Socially Optimal Criminal Court Waiting Times: A Partial Investigation

Working Paper

Andrew Torre
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Andrew Torre●

School of Accounting, Economics and Finance,
Deakin University, 221 Burwood Highway,
Burwood, Victoria. Australia. 3125.
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Email: andt@deakin.edu.au
Fax: +61 3 92446283

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Abstract

Criminal courts provide a forum for conducting prosecutions with a guilty plea or a trial. Since queues are used as the basis for rationing scarce court facilities delays are inevitable, however courts are invariably criticised as being inefficient as a consequence. This focus on court delay defined as the time elapsing between the listing of the case in the court list and its final disposition is misleading. Rather, attention should be drawn to the considerably longer period between the initiation of proceedings and the conclusion of the case. In the case of defendants not granted bail, this pre-trial delay confers both costs and benefits on society and this observation can be used to ascertain socially optimal pre-trial waits.

Keywords: Socially optimal waits; Pre-trial delay; Court delay.
1 Introduction

Delays in the criminal justice system are invariably considered to be too long and the cause is usually attributed to the courts. One important public response over the last decade has been an emerging trend to evaluate court performance at national levels (Dakolias, 1999). For example, recently in Australia, courts management has emerged as a new field of public administration, and there has been a growing interest in determining how well the courts and the organisations that support them are performing. Attention is increasingly being focussed on what courts actually achieve with the means at their disposal (Witham, 1995).

In response to this challenge, the Australian Productivity Commission (2005) has commenced publication of an annual report on government services, which includes a lengthy section on the courts. This document has once again resurrected some of the debates about the alleged deficiencies in their operation. These include, whether their efficiency and performance can be measured, and if so how; allegedly long delays, the public and private cost of legal proceedings and the adequacy of the resources made available to the courts by governments.
The approach taken by the Commission in its review of the operation of the courts, in both the criminal and civil jurisdictions reflects the difficulties of evaluating organisations, which do not engage in market activities. Typically, in such instances the specification of unambiguous output and input measures is difficult. Elementary public choice theory suggests that the production of socially optimal amounts of public goods is unlikely because of difficulties in identifying the true willingness to pay of the community, and doubts about whether governments can supply them cost effectively.

Prior to a case being finally heard by a criminal court it has gone through a series of stages, as required by the rules of criminal procedure in the particular jurisdiction. In relation to civil litigation, Gravelle (1990) and Vereeck & Mühl (2000), make critical distinctions between, the different time periods, which culminate in a court trial; the negotiation time between parties before the plaintiff commences suit; the procedural time necessary to prepare the trial; the wait between the listing of the case and the start of the trial, and finally, the length of the trial. According to the authors only the third time period is genuine court delay since it depends on the performance of the courts. The former two are correlated with the behaviour of the parties themselves, while the last is driven by
the complexity of the case.¹ In the criminal jurisdiction, criminal justice waiting times or pre-trial delay as the term is used in this paper, will refer to the total time elapsing between the defendant’s imprisonment after being refused bail until final disposition of the case by a trial or guilty plea. As such it is different from and longer than court delay as usually defined, which is the time, elapsing from the listing of the case until the final disposition by a guilty plea or a trial.

Criminologists have increasingly documented the prevalence of high recidivism rates amongst offenders, which has led them to adopt the term criminal careers or career criminals; contemporary examples are Cohen, (1998) and Weatherburn, Hua & Moffatt, (2006). Consequently, one of the potentially substantial social benefits of criminal justice delay is the number of crimes prevented because incarcerated defendants who have been refused bail and are waiting on remand find that their criminal careers are interrupted. Incorporating this observation into a basic economic framework enables socially optimal criminal justice waiting times for defendants not granted bail to be theoretically identified and then empirically estimated.

¹ This definition of court delay is not utilised in subsequent research by Mühl. As an example see the author’s doctoral thesis (in German) (2003).
This is the objective of this paper. First, relevant economic, criminology and legal literature is reviewed in order to carefully place the issue in context. Second, these main ideas are brought together into a straightforward economic model in order to specify a socially optimal criminal justice wait. Third, the model is simulated using plausible parameter values and its sensitivity to changes in these is tested; and finally conclusions follow.

11 Literature Review

Three areas of literature are reviewed: court delay as a rationing device and the plea bargain as a response; causes of and solutions to court delay and the economic analysis of optimal penalties. In relation to the first two categories, the objective is to show that in the economic literature the substantial benefits of pre trial delay are ignored, and the third theme is used to formulate the basic theoretical model.

(a) Court Delay as a Rationing Device and the Plea Bargain

The police, criminal courts and prisons comprise the main institutions of the criminal justice system, and produce the intermediate outputs of clearance rates, conviction rates and punishments respectively, for
different offences. These intermediate outputs allegedly translate into a lower crime rate and consequent social losses from criminal activity, which is one way of characterising the final output of this industry. According to this view of the system, the only implicit if not explicit role of court delay is that at the intermediate stage, it functions as a costly rationing mechanism for scarce court time.

One early contribution to the theory of criminal court waiting times was Posner (1986) who used a demand and supply framework. Using the analogy of a highly competitive market where price and quantity are the outcome of the interplay between the forces of demand and supply, Posner argued that observed waiting times that elapse between the decision to prosecute a defendant and disposition of the case by a court, and changes in these waits over time, are also determined by the interaction between demand and supply factors. A book length analysis along similar lines of the American Federal courts with suggested reforms is to be found in Posner (1996).

No attempt is made at deriving the demand and supply functions formally from first principles, or in empirically estimating them. Rather, the model is used to make the observation that lengthening court lists in the American courts can be explained as the outcome of the demand for
judicial services growing faster than their supply over time. By implication, the aggregate demand curve for criminal court trials is a negatively sloped function in trial waiting times, and supply is fixed and independent of these waits. Subsequently, in discussing the main findings of the law and economics literature, Posner (1975, 1987) repeats his earlier assertion that a negative relationship exists between the size of the trial queue and the number of trials. More formal models in the American law and economics literature emphasise the institution of the plea bargain as the predominant mechanism to stabilise rising trial waits due to excess demand pressure (Landes, 1971; Rhodes, 1976; Adelstein, 1978; Grossman and Katz, 1983). Again, the implication is that court delay is an inefficient rationing mechanism imposing a net social cost.

Classic plea bargaining is a procedure used in the criminal courts whereby an accused admits guilt in exchange for some concession by the prosecution, or, perhaps by the judiciary (Bishop, 1989). In Australia, prosecution guidelines generally recognise that “charge bargaining” is an acceptable practice. This involves either a guilty plea in return for a charge of a lesser offence, or a dismissal of one or more charges, subject to the proviso that the charges to be proceeded with bear a reasonable relationship to the criminal conduct of the accused (Mack and Anleu, 1995; Bishop). Discussions occur as an informal, semi adversarial and
A cooperative process, with the objective of identifying the facts in a situation of uncertainty, which can be proved beyond reasonable doubt, and the charge, which most appropriately reflects the facts to the satisfaction of both the prosecution and defence, (Mack & Anleu). However, unlike in the USA, Australian prosecutors are unable to give any assurance as to the sentence a judge might impose (Bishop). The situation in the UK is moving closer to the US model following the recent decision by the English Court of Appeal in R v. Goodyear (2005). Defendants who intend pleading guilty can obtain from the judge a public and binding indication of the maximum sentence they will receive given the facts of the case. However, this declaration is not available in relation to the expected sentence following a trial.

Recently, reforms in some European countries have been introduced to the inquisitorial system with the objective of making the judge a more passive actor and relying more on the prosecutor and defence for fact finding and conducting proceedings (Langer, 2004). In response to increasing court delays, several jurisdictions have attempted to import into their criminal procedure the main elements of American plea bargaining, defined as a procedural mechanism through which the prosecution and defence can reach an agreement for the disposition of a case, subject to the approval of the court. Langer documents these efforts.
in four different countries, and the following brief discussion is based on his work.

The closest to and the most distant from the American model are the Argentine and French systems respectively, with Italy and Germany falling in between. Plea bargain systems can be distinguished from each other using the following criteria; the permitted scope of the bargain, (sentence and/or charges); the reason for its introduction; the existence of an upper bound on the penalty that can be agreed upon; the existence of a temporal constraint and whether the court must accept the agreement, or it retains the discretion to acquit the defendant.

In Argentina, there is scope for a sentence bargain only between the prosecutor and the defence, and it is subject to a maximum of six years imprisonment, and a temporal constraint. The objective is to reduce the case load of the trial courts. Even though the defendant must admit guilt, if a bargain is successfully consummated, the court is not bound by this decision, and can still acquit the accused. Under the French system, the objective of the plea bargain is to reduce the trial case load of the courts by diverting the defendant from the court system in the first place. The prosecutor takes on the role of a diversion officer who offers the offender a combination of a fine, community service or making reparation to the
victim. This must be accepted by the defendant as an admission of guilt, and a judge plays no role in the overall process.

Subject to the requirement that the reduction cannot be greater than one third of the regular sentence for the case, the Italian system allows the prosecutor and defence to bargain over the sentence only, and not the range of charges. Entering into a bargain is not equivalent to a guilty plea, and the judge makes the final decision whether to accept it or acquit. If the prosecutor rejects it, the judge can reconsider the matter. German plea bargains focus on confessions, which shorten but do not replace the trial. They can be initiated by the defence, judge or prosecutor and can arise either during trial preparation or the trial, taking the form of an offer to confess at trial in exchange for a guaranteed sentence or dropping of a number of charges.

Plea bargaining in its different manifestations is therefore seen as being an important mechanism for dealing with court delays. Many commentators equate quality of court performance with waiting times, making the link between the two as follows. Increasing delays signal increasing inefficiency, and conversely, decreases are thought to show the opposite. Not surprisingly, the Productivity Commission reinforces these views, given that one of the stated objectives of court administration
adopted by the steering committee is the processing of matters in an expeditious and timely manner. Dakolias documents average waiting times for the resolution of civil cases in a sample of eleven developing and developed countries. An equivalent published survey of criminal cases is non-existent; however, a broad indication of the extent of waiting times can be gleaned from published statistics and other studies.

In Australia, in the period 1999-2000 the median wait in the higher criminal courts from the initiation of the case until its finalisation was 17.40 weeks for a guilty plea; 41.30 weeks for a trial followed by an acquittal and 49.30 weeks for a trial followed by a conviction (ABS, 2001). There was considerable variation between the seven Australian states as shown in part A of table 1 below.
TABLE 1

Waiting Times in the Criminal Courts: Pre-trial delay


<table>
<thead>
<tr>
<th>Plea</th>
<th>NSW</th>
<th>VIC</th>
<th>QLD</th>
<th>SA</th>
<th>WA</th>
<th>TAS</th>
<th>NT</th>
<th>ACT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gp</td>
<td>27</td>
<td>18.6</td>
<td>17.9</td>
<td>17</td>
<td>11.7</td>
<td>10.8</td>
<td>15.10</td>
<td>19.30</td>
</tr>
<tr>
<td>NGp</td>
<td>46.2</td>
<td>42.4</td>
<td>29.4</td>
<td>27.8</td>
<td>63.4</td>
<td>35.9</td>
<td>52.90</td>
<td>50.40</td>
</tr>
<tr>
<td>(acquitted)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NGp</td>
<td>67.4</td>
<td>52.1</td>
<td>32.7</td>
<td>29.8</td>
<td>64.6</td>
<td>32.7</td>
<td>64.40</td>
<td>51.70</td>
</tr>
<tr>
<td>(convicted)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data Sources: Australian Bureau of Statistics. Higher Criminal Courts Australia. Catalogue number: 4513.0

The economics and statistics division of the UK Home Office publishes limited information on court waiting times. In the Crown Courts in England & Wales, waiting time is defined as the period
between the date that a magistrate commits the case to the Crown Court (committal date) until the date of a defendant’s first main hearing in that court. The mean wait between April 2000 and March 2001 was 16.64 weeks for not on bail, and 9.37 weeks for on bail defendants, with the overall mean being 26.01 weeks.\footnote{This information was provided to the author in the form of an email from the UK Home Office.} In the USA a relatively recent study found that in 2000, in the 75 largest counties, the median wait in weeks for felony cases from arrest until final adjudication of the case was 13 weeks for not on bail, and 21 weeks for on bail defendants (US Department of Justice, 2000). In continental Europe there is a documented lack of specific studies and empirical research on court delay (Fabri & Langbroek, 2003).

\textit{(b) Causes of and Solutions for Court Delay}

Earlier and mainly descriptive overseas literature, views court delays as generally being harmful, and documents the possible causes of and remedies for these. It is conjectured that the problem is caused by poorly managed and understaffed courts confronting large caseloads, interacting with self serving actors in the litigation process adopting deliberate delaying strategies. Examples are to be found in (Rosenberg, 1965; Carrington, 1969; Saari, 1967; Nimmer, 1978).
An example of a contemporary and representative examination of this issue is Weatherburn & Baker (2000). They find that increased delays in the NSW District Court cannot be explained by an increase in the demand for criminal court time, or a reduction in criminal court capacity. Rather, the cause is inefficiencies in trial case processing. Less than 40% of cases listed for trial actually proceed on the date that they are first listed, because the accused switches the final plea to guilty; an adjournment is granted or the matter itself is not reached.

An important reason why plea changes occur on the day of the trial is the lack of a clear sentence benefit to the defendant. Most trial adjournments are sought by defence representatives due to problems with legal representation and the need for further preparation of the case. A number of policies for expediting the flow of trial matters through the court are suggested. These include re-listing matters, which are not reached or adjourned with a minimum of delay; mechanisms to ensure early consultation between defence and Crown on the scope for a guilty plea; continuity of senior defence and Crown representatives from case commencement to finalisation; greater and consistent sentence discounts for early pleas of guilty; more thorough checking by the Crown of witness availability, and the court of readiness to proceed to trial, and re-
listing of adjourned matters before the judge who granted the adjournment.

As a response to these problems, court administrators in different jurisdictions are increasingly adopting time standards for the disposal of different types of cases. For example, in the District Court of NSW in Australia, it is expected that 90% of criminal trials should commence within 112 days or 0.31 years of committal for trial. In 2000, the actual delay far exceeded this benchmark, which prompted the Weatherburn & Baker study by the NSW Bureau of Crime Statistics and Research.

(c) The Economic Model of Crime and Optimal Penalties

Becker (1968) in his now classic paper on the economic approach to crime and punishment argued that society will maximise its welfare by minimising the following social loss from crime function:

\[ L = H(O) - G(O) + C(p,O) + b p f O \quad (1) \]

i.e. The social loss from crime is equal to the social harm from minus the benefits of the offence to the defendant plus the social cost of enforcement and punishment. In (1) \( p \) is the defendant’s probability of
conviction; \( f \) is the fine or penalty and \( b \) is a coefficient whose value is zero if a fine rather than incarceration is used to punish the defendant. Its value is zero because if the fine is set equal to the harm caused by the crime, the monetary value of the penalty will exactly compensate society at a social cost of zero. In effect, it is a transfer from the offender to society. However, if a prison term is used to punish the defendant \( b \) will be positive, and there will be a net cost to society because society’s incarceration costs will exceed the prisoner’s private costs of foregone income and the disutility of jail.

Expression (1) can be minimised by providing potential offenders with the right incentives to only commit an offence, if the private gains exceed the damage and enforcement costs to society. This is achieved by setting ex ante the expected penalty equal to the marginal damage or harm cost + the marginal enforcement cost. As would be expected, the Becker analysis provoked a critical literature from both economists and non economists. Two representative examples of the latter are Dau-Schmidt (1983) and Coffee (1980).

The essence of their argument is as follows. The function of the criminal law is to punish the offender for morally culpable conduct, rather compensate society for some harm. A fundamental manifestation of this
is the law and practice of sentencing adopted by the legislature and the courts, which contradicts the predictions of the Becker formulation in a number of ways. First, punishments do not reflect the social cost of the offence because wealthier persons may be asked to pay a higher fine than poorer ones for the same offence. Second, recidivists are given higher sentences than first offenders. Third, society does not regard fines and jail sentences to be perfect substitutes. On the contrary, the former are a less severe form of sanction appropriate for offenders whose moral culpability is lower. Fourth, certainty of punishment is more important in deterring crime than severity, in contrast to economic analysis where it is more costly to increase certainty than severity.

Dau-Schmidt attempts to recast Becker’s economic analysis in the framework of contemporary legal theory, and in so doing modifies Becker’s social loss function. First, the term \( G(O) \) should be excluded from (1) because society places no value on offender gains from an offence. Second, the \( b \) coefficient cannot be set equal to zero by using a fine rather than imprisonment. Rather, \( b \) now enters the social welfare function in two ways. The number of offences is a function of \( b \) because imprisonment reduces offences, and the social loss from crime function should reflect the retributive satisfaction society derives from incarcerating offenders. Consequently (1) can be rewritten as:
L = H(O(b,p,f,c,h) + C(O(b,p,f,c,h)p) + b p f O (b,p,f,c,h) - R(b, p,f) \ (2)

where c and h are the benefits from criminal and honest activity, b is the incarceration period and R is the satisfaction from retribution, and the other terms have the same meaning as in (1).

111. Theoretical Model

(i) The Marginal Social Cost of Pre-trial Delay

As the previous extensive literature review reveals, it is implicitly assumed that pre-trial delay is invariably costly. Samuels (1991) provides a useful summary of the objections. Delay exacerbates the mental, social and financial burdens already borne by accused persons, who are presumed innocent until proven guilty; it may reduce the defendant’s probability of conviction due to deterioration in the quality of evidence; it encourages guilty pleas and causes the erosion of public confidence in the judicial system, encouraging self help as a remedy to address perceived wrongs.
Utilising the main ideas from the literature, it is possible to formulate a marginal social cost and expected marginal social benefits of pre-trial delay function. The marginal social cost of pre-trial delay will be a function of the defendant’s wait on remand until the final court case \( T \); the costs of pre-trial incarceration \( C \), (defendant’s foregone income and psychic costs + victim sufferings + social cost of incarceration) and the social discount rate \( r \).

\[
\text{i.e. } \text{MSC} = (T,C,r) \quad (3A)
\]

Expression (3A) can be simulated using the formula for the present value of an annuity. Following Copeland & Weston (1988) the following expression is used:

\[
\text{MSC} = C \left[ \frac{1 - (1+r)^{-T}}{r} \right] \quad (3B)
\]

Expression (3B), which is illustrated in figure 1, will always be an increasing and concave function in delay \( T \) for any given value of \( C \) and \( r \), and shows the additional and increasing social cost of each unit of pre-trial delay.
(ii) Expected Marginal Social Benefits of Pre-trial Delay

The great majority of defendants refused bail are not once off offenders but recidivists, therefore, the main expected marginal social benefit of incarceration prior to the determination of guilt is the expected saved social losses from the commission of further offences; victim and wider
society suffering, and saved police, court and corrections costs. The benefits are expected because they depend on the offender being apprehended and then refused bail by the court, i.e.:

\[
\text{EMSB} = (T, P_A, P_N, r, \beta, V, J) \quad (4A)
\]

In (4A) EMSB = expected marginal social benefits of pre-trial delay; 
T = the defendant’s wait on remand; \( P_A \) = the defendant’s probability of apprehension; \( P_N \) = the defendant’s probability of not receiving bail; \( r \) = the social discount rate; \( V \) = saved social losses attributable to the offence; \( J \) = saved criminal justice system costs and \( \beta \) = the number of offences the defendant would be expected to commit if granted bail. An appropriate functional form for (4A), adapted from Copeland & Weston is (4B):

\[
\text{EMSB} = \left\{ (1+r)^T P_A P_N \beta (V + J) \right\} \quad (4B)
\]

Expression (4B) illustrated in figure 2, will always be a decreasing and convex function in delay T for any given value of \( P_A, P_N, \beta, V, J \) and \( r \), and shows the additional and diminishing expected social benefit of each unit of pre-trial delay.
If the EMSB and MSC curves in figures 1 and 2 are brought together on to the one diagram as in figure 3 below, it is possible to theoretically specify the socially optimal pre-trial delay $T^*$ and measure the social welfare implications of waits, which deviate from $T^*$. 
The social cost of pre-trial waits longer than $T^*$ is the excess of marginal social cost over marginal social benefits and conversely for waits shorter than $T^*$.

IV. Empirical Analysis
(a) Primary Simulation

The case study chosen to illustrate the methodology empirically is the crime of burglary in NSW in 2004 because estimates of difficult to obtain parameters in the model are readily available in relation to this offence from studies conducted by the criminologists, Weatherburn et. al. (2006) and Stevenson et. al. (2001). In the first piece of work, the authors study the impact of imprisonment on the burglary rate in NSW, and after reviewing the existing literature and then conducting their own research, conclude that the best estimate of the mean number of burglaries committed each year by an offender (juvenile and adult) in NSW ($\beta$) is 38.1 when free. The probability of being apprehended and convicted for a burglary in NSW in 2004 is $0.040 \times 0.76 = 0.0304$; while the probability of a convicted burglar receiving a prison sentence is 0.44 with the average minimum sentence imposed on persons convicted of burglary being 1.02 years. The average time offenders will remain involved in crime is 4.1 years, which is the average residual criminal career. This imprisonment rate keeps the number of burglaries lower than it would otherwise be, or prevents about 44,700 domestic and commercial burglaries. The second study is of value in this exercise because it provides an estimate of the
median value of weekly earnings for burglars in NSW at $2,000 yielding an annual income of $104,000.³

The social loss from the offence is equivalent to its social cost, and the Australian Institute of Criminology (2003) has estimated the victim and other external cost components for burglary to be on average $2,000 for a residential and $4,500 for a non-residential burglary, while the social cost of incarceration is estimated at $70,000 per annum based on the recurrent cost of keeping someone in jail of $189 per day in Australia in NSW in 2005 (Weatherburn et. al. 2006).

The initial values of the variables used in the primary simulation exercise are as follows. Footnotes are used to assist in interpreting the results and provide further information about the methodology.

³ On the assumption that if offenders directed their risk taking entrepreneurial skills toward legal activity, they could earn an equivalent sum, this figure is also a reasonable estimate of the offender’s foregone legal income while being held on remand.
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Input Values</th>
<th>Median</th>
<th>Min</th>
<th>Max</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>N (170,000, 30,000)</td>
<td>162,000</td>
<td>110,500</td>
<td>210,400</td>
<td>30</td>
</tr>
<tr>
<td>r</td>
<td>0.06</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PA</td>
<td>0.04</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>PN</td>
<td>0.66</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>$\beta$</td>
<td>Poisson (38)</td>
<td>37.50</td>
<td>27.00</td>
<td>47.00</td>
<td></td>
</tr>
</tbody>
</table>

30***

| V + J     | N (85,000, 10,000) | 85,110 | 60,590 | 103,800 | 30** |

---

4 N is the sample size for each variable.
5 C measures four different variables, the burglar’s foregone income during incarceration, victim and community suffering due to the case being delayed before final resolution by the court and the cost of pre-trial incarceration. As noted in the text estimates of the first and last variables are available, however, these are non-existent for the second and third. In the NSW District Court in 2004, the actual median wait for not on bail defendants charged with burglary was 0.71 years (NSW Bureau of Crime Statistics, 2004). Consequently it is plausibly assumed that C is a normally distributed random variable with a mean value of $170,000 and a standard deviation of $30,000. This implies a range of $80,000 to $260,000 for this variable. For the simulation exercise 30 values were sampled randomly.
6 These values are derived from the distribution of the 30 different random values of C.
7 Number of offences committed if granted bail is distributed as a Poisson distribution.

8 Saved social losses and criminal justice system costs are assumed to be a normally distributed random variable with a mean value of $85,000 and a standard deviation of $10,000, which implies a range of $55,000 to $115,000 for this variable. For the simulation exercise 30 values were randomly sampled.
9 These values are derived from the distribution of the 30 different random values of $V + J$. 
A statistical program was utilised to search for values of $T$, which equated the EMSB to the MSC of pre trial delay, for each combination of the variables. Given that there are three variables and 30 values of each, the maximum number of combinations is $30^3 = 27,000$. Each of these 27,000 combinations was substituted into expressions (4A) and (4B) and for each combination, the optimal $T^*$ and corresponding values of EMSB (Ben) and MSC (MC) were computed. The distribution of values arising from this exercise is presented below:

<table>
<thead>
<tr>
<th>T*(yrs)</th>
<th>Min</th>
<th>Q1</th>
<th>Med</th>
<th>Mean</th>
<th>Q3</th>
<th>Max</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.20</td>
<td>0.44</td>
<td>0.52</td>
<td>0.53</td>
<td>0.62</td>
<td>1.13</td>
<td>(0.32, 0.81)</td>
</tr>
</tbody>
</table>

| Ben/MC  | ($)  | 45,930  | 73,680 | 87,190 | 86,880 | 98,820 | 136,700 |

Since the distribution of values is slightly skewed, the median values will be adopted as best representing the true outcomes. According to the NSW Bureau of Crime Statistics (2004), the actual median wait for not on bail defendants whose burglary cases were completed in the NSW District Court in 2004 was 0.71 yrs, which means the actual exceeds the simulated median optimum by about two months.
Since simulated $T^* < \text{actual } T$ (i.e. MSC > EMSB) as shown in figure 4, there is an implied social cost since pre-trial waits for burglary are slightly too long. The distribution of these excess cost values is shown below:

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Q1</th>
<th>Med</th>
<th>Mean</th>
<th>Q3</th>
<th>Max</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>EMSB, MSC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$87,190$</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 4
As noted in the literature review, economists and criminologists disagree over the most cost-effective way of deterring a given amount of crime, either by increasing certainty or severity of punishment. The latter variable does not enter the analysis in this case since the focus is on pre-trial delay before the determination of guilt or innocence. However, the former does and like the bail decision is an important variable, which society can manipulate. Consequently it is a useful exercise to test the sensitivity of the primary results to changes in $P_A$ and $P_N$.\(^\text{10}\)

Increases in $P_A$ and $P_N$ will shift the EMSB curve out to the right and conversely for decreases. Simulating the model at different values of these parameters enables estimates of the socially optimal pre-trial waits at which the increase or decrease in net social surplus will be maximised. This argument is partially illustrated in figure 5 below for an outward shift of the EMSB curve. The initial equilibrium pre-trial wait is $T^*$ where $\text{EMSB} = \text{MSC} (\$)$ and the net social surplus per unit of time is $\Delta + $\(^\text{10} \) Changing the social discount rate has very little impact on the results. This follows from the functional form adopted for the analysis.
B. Following either an increase in $P_A$ or $P_N$ the EMSB curve shifts out to the right to EMSB* and society will be better off by the shaded area in figure 5. The pre-trial wait (new social optimum), which enables society to realise this entire additional surplus is $T_N$.\footnote{The simulations do not identify the dollar value of the entire additional surplus.}
(i)  Increase $P_A$ from 0.04 to 0.06

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
<th>Q1</th>
<th>Med</th>
<th>Mean</th>
<th>Q3</th>
<th>Max</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>T*(yrs).</td>
<td>0.30</td>
<td>0.66</td>
<td>0.78</td>
<td>0.79</td>
<td>0.92</td>
<td>1.68</td>
<td>(0.47, 1.20)</td>
</tr>
<tr>
<td>Ben/MC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>($)</td>
<td>68,440; 109,000; 128,500; 128,100; 145,300; 201,800</td>
<td></td>
<td></td>
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</tbody>
</table>

(ii)  Increase $P_A$ from 0.04 to 0.7

<table>
<thead>
<tr>
<th></th>
<th>Min</th>
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<th>Med</th>
<th>Mean</th>
<th>Q3</th>
<th>Max</th>
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</tr>
</thead>
<tbody>
<tr>
<td>T*(yrs).</td>
<td>3.25</td>
<td>6.40</td>
<td>7.43</td>
<td>7.49</td>
<td>8.51</td>
<td>13.53</td>
<td>(4.78, 10.53)</td>
</tr>
<tr>
<td>Ben/MC</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>($)</td>
<td>0.6m; 0.89m 1,03m 1m 1.1m 1.52m</td>
<td></td>
<td></td>
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</table>

(iii)  Decrease $P_A$ from 0.04 to 0.02

<table>
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<th>Mean</th>
<th>Q3</th>
<th>Max</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>T*(yrs).</td>
<td>0.10</td>
<td>0.22</td>
<td>0.26</td>
<td>0.27</td>
<td>0.31</td>
<td>0.58</td>
<td>(0.16, 0.41)</td>
</tr>
<tr>
<td>Ben/MC</td>
<td></td>
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</tbody>
</table>
(iv) *Increase $P_N$ from 0.66 to 0.80*

<table>
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<th>Med</th>
<th>Mean</th>
<th>Q3</th>
<th>Max</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.25</td>
<td>0.54</td>
<td>0.63</td>
<td>0.65</td>
<td>0.75</td>
<td>1.37</td>
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</tbody>
</table>

Ben/MC

($) 23,220; 37,710; 44,450; 44,370; 50,480; 70,510

(v) *Decrease $P_N$ from 0.66 to 0.40*

<table>
<thead>
<tr>
<th>Min</th>
<th>Q1</th>
<th>Med</th>
<th>Mean</th>
<th>Q3</th>
<th>Max</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.12</td>
<td>0.27</td>
<td>0.32</td>
<td>0.33</td>
<td>0.38</td>
<td>0.70</td>
</tr>
</tbody>
</table>

Ben/MC

($) 55,710; 88,850; 104,800; 104,500; 118,700; 164,700

(vi) *Increase $r$ from 0.06 to 0.10*

<table>
<thead>
<tr>
<th>Min</th>
<th>Q1</th>
<th>Med</th>
<th>Mean</th>
<th>Q3</th>
<th>Max</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0.21</td>
<td>0.45</td>
<td>0.53</td>
<td>0.54</td>
<td>0.63</td>
<td>1.13</td>
</tr>
</tbody>
</table>

($) 28,120; 45,310; 53,720; 53,500; 60,880; 84,420
The most striking outcome of the comparative statics exercise is the different impacts of the apprehension and not on bail variables. Increasing the probability of apprehension appears to have a considerably much greater impact on optimal waits and social benefits than increasing the number of burglary defendants who are not granted bail. For example the simulations show that increasing $P_A$ to 0.7 increases the optimal pre-trial detention period to approximately 7 years, which is high given the relatively low average sentence of imprisonment given to convicted burglars by the courts of approximately 19.2 months in 2006 (NSW Bureau of Crime Statistics and Research, 2007).

V Conclusions and Future Directions

Pre trial delay, which is longer than the usual definition of court delay, is usually seen as being deleterious, particularly for defendants not granted bail, however this analysis has taken a different approach. Building upon the work of criminologists, dollar estimates of the social benefits and costs of pre-trial incarceration for recidivist burglars have been provided, and given current resource commitments, police efforts
and bail decisions by magistrates in NSW, the estimated socially optimal pre-trial wait is relatively close to the actual in 2004. Furthermore, this optimum is relatively more sensitive to changes in the probability of apprehension, than to the probability of receiving bail for a burglary offence. Examining the issue of court delay in this framework should redirect the focus away from always associating longer court waits with worsening court performance and increasing social costs toward an appreciation of the potentially wider community benefits of criminal justice system delay.

Given the constant barrage of complaints about excessive waits and the need for more funding, this exercise has some social value, as there is little if any empirical evidence available to support these claims. While the specification of the theoretically social optimum in this analysis is fairly obvious, the empirics are not as straightforward to handle. The methodology adopted here for the latter also provides an alternative non-econometric way for conducting criminal justice system cost benefit studies.

The tentative work reported here suggests the NSW criminal justice system is at present functioning reasonably efficiently in processing and incarcerating professional burglary offenders with many prior convictions.
prior to their determination of guilt by the court. Further theoretical and empirical work along these lines is required to construct and estimate a broader model of socially optimal criminal court waits applicable to all defendants in all criminal cases irrespective of their bail status.
References


R v Goodyear. (2005), 2 Cr.- App.-R.-20


U.S. Department of Justice, 2000, *Felony Defendants in Large Urban Counties_*, Bureau of Justice Statistics.


