Although there was variation in the percentage of prisoners released across states, it is clear that the majority of life sentence prisoners in all states could expect to

be released at some point before they died, and there was no statistical difference in the percentage of prisoners who died in prison between states that abolished the death penalty earlier (Queensland and New South Wales) and states that abolished the death penalty later.

Every state eventually introduced a mandatory life sentence for murder when the death penalty was abolished. Table 7 shows the average length of sentences served by prisoners who served life sentences and commuted death sentences based on Potas (1989) and Freiberg A. & Biles D. 1975. The data are incomplete, but it appears there was not a systematic difference between states in terms of the length of sentence served by those released from prison (except in Tasmania where the average term served does appear to have been shorter) and whether the state abolished the death earlier or later.

More recent data about sentences served by releasees are unavailable. However, since those data were collected, sentences for murder, and most probably the length of sentence actually served, are longer than they used to be in all states. (see Anderson (2012) for a discussion). In the models presented in Table 3 & 4, the dummy variables that control for the decade will to some extent pick up trends in sentencing that are common to all Australian states. However, Table A1 and Table A2 in the Appendix present the results omitting the 1990s and 2000s from the analysis because there is no data about sentences served by recent releasees. The results are very similar to those in Table 3 and Table 4.

CONCLUSION

Overall, the analysis did not reveal much evidence that the death penalty reduces homicides. Simple time series plots of homicide rates against executions and the abolition of the death penalty suggested that trends in homicides were similar across states despite different capital punishment regimes being in place.

The OLS estimates of the effect of executions on the following year's homicide rate were negative but not statistically significant. Under IV, using whether the Australian Labor

Party were in power as an instrumental variable, the effect of executions was also not statistically significant. The validity of the instrument depends on the extent to which voters supported the ALP because of its position on the death penalty and whether the ALP being in power affected homicide rates beyond their effect on police and prison numbers.

Using OLS, death penalty laws were statistically significant when controlling for state- and decade-fixed effects and state-specific linear time trends. However, the effect of death penalty laws was no longer statistically significant once demographic and criminal justice factors were been controlled for. Using ALP support in the state Legislative Councils, which depended on electoral reforms, as an instrumental variable, the effect of the abolition of the death penalty was not statistically significant.

This study suggests that the death penalty did not deter murderers in Australia. Furthermore, policy makers considering this evidence also need be mindful that at least one execution in the dataset was the result of a wrongful conviction. In 2008, Colin Campbell Ross was posthumously pardoned for the murder of Nell Alma Tirtschke for which he was hanged in 1922. He was pardoned on the basis of DNA evidence. Given advances in forensics and technology, one might believe that wrongful executions are less likely today; but, perhaps, one should not put too much of faith in the hands of an imperfect justice system.

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Table 1: State aggregates 1910-2010

	New South Wales	Victoria	Queensland	South Australia	Western Australia	Tasmania
Year of final execution	1940	1967	1913	1964	1964	1946
Year of abolition	1955	1975	1922	1976	1984	1968
Number of executions	12	17	3	15	19	5
Average annual homicide rate	1.6	1.6	1.36	1.37	1.27	1.6
Change in homicide rate five years after/before abolition	0.48	-0.178	-0.026	0.551	0.072	0.911
Five-year difference in difference of homicide rate relative to retentionist states	0.566	-0.665	0.149	0.488	n/a	0.624

Table 2: List of variables and sources

Variable	Years	Source
Estimate of annual population of each state	1910-2010	Australian Bureau of Statistics, 3105.0.65.001 Australian Historical Population Statistics, 2014. Table 1.1
Homicide rate per 100,000 persons	1910-1963	State Year Books
	1963	No data
	1964-2010	Australian Institute for Health and Welfare
Execution data	1910-2010	State Year Books
Men aged 20-29 as percentage of population	1910-2010	Australian Bureau of Statistics 3105.0.65.001 Australian Historical Population Statistics, 2014
Indigenous Australians as a percent of population	1910-1966	Smith (1981) for the same dates as Census, interpolated for intervening years
	1967-2010	Five-year Census (starting from 1971) interpolated for intervening years
Percent living in rural areas	1910-2010	<i>Censuses of 1901, 1911, 1921, 1933, 1947, 1954, 1961</i> and then every five years Interpolated for intervening years
Percent foreign born	1910-2010	As above.
Suicides per 100k	1910-1963	State Year Books
	1963-1977	Clifford (1979)
	1978	Interpolated
	1979-1992	ABS Catalogue Number 33090 Suicides 1921-1998 Table 10
	1992-2002	ABS Catalogue Number 3309.0.55.001 Suicides: Recent Trends, Australia. Table 6
	2001-2010	Australian Bureau of Statistics 3303.0 Causes of Death, Australia, 2010. Table 11.5
Marriages per 100k & Divorces per 100k	1900-1979	Mukherjee et al (1981)
	1980-1982	Vamplew (1989)
	1983-1987	Interpolated
	1988-2010	<i>Yearbook Australia</i>
Prisoners per capita, Police Officers per capita	1910-2010	<i>Yearbook Australia</i>

Table 3: OLS estimates of effect of lagged values on homicide rate

	(1)	(2)	(3)
Executions	-0.155	-0.174	-0.193
	[0.205]	[0.198]	[0.183]
Young males			0.116
			[0.243]
Indigenous			-0.053
			[0.647]
Foreign born			0.007
			[0.914]
Rural dweller			0.009
			[0.8]
Unemployment			0.015
			[0.248]
Police per 100k			0.000
			[0.948]
Prisoners per 100k			-0.001
			[0.326]
Marriages per 100k			-0.001
			[0.012]**
Divorces per 100k			0.000
			[0.471]
Suicides per 100k			0.041
			[0.042]**

(1) State fixed effects and indicator variables for each decade

(2) as in (1) with linear state-specific trends

(3) as in (2) with year-state varying observable factors

*, ** and *** significant at 10%, 5% and at 1% level.

All variables are lagged by one year.

Observations are weighted by state-year population.

p-values derived from Wild-Cluster Bootstrap in parenthesis.

Table 4: OLS estimates of effect of lagged values on homicide rate

	(1)	(2)	(3)
Abolition	0.110 [0.095]*	0.204 [0.009]***	0.107 [0.219]
Young males			0.124 [0.233]
Indigenous			-0.063 [0.51]
Foreign born			0.002 [0.939]
Rural dweller			0.009 [0.676]
Unemployment			0.016 [0.21]
Police per 100k			-0.001 [0.743]
Prisoners per 100k			-0.001 [0.493]
Marriages per 100k			-0.001 [0.011]**
Divorces per 100k			0.000 [0.427]
Suicides per 100k			0.036 [0.074]*

(1) State fixed effects and indicator variables for each decade

(2) as in (1) with linear state-specific trends

(3) as in (2) with year-state varying observable factors

*, ** and *** significant at 10%, 5% and at 1% level.

Observations are weighted by state-year population.

All variables are lagged by one year.

p-values derived from Wild-Cluster Bootstrap in parenthesis.

Table 5: Characteristics of legislative council

	Elected?	Removal of property franchise	Rural malapportionment reform	Failed constitutional & electoral reforms
<u>New South Wales</u>				
until 1934	Life-time appointees by Governor General	n/a	n/a	Abolition of Council fails in 44-43 vote in 1926
1934-1978	Indirect election by Assembly and Council	n/a	n/a	Reform bill for direct election defeated in 1943 Abolition of Council bill defeated 30-29 in 1946 Abolition of Council referendum defeated in 1961
Since 1978	Direct elections	n/a	At-large district & PRSTV since 1978	
<u>Victoria</u>	Direct elections	1950	Multi-seat PRSTV since 2006	1959, 1976, 1977 failed Bills to abolish Council
<u>Queensland</u> (until 1922)	Life-time appointees by Governor	n/a	n/a	Abolition of Council referendum defeated in 1917
<u>South Australia</u>	Direct elections	1975	At-large district & PRSTV since 1975	Bill to reduce rural malapportionment and introduce universal suffrage defeated in 1966
<u>Western Australia</u>	Direct elections	1965	PRSTV since 1989 but malapportionment continues	1919 Bill to grant vote to ex-servicemen fails. 1978 Bill for PR does not proceed.
<u>Tasmania</u>	Direct elections	1968	Always single seat districts	No major reforms.

Table 6: IV estimates of effect of lagged values on homicide rate

	(1)		(2)	
	1 st Stage	2 nd Stage	1 st Stage	2 nd Stage
Any Executions		-0.571 (0.631)		
Abolition				-0.213 (0.364)
ALP Premier	-0.082*** (0.012)			
%ALP Seats in Council			0.007*** (0.001)	
Young Male	0.011 (0.057)	0.118* (0.071)	0.054 (0.052)	0.131* (0.079)
Indigenous	0.066* (0.033)	-0.026 (0.107)	-0.047 (0.118)	-0.078 (0.119)
Foreign Born	-0.002 (0.007)	0.008 (0.013)	0.038*** (0.007)	0.014 (0.023)
Rural Dweller	0.006 (0.008)	0.010 (0.019)	-0.025 (0.024)	0.003 (0.028)
Unemployment	0.007 (0.005)	0.018* (0.011)	-0.015** (0.006)	0.010 (0.006)
Police per 100k	-0.000 (0.001)	-0.000 (0.001)	0.005** (0.002)	0.001 (0.001)
Prisoners per 100k	-0.000 (0.000)	-0.001 (0.001)	-0.002 (0.002)	-0.002 (0.001)
Marriages per 100k	0.000 (0.000)	-0.001** (0.000)	-0.001*** (0.000)	-0.001** (0.000)
Divorces per 100k	-0.000 (0.000)	-0.000* (0.000)	0.001 (0.000)	-0.000 (0.000)
Suicides per 100k	0.004 (0.005)	0.042*** (0.010)	0.036** (0.011)	0.048*** (0.009)

Models include state fixed effects, indicator variables for decades, and state-specific linear time trend.

*, ** and *** significant at 10%, 5% and at 1% level.

Observations are weighted by state-year population.

All variables are lagged by one year.

Standard errors are clustered by state.

Table 7: Non-Capital Sanctions of Commuted and Life-Sentence Prisoners

	Year	Percentage Released or Deported	Average Duration	Notes
New South Wales	1932-1974	80	13 years 6 months	Term Served (Males)
	1975-1979		14 years 3 months	Term Served
	1984-1987		11 years 7 months	Term Served
Victoria	1928-1974	89	13 years 9 months	Term Served (Males)
	1986-1987		14 years 3 months	Minimum Sentence
Queensland	1900-1974	76	12 years 11 months	Term Served (Males)
	1959-1988		15 years 9 months	Term Served
South Australia	1918-1974	94	11 years	Term Served (Males)
	1983-1988		13 years 3 months	Minimum Sentence (with remission)
Western Australia	1918-1974	81	12 years 11 months	Term Served (Males)
	1975-1988		13 years 11 months	Term Served
Tasmania	1951-1974	83		
	1946-1988		10 years 3 months	Term Served

Sources:

Potas, Ivan. 1989. "Life Imprisonment in Australia" Australian Institute of Criminology, Canberra Australia. Trends & Issues in Crime and Criminal Justice Number 19.
 Freiberg A. & Biles D. 1975. *The Meaning of 'Life': A Study of Life Sentences in Australia*, Australian Institute of Criminology, Canberra.

Figure 1a: Homicide rate by year for New South Wales

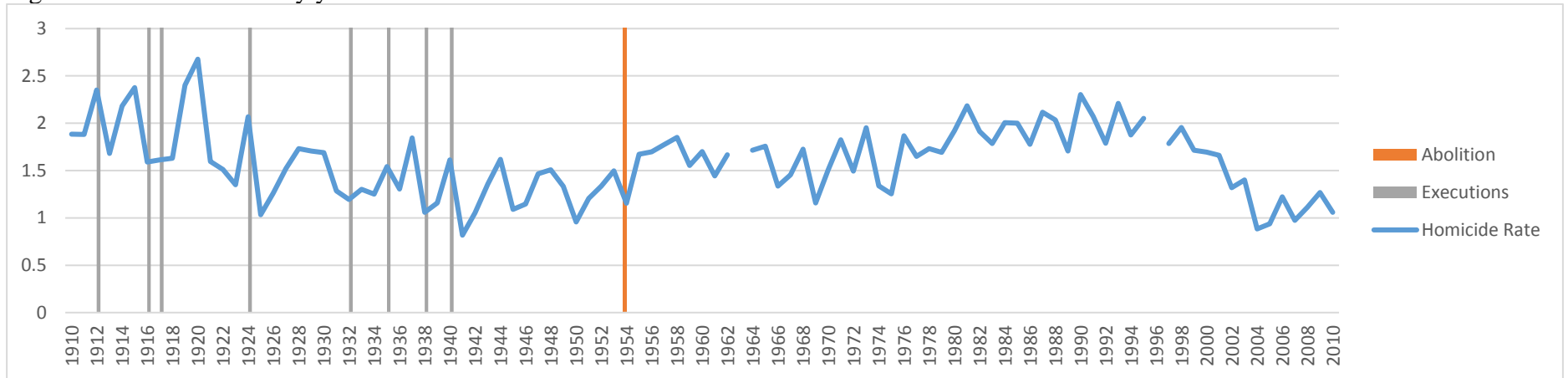


Figure 1b: Homicide rate by year for Victoria

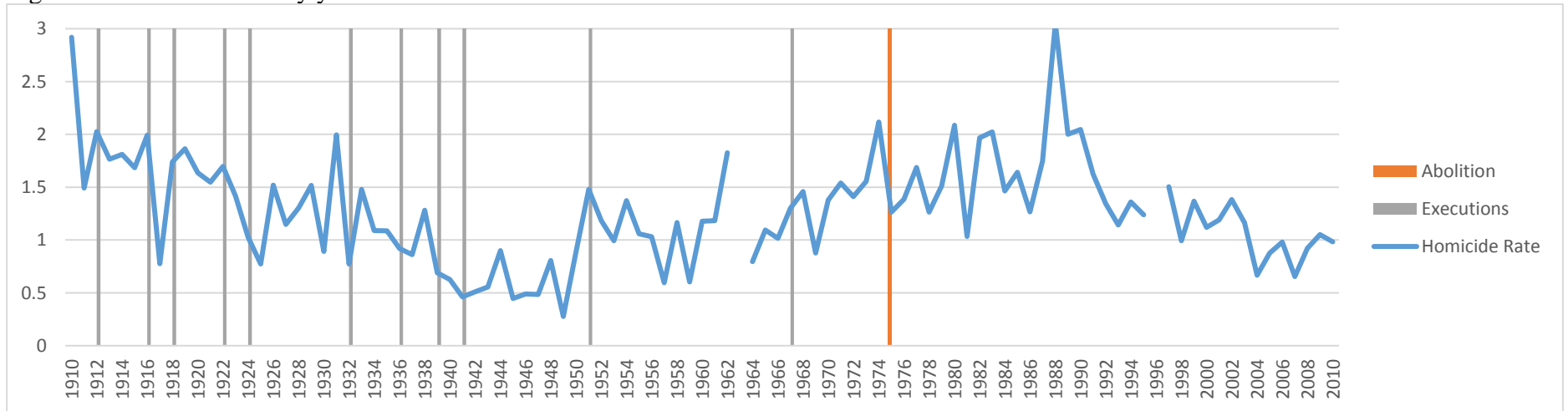


Figure 1c: Homicide rate by year for Queensland

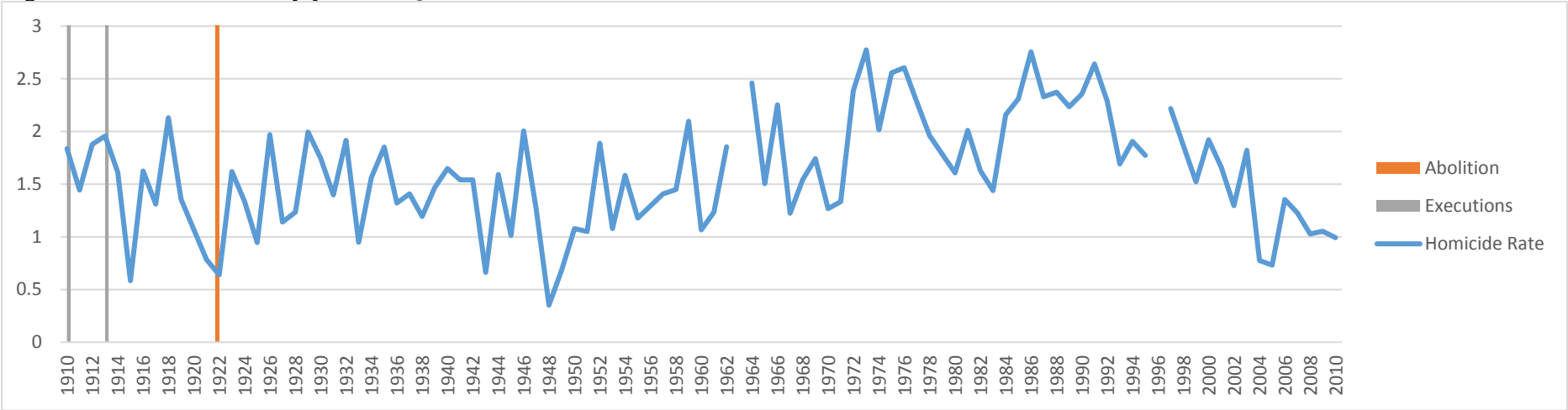


Figure 1d: Homicide rate by year for South Australia

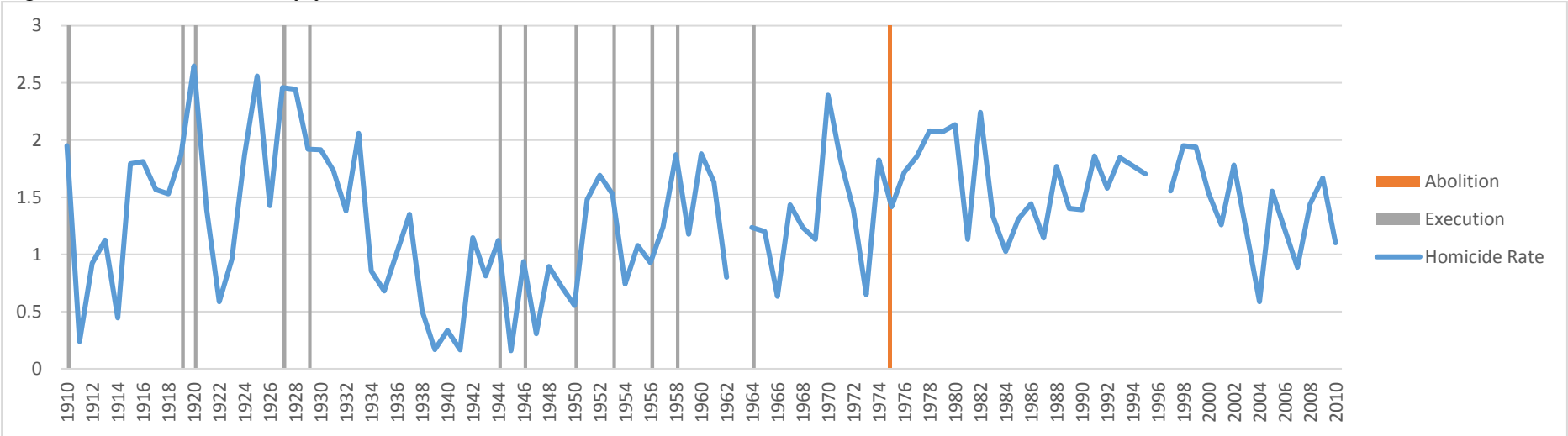


Figure 1e: Homicide rate by year for Western Australia

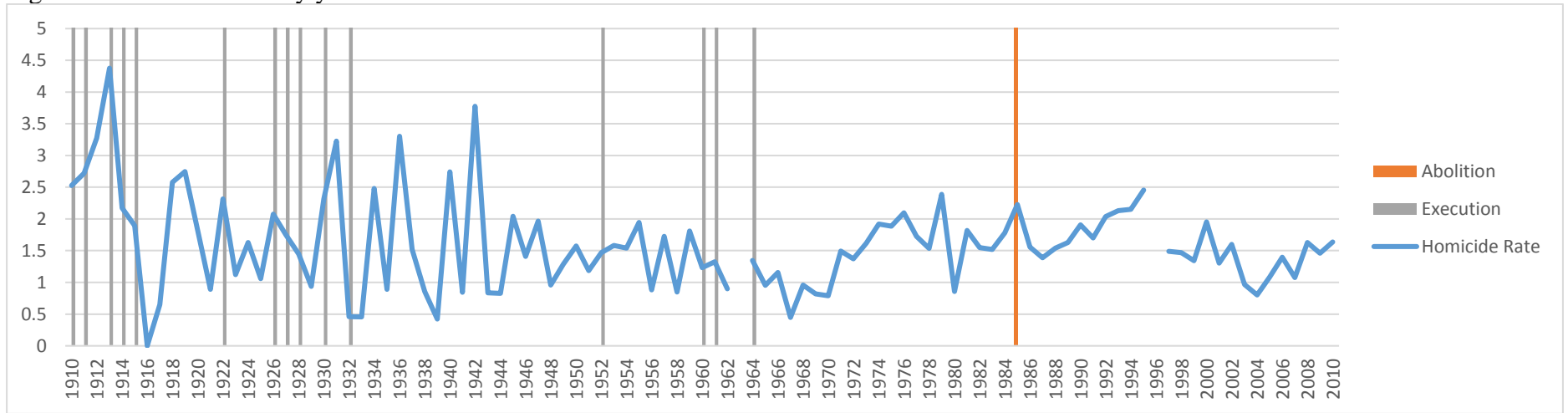


Figure 1f: Homicide rate by year for Tasmania

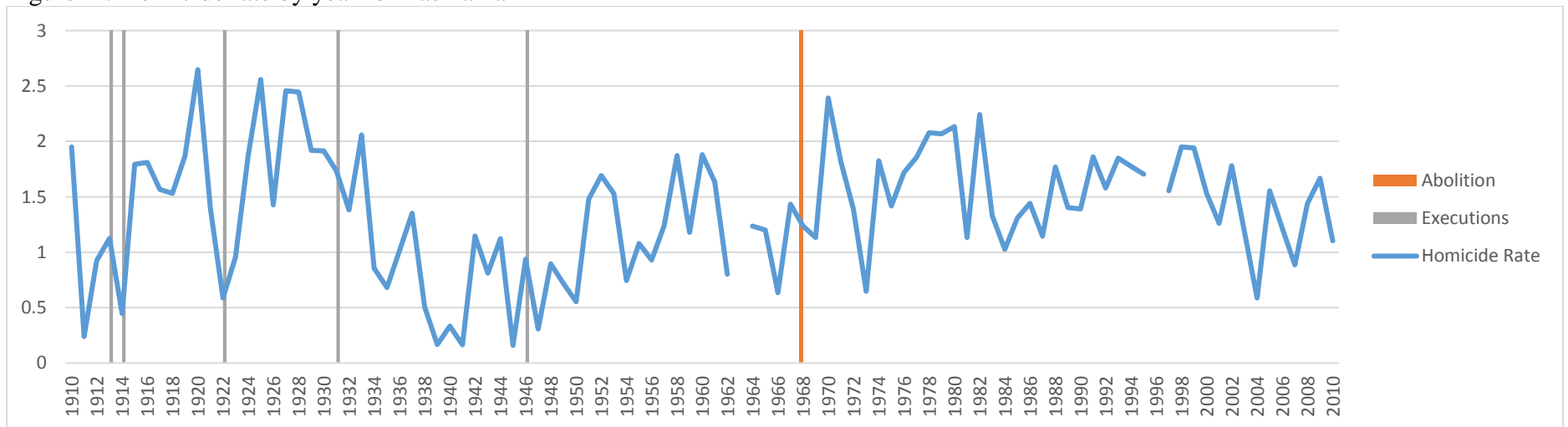


Figure 2a: Males age 20-29 as a percentage of state population

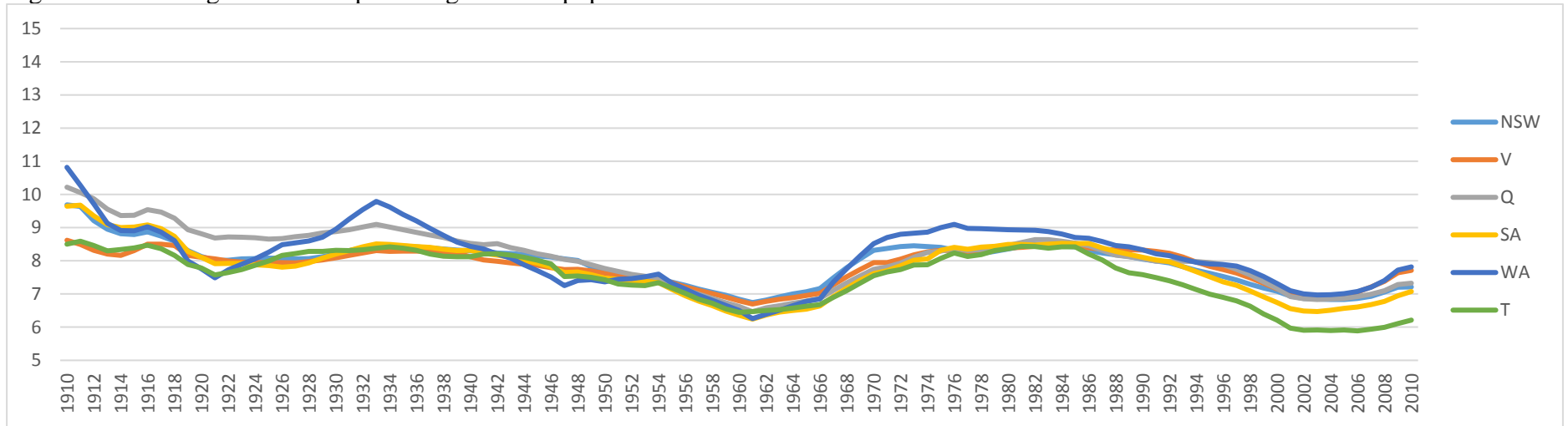


Figure 2b: Indigenous population as a percentage of state population

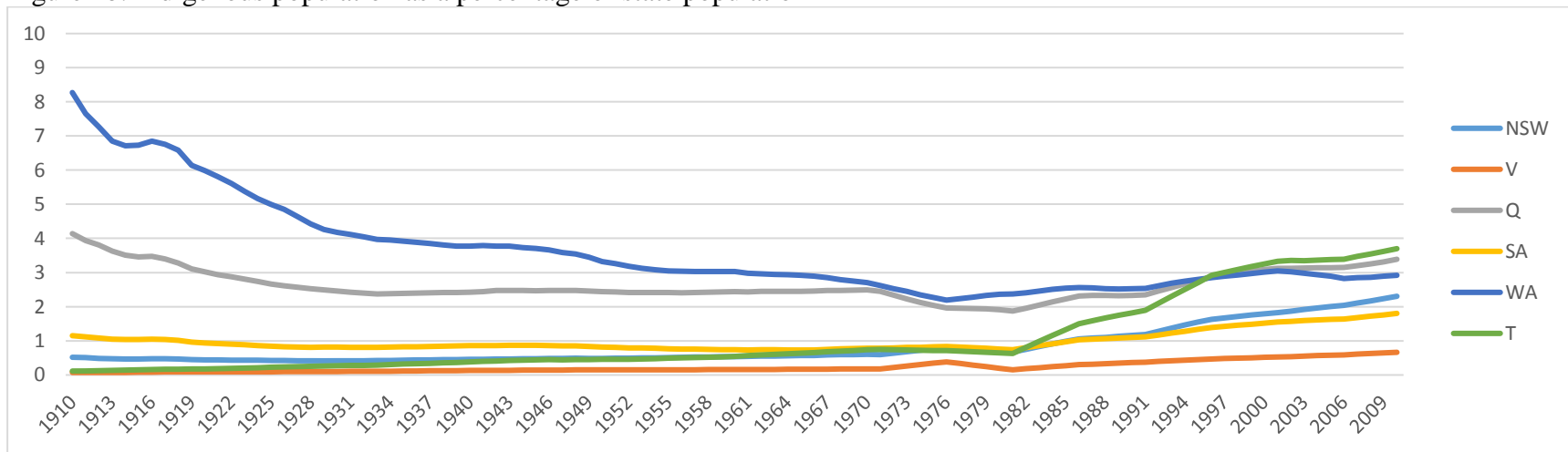


Figure 2c: Rural dwellers as a percentage of state population

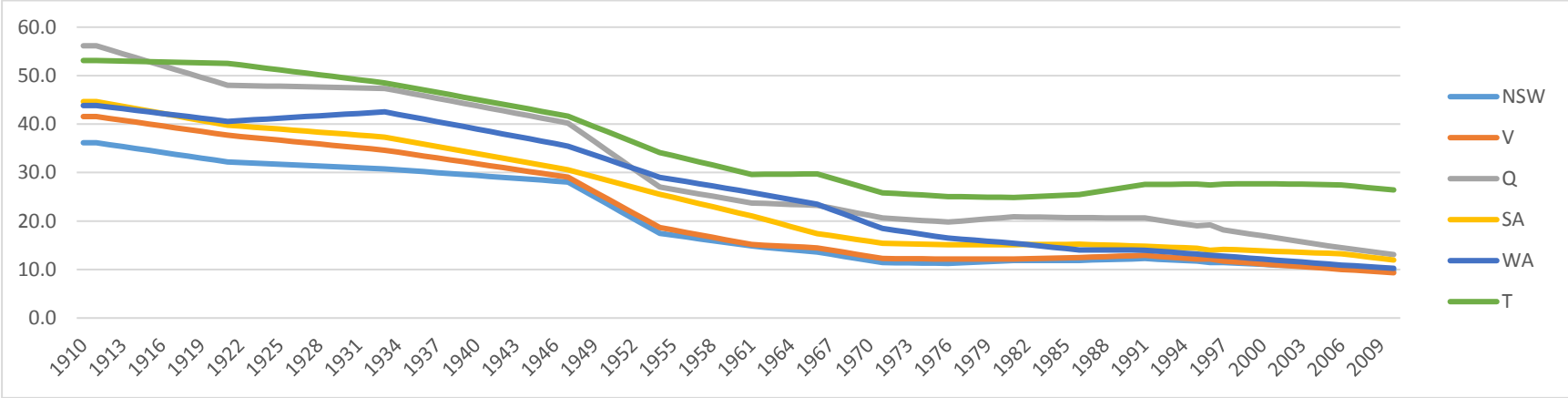


Figure 2d: Percent foreign born

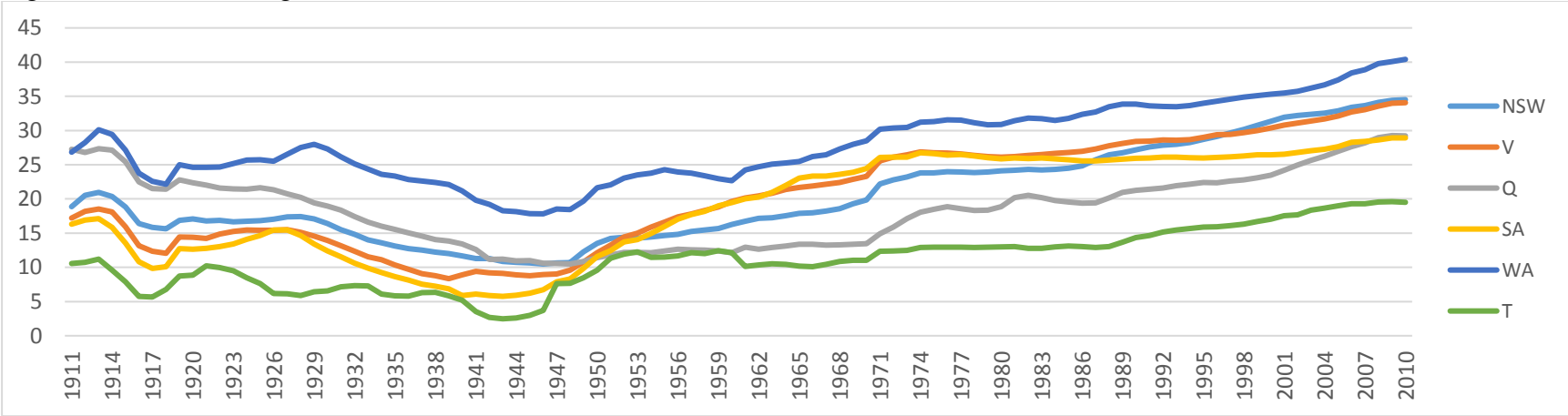


Figure 2e: Percent unemployed

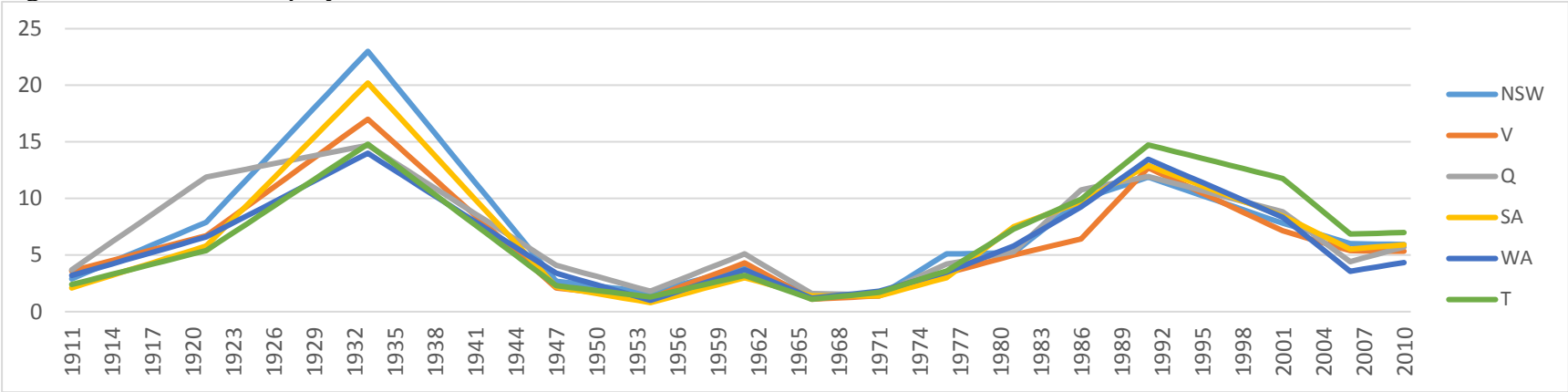


Figure 2f: Marriages per 100,000 inhabitants

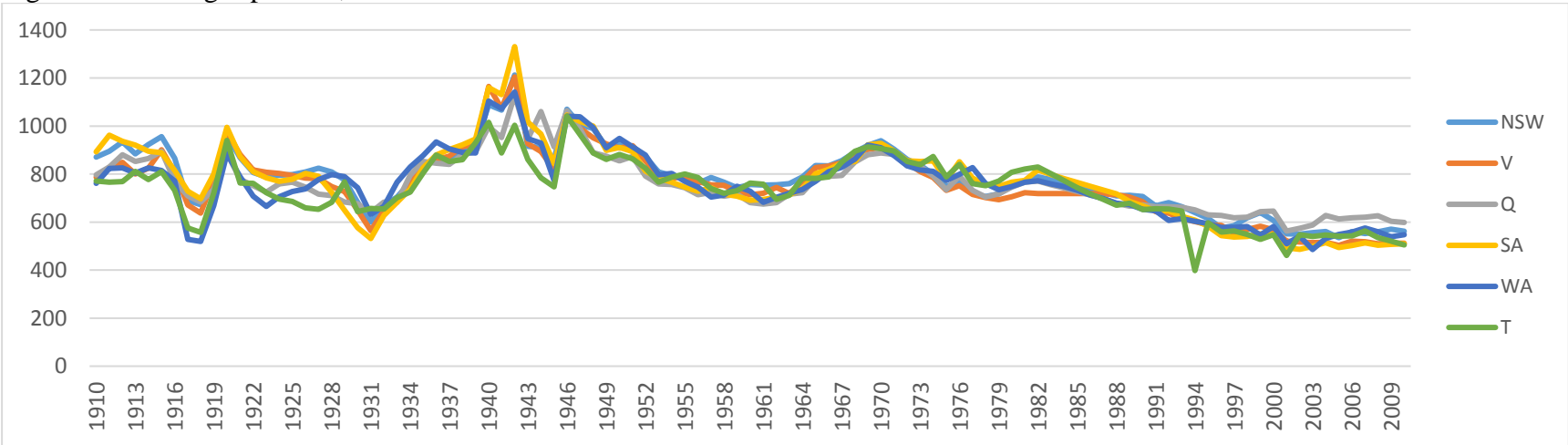


Figure 2g: Divorces per 100,000 inhabitants

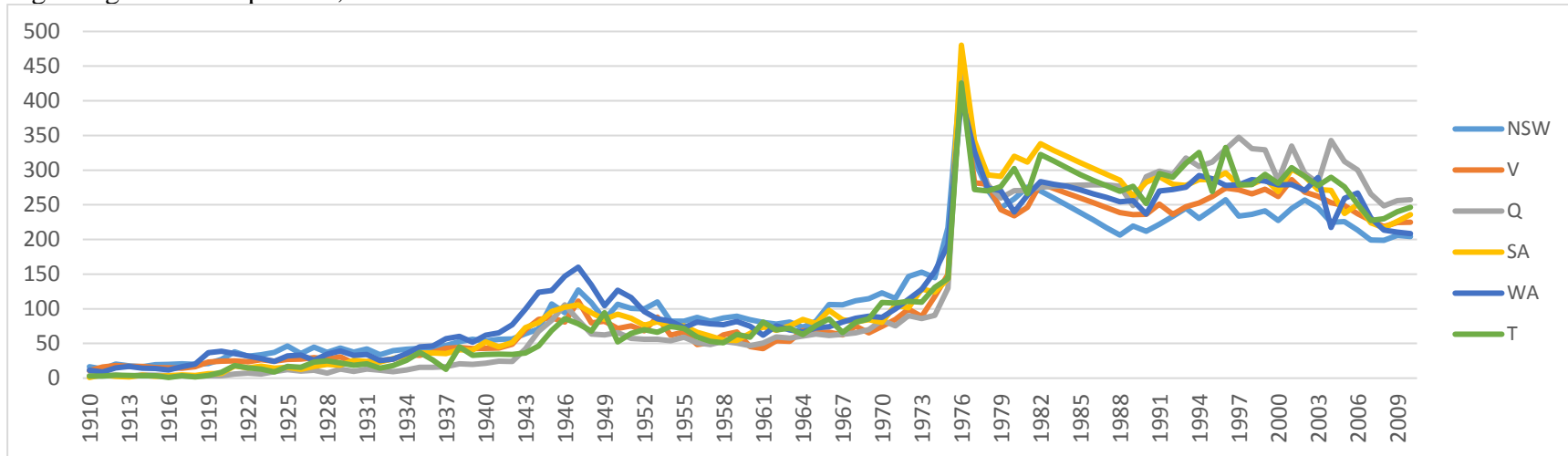


Figure 2h: Suicides per 100,000 inhabitants

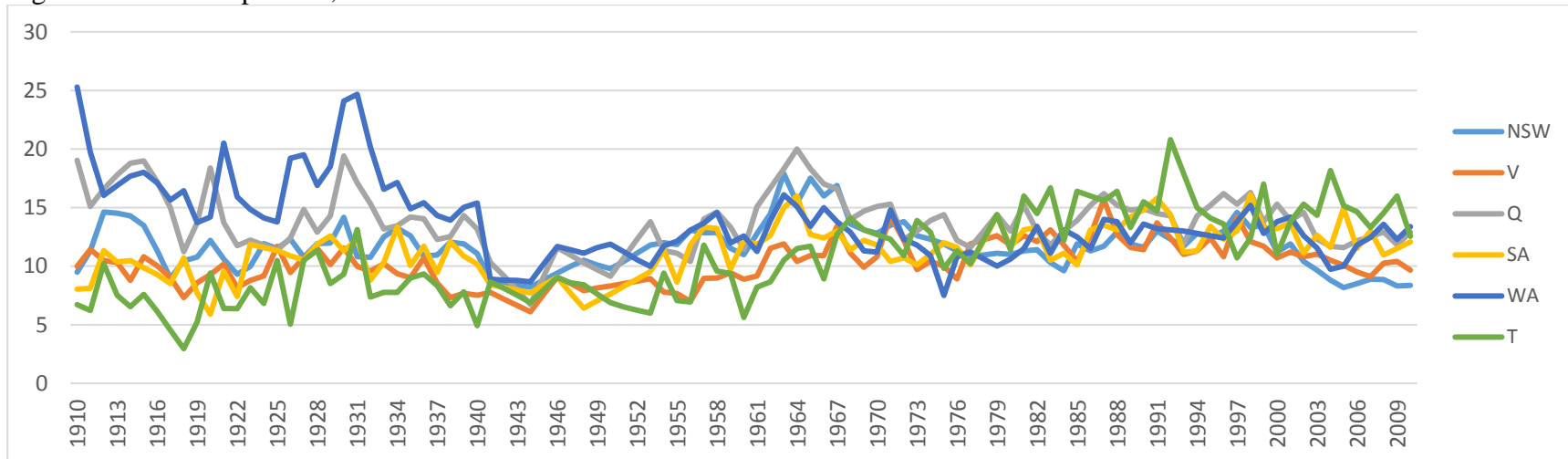


Figure 2i: Police per 100,000 inhabitants

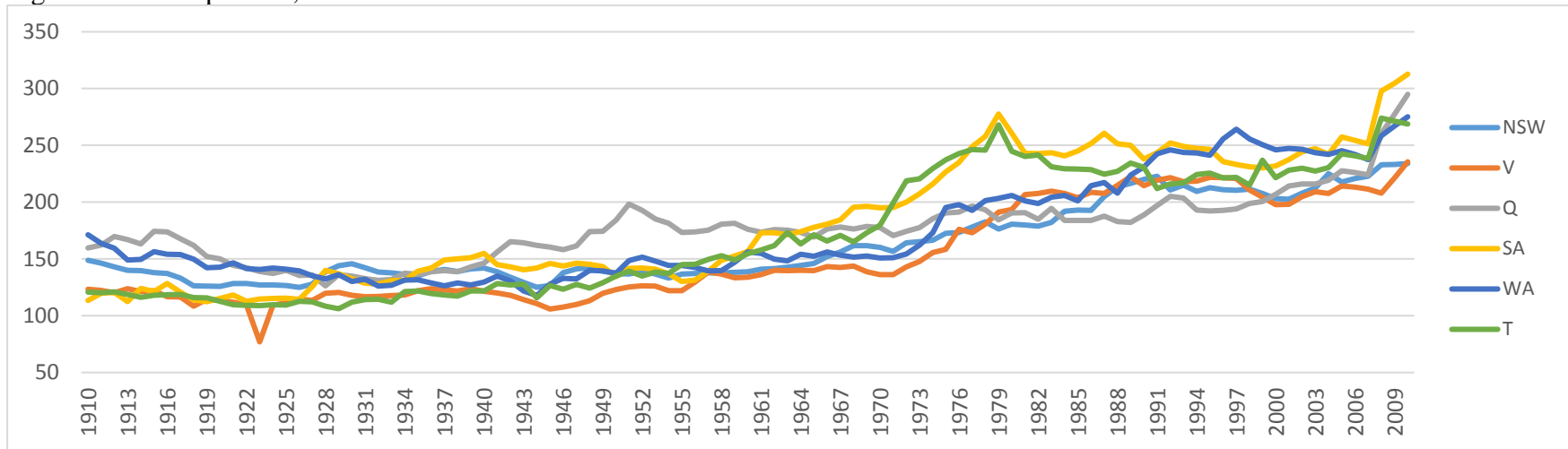


Figure 2j: Prisoners per 100,000 inhabitants

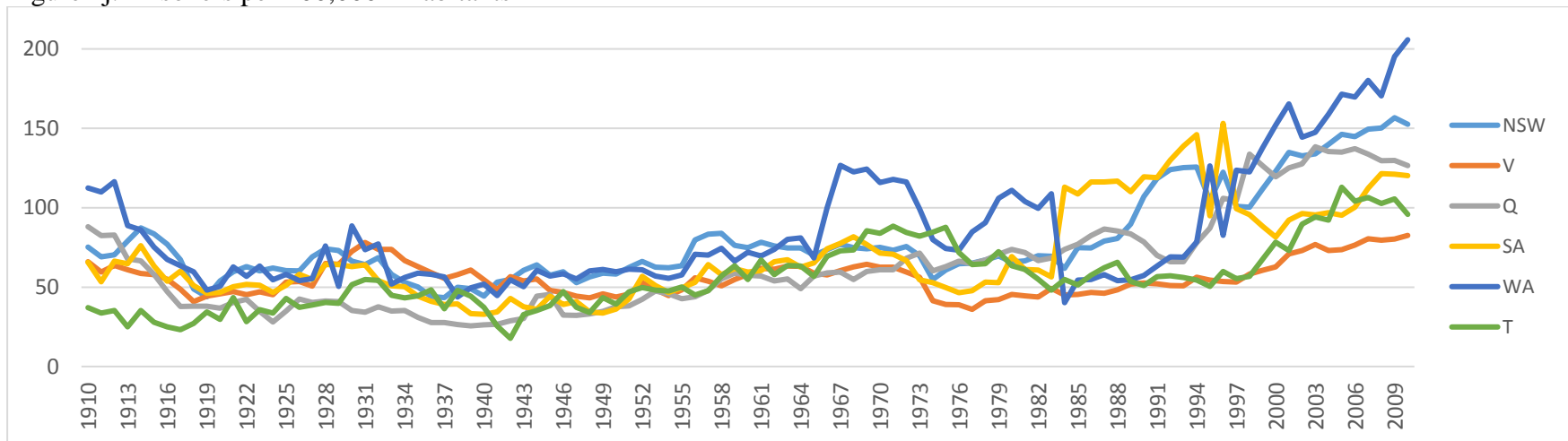


Figure 3a: Percentage of seats held by ALP in New South Wales

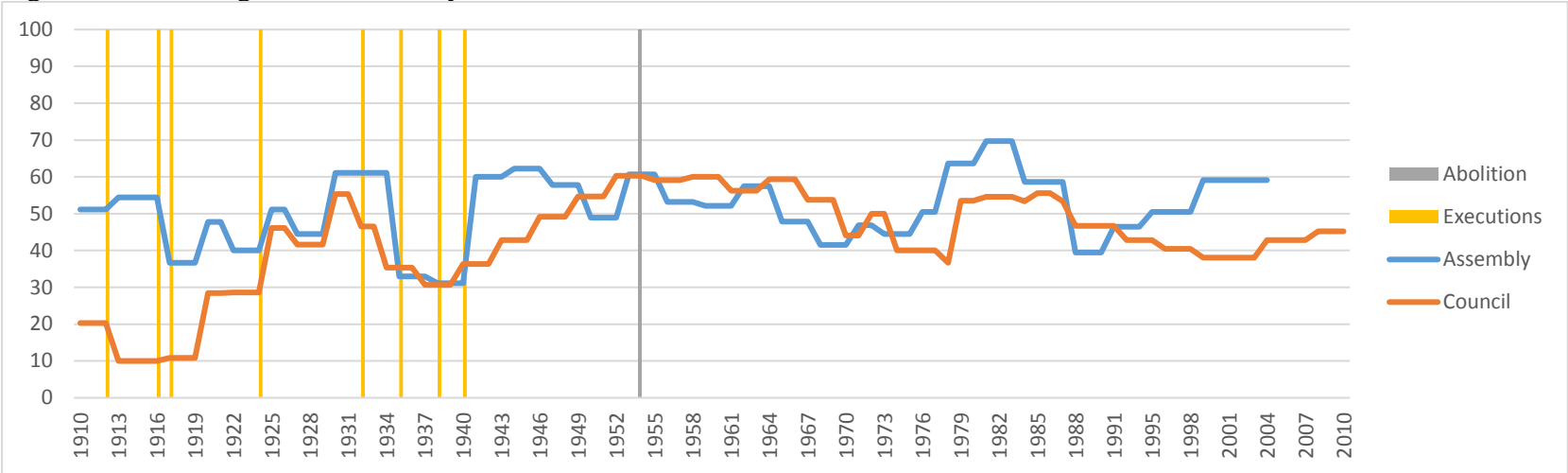


Figure 3b: Percentage of seats held by ALP in Victoria

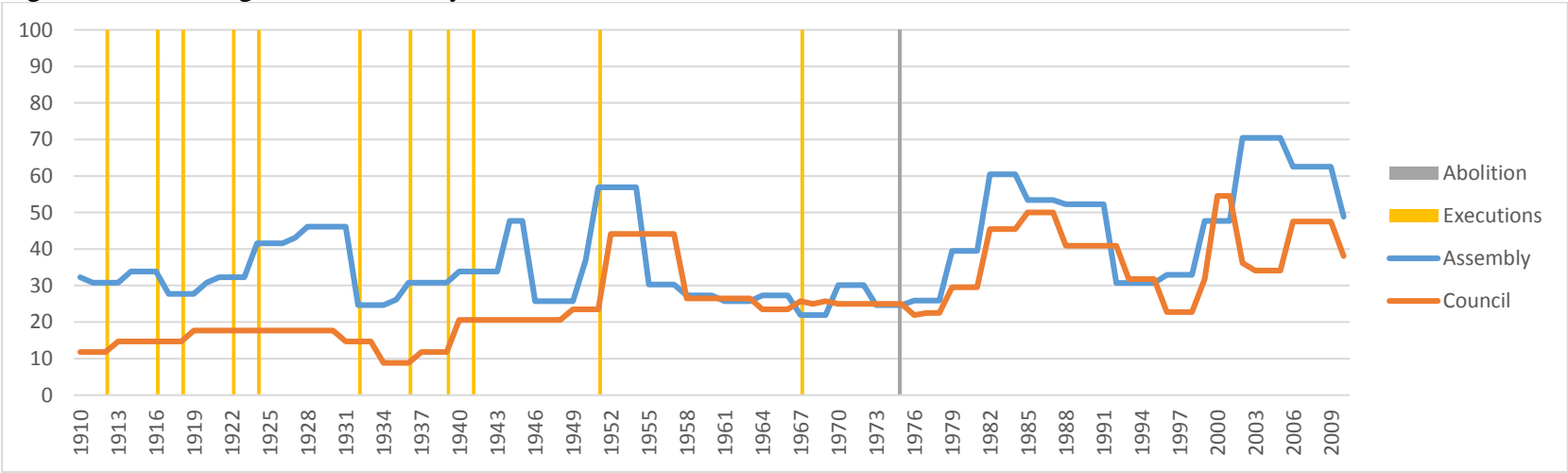


Figure 3c: Percentage of seats held by ALP in Queensland

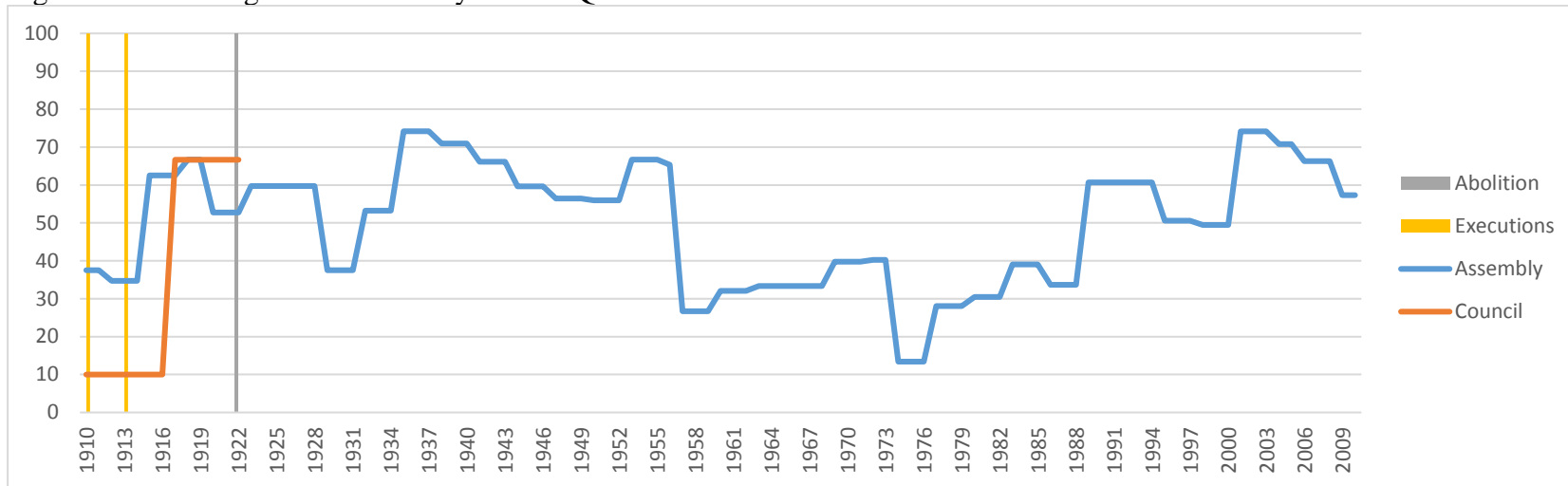


Figure 3d: Percentage of seats held by ALP in South Australia

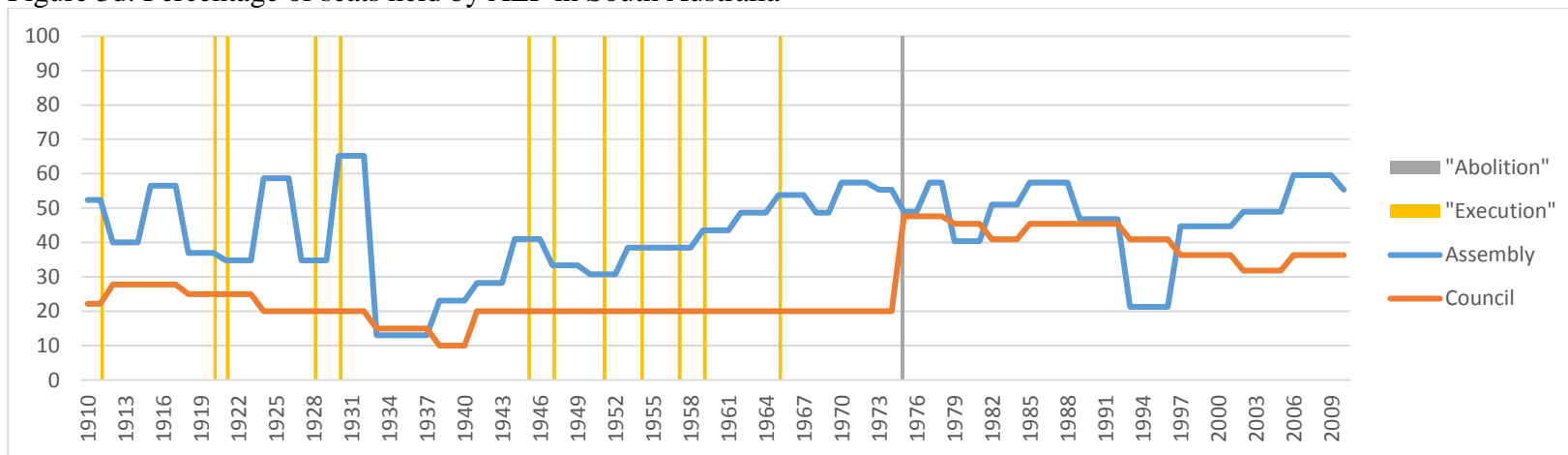


Figure 3e: Percentage of seats held by ALP in Western Australia

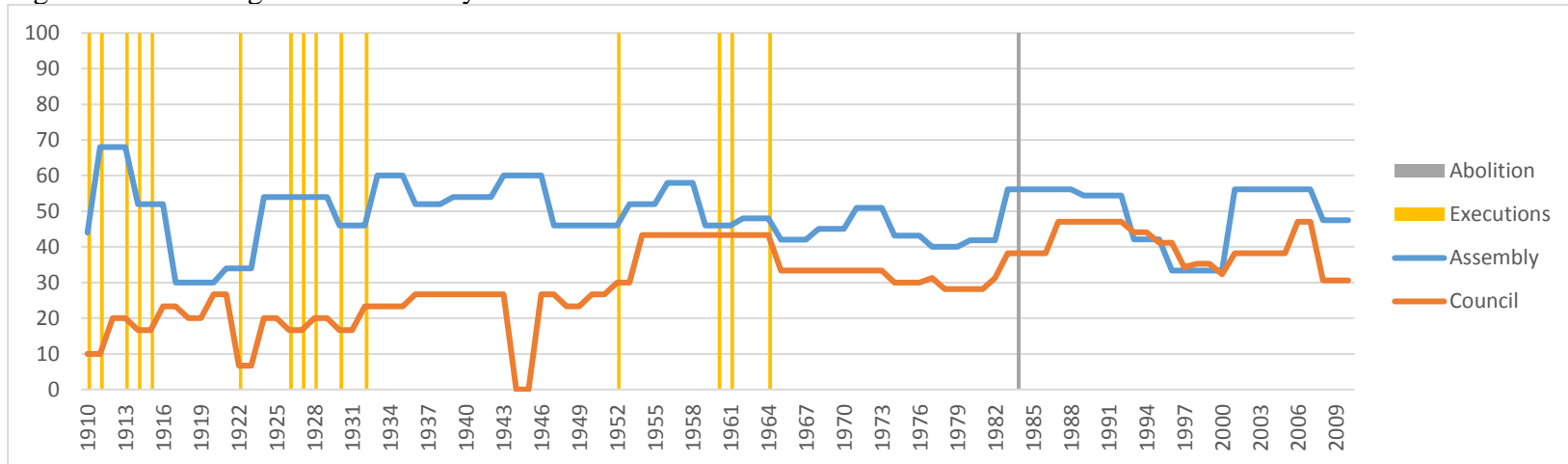
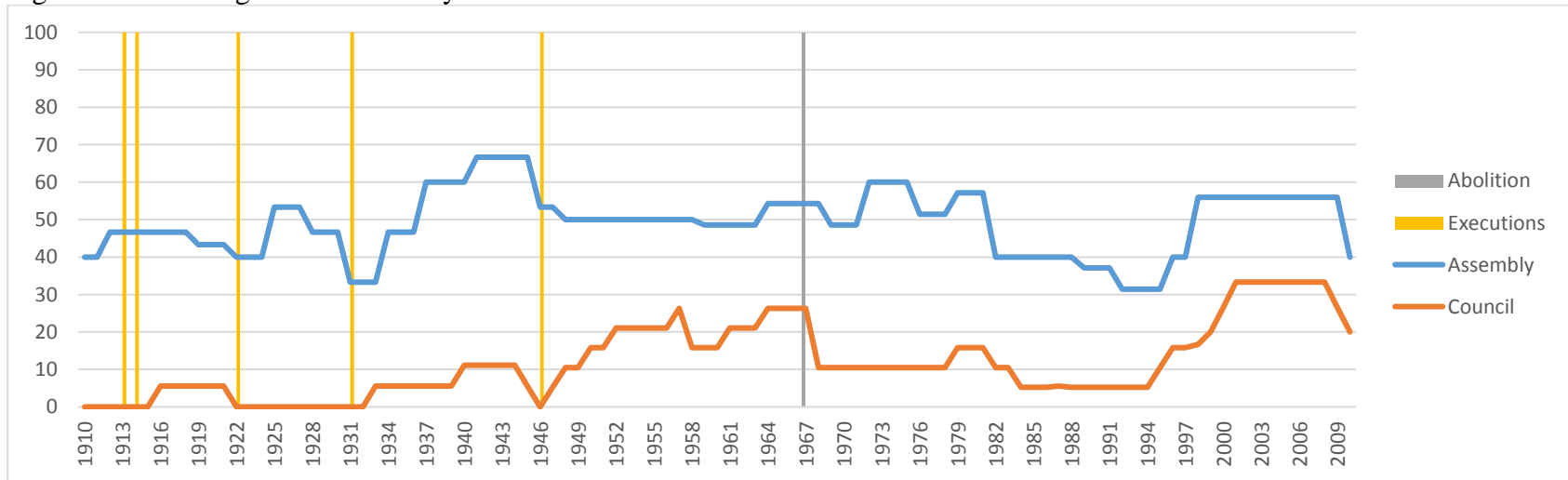


Figure 3f: Percentage of seats held by ALP in Tasmania



Appendix Table A1: OLS estimates of effect of lagged values on homicide rate, pre-1990

	(1)	(2)	(3)
Executions	-0.152 [0.235]	-0.183 [0.189]	-0.181 [0.112]
Young males			0.010 [0.974]
Indigenous			-0.096 [0.188]
Foreign born			-0.017 [0.14]
Rural dweller			0.024 [0.424]
Unemployment			-0.006 [0.624]
Police per 100k			0.004 [0.118]
Prisoners per 100k			-0.001 [0.482]
Marriages per 100k			-0.001 [0.002]***
Divorces per 100k			-0.001 [0.326]
Suicides per 100k			0.029 [0.082]*

(1) State fixed effects and indicator variables for each decade

(2) as in (1) with linear state-specific trends

(3) as in (2) with year-state varying observable factors

*, ** and *** significant at 10%, 5% and at 1% level.

Observations are weighted by state-year population.

All variables are lagged by one year.

p-values derived from Wild-Cluster Bootstrap in parenthesis.

Appendix Table A2: OLS estimates of effect of variable on homicide rate OLS estimates of effect of lagged values on homicide rate, pre-1990

	(1)	(2)	(3)
Abolition	0.116 [0.208]	0.157 [0.015]**	0.108 [0.309]
Young males			-0.003 [0.892]
Indigenous			-0.093 [0.314]
Foreign born			-0.022 [0.002]***
Rural dweller			0.026 [0.406]
Unemployment			-0.008 [0.484]
Police per 100k			0.003 [0.276]
Prisoners per 100k			0.000 [0.999]
Marriages per 100k			-0.001 [0.018]*
Divorces per 100k			-0.001 [0.062]*
Suicides per 100k			0.023 [0.201]

(1) State fixed effects and indicator variables for each decade

(2) as in (1) with linear state-specific trends

(3) as in (2) with year-state varying observable factors

*, ** and *** significant at 10%, 5% and at 1% level.

Observations are weighted by state-year population.

All variables are lagged by one year.

p-values derived from Wild-Cluster Bootstrap in parenthesis.