Proportional Justice versus Efficient Deterrence in Hong Kong Criminal Sentencing

Introduction

Legal scholars suggest that the criminal justice system has several aims: retribution, reformation, incapacitation, individual deterrence, and general deterrence.[1] These aims can be thought of as combining considerations of justice relating to past actions, and considerations of deterrence of crime by control of future criminal behavior. Without a balance between these two broad goals, criminals who have committed minor crimes could be deterred by severe punishments but this would offend notions of proportional justice. On the other hand, criminal penalties that are in strict proportion to the severity of the crime may control behavior too little or too much.[2]

Even if just sentences that provide adequate behavioral control could be agreed upon, a conflict may still arise because the resources for controlling criminals and producing justice are limited. How much control of behavior is consistent with justice? And is this combination also consistent with the resources available for police monitoring, incarceration, parole, and other necessary ingredients of the criminal justice system? Wealthy societies may be prepared to spend more on rehabilitation than poor societies, but this means wealthy societies will have different configurations of justice and control, even if notions of justice were similar across societies of different wealth.

To address these issues in the context of Hong Kong's criminal justice system, we extend recent work done on the United States criminal justice system by Waldfogel.[3] Waldfogel has developed a formal methodology which can be used to infer how criminal sentences control behavior. Using Waldfogel's framework, we need not be concerned with defining 'justice.' Instead, proportional justice is taken to mean that criminal sentences are increased in proportion to the harm done, abstracting from the deterrent effects of sen-

1 B W Ewart and D Pennington, 'Reasons for Sentence: An Empirical Investigation' [1988] Crim LR 584, report reasons stated for sentences in magistrates' and Crown courts in the United Kingdom. In the ninety cases examined in their study, retribution was given as the reason in 33 cases and individual deterrence was given in 28 cases. Reformation was given as the reason in 22 cases, and incapacitation and general deterrence in six cases each. (The sum of these aims exceeds ninety since three offenders were told of more than one aim.) Individual deterrence involves the particular criminal and general deterrence extends the notion to the deterrence of future crimes by all potential criminals. On the American criminal justice system, F Easterbrook, 'Criminal Procedure as a Market System' (1983) 12 Journal of Legal Studies 289 argues that the system leads to penalties which maximise deterrence.

2 For example, compare the crimes and punishments reported in a recent issue (27 August 1994) of the South China Morning Post: on page 2 a convicted murderer/rapist was sentenced to 8.5 years while on page 5 a convicted taxi robber was sentenced to sixteen years in jail. One can only speculate on the theory of criminal justice with which these sentences are consistent.

3 J Waldfogel, 'Criminal Sentences as Endogenous Taxes: Are they Just or Efficient?' (1991) Working paper, Yale University; J Waldfogel, 'Criminal Sentences as Endogenous Taxes: Are they Just or Efficient?' (1993) 36 Journal of Law and Economics 139.

tences. In his study, Waldfogel concluded that US criminal sentencing more closely approximates a system of efficient deterrence than a system of proportional justice.

In the following section we briefly discuss the alternative methods for determining criminal sentences, namely proportional justice and efficient deterrence. We then examine the criminal justice system of Hong Kong using the methodology developed by Waldfogel. Data from sentencing in the Hong Kong criminal courts and the tariff schedule[4] cited by judges are examined to determine the extent to which either actual sentences, or tariff sentences, imply that the criminal sentences in Hong Kong can be better described as being consistent with efficient behavior control or proportional justice. Our empirical results show that criminal sentences in Hong Kong are consistent with neither proportional justice nor optimal deterrence. In fact, current sentences lie between these two alternatives, and sentences would have to be made more proportional to harm in order for efficiency to obtain.

Justice or efficiency?

Proportional justice

Many legal scholars consider that justice means that sentences should reflect proportionality in the sense that crimes which are twice as bad should be punished twice as severely. This could be characterised as a just or moral approach to criminal sentencing. For example, Ashworth[5] argues for a system of 'just deserts' where proportionality plays the major role in determining sentences; in this system, deterrence is relegated to a minor and passing role. In a series of papers and books, Von Hirsch and others have argued strenuously for basing criminal sentences on proportionality rather than deterrence.[6] Their argument includes the view that just deserts or proportionally just sentencing is based on particular agreed facts of particular crimes, but deterrence-based sentencing implies sentencing one person for speculative and only potential acts of others.

4 'Tariff' schedule sentences in Hong Kong (and other British courts) refer to the judicially agreed starting point-sentences for particular crimes. For tariffs followed in Hong Kong, see, for example, for burglary: *R v Tang Ping* (1988) CA, Crim App No 93 of 1988, as confirmed in *R v Wong Man* (1992) CA, Crim App No 372 of 1992; for robbery: *R v Tran Van Anh* (1993) 2 HKCLR 122; for rape: *R v Keith Billam* (1986) 82 Cr App R 347 and *R v Wong Man-hung* (1994) CA, Crim App No 480 of 1992; and for manslaughter: *R v Cheung Siu-fai* (1993) CA, Crim App No 379 of 1992 and *R v Lee Kau-keung* (1992) CA, Crim App No 506 of 1991. The 'tariff' sentence can be reduced or increased as the crime is less or more damaging or the convict is more or less contrite or suitable for reformation.

5 A Ashworth, 'Criminal Justice and Deserved Sentences' [1989] Crim LR 340.

6 H Gross and A Von Hirsch (eds), *Sentencing* (Oxford and New York: Oxford University Press, 1981); A Von Hirsch, 'Utilitarian Sentencing Resuscitated: The American Bar Association's Second Report on Criminal Sentencing' (1981) 33 Rutgers Law Review 772; A Von Hirsch and N Jareborg, 'Gauging Criminal Harm: A Living-standard Analysis' (1991) 11 Oxford Journal of Legal Studies 1; M Wasik and A Von Hirsch, 'Statutory Sentencing Principles: The 1990 White Paper' (1990) 53 MLR 508.

Efficient deterrence

Other scholars, especially those from within economics, avoid notions of justice and morality, partly because they present insurmountable measurement and definitional difficulties. As an alternative, these scholars use an essentially utilitarian approach and ask whether a sentencing algorithm can be found which minimises the total social cost of crime. These include costs to victims such as risks of death and other direct losses from crimes, the costs involved with higher crime rates such as locks and burglar alarms and the need to avoid certain areas after dark, and the costs to third parties who must suffer higher tax burdens to maintain the criminal justice system.

This approach seeks to find the optimal sentence at which gains (reduced costs to victims and potential victims) are balanced against the costs of maintaining the criminal justice system. This utilitarian approach presupposes that varying sentence length can affect criminal behavior and that data exist such that the effect can be measured reliably.[7]

The analytics of optimal criminal sentences

In this section we explain the simple analytics of the utilitarian approach to optimal criminal sentences. As discussed above, this approach does not require us to define precisely the term 'justice' because we seek only to minimise the total cost of individual crimes by choosing optimal sentence lengths. The optimal criminal sentences are constrained by the costs of incarceration, the probability of apprehension, and the sensitivity of criminal behavior to sentence length. Using Waldfogel's[8] model, we will define the relationship among the total social cost of crime, the supply of crimes, the length of criminal sentence, the incarceration cost, and the probability of apprehension.

Let $S_i(x_i)$ represent the supply of offenses for crime i as a function of x_i, the sentence length for crime i. The supply of criminal offenses is assumed to be decreasing in the length of criminal sentences; this implies that the substitution effect of increasing the price that a criminal pays for committing an offence will dominate any offsetting income effect.[9] If we further let p_i represent the probability of apprehension and incarceration for crime i, then the cost of incarcerating criminals for all crimes can be expressed as

$$\text{Incarceration cost} = b \sum_i p_i S_i(x_i) x_i \qquad (1)$$

7 We hasten to acknowledge that there are difficulties in measuring the responsiveness of criminal behavior to changes in criminal penalties. The econometrician Ed Leamer, 'Let's Take the Con out of Econometrics' (1983) 73 American Economic Review 43, commenting on results that suggested that each additional execution deterred thirteen murders, said, 'This seems like such a healthy rate of return, we might want just to randomly draft executees from the population at large' (p 41). Leamer concludes that 'inference from these data about the deterrent effects of capital punishment is too fragile to be believed' (p 42).

8 See note 3 above.

9 See M Block and J Heineke, 'A Labor Theoretic Analysis of Criminal Choice' (1975) 65 American Economic Review 314.

where b is the monthly incarceration cost per prisoner. Equation (1) states that the total incarceration cost is the cost per prisoner-month (b) multiplied by the sum of the product of the length of sentence in months (x_i) and the number of criminals that are apprehended and incarcerated ($p_i S_i(x_i)$).

In addition to the direct incarceration costs, crime imposes more general costs on society. The social costs include the direct harm done to victims of crimes and the resources expended by potential victims to ensure the security of their person and property. The social cost resulting from the supply of n possible types of crimes can be represented as

$$\text{Social cost} = U(S_1(x_1),\ldots,S_n(x_n)) \tag{2}$$

where U is a mathematical function relating the supply of all crimes to the aggregate social cost.

By adding the incarceration cost and the social cost we obtain the total cost of criminal actions to victims and the incarceration cost of the criminal justice system:[10]

$$\text{Total cost} = U(S_1(x_1),\ldots,S_n(x_n)) + b\sum_i p_i Si(x_i) x_i \tag{3}$$

We now ask the question: What level of criminal sentences x_i would minimise the total cost? Algebraically, we need only minimise the expression in equation (3) to solve for the cost-minimising sentences. Differentiating equation (3) by choice of the sentence length for each crime i yields the following equation:

$$\sum U_i(\partial S_i/\partial x_j) = -b\left\{\sum_i p_i[x_i(\partial S_i/(\partial x_j)] + p_j S_j(x_j)\right\} \tag{4}$$

for all $j = 1, \ldots, n$. At the optimal solution, the length of sentence, x_i^*, for each crime minimises the total cost of criminal actions and incarceration: if a longer sentence were chosen, additional costs of imprisonment would exceed the benefits of lower harm to victims and to the rest of society; if a shorter sentence were chosen, the reduction in prison costs would be outweighed by greater harm to actual and potential victims.

10 The cost of criminals' time while incarcerated is not explicitly included in the total cost equation for two reasons. First, it appears to be inappropriate to include the value of criminals' time losses to the extent that this is a transfer from the criminals to the prison; for example, a criminal's labor may be used productively while she is incarcerated. Second, even if it would be appropriate to account for criminals' time cost, this would simply scale the parameter b if criminals are homogeneous.

To make the analytical model more tractable, we will assume that prison sentences for crime *i* do not affect the supply of crime *j*.[11] This would imply that the crimes are independent of one another so that the cross-effects are zero; ie $\partial S_i/\partial x_j = 0$ for $i \neq j$. With this assumption, we can simplify equation (4) and re-express it as

$$\Sigma U_i(\partial S_i/\partial x_i) = +bp_i[S_i+x_i(\partial S_i/\partial x_i)] = 0 \quad (5)$$

From this simplified expression, we can solve directly for the optimal length of criminal sentence

$$x_i^* = -\frac{(U_iE_i)}{bP_i(1+E_i)} \quad (6)$$

where $E_i = (\partial S_i/\partial x_i)(x_i/S_i)$ represents the elasticity of crime *i* with respect to its sentence — a measure of the responsiveness of the supply of offences as the criminal penalty varies. Equation (6) indicates that the optimal sentence will be longer where greater harm is involved, but shorter where either prison costs are higher or the probability of incarceration is higher.[12]

We will now proceed to estimate the optimal criminal sentences for Hong Kong in the context of the utilitarian framework developed above. Our purpose in doing this will be to compare the actual sentences in Hong Kong to the optimal sentences that we calculate.

Calculating optimal sentences for Hong Kong

To calculate optimal sentences from equation (6), we require estimates of the harm from crimes, elasticities of the supply of offences with respect to sentence length, the cost of imprisonment, and the probability of incarceration. The values of these parameters, and the details of their calculation, are listed in Table 1.

11 This assumption is a serious restriction to place on the model for two reasons. First, it would appear that professional criminals would substitute offences for one another in order to maximise their profits relative to the expected penalty. Second, as was brought to our attention by an anonymous referee, this assumption would not be appropriate if crime *j* were a lesser included offence which prosecutors would have discretion to indict for in addition to crime *i*. The second point would seem to be of less importance for the empirical results in this paper since lesser offences are not an important issue here.

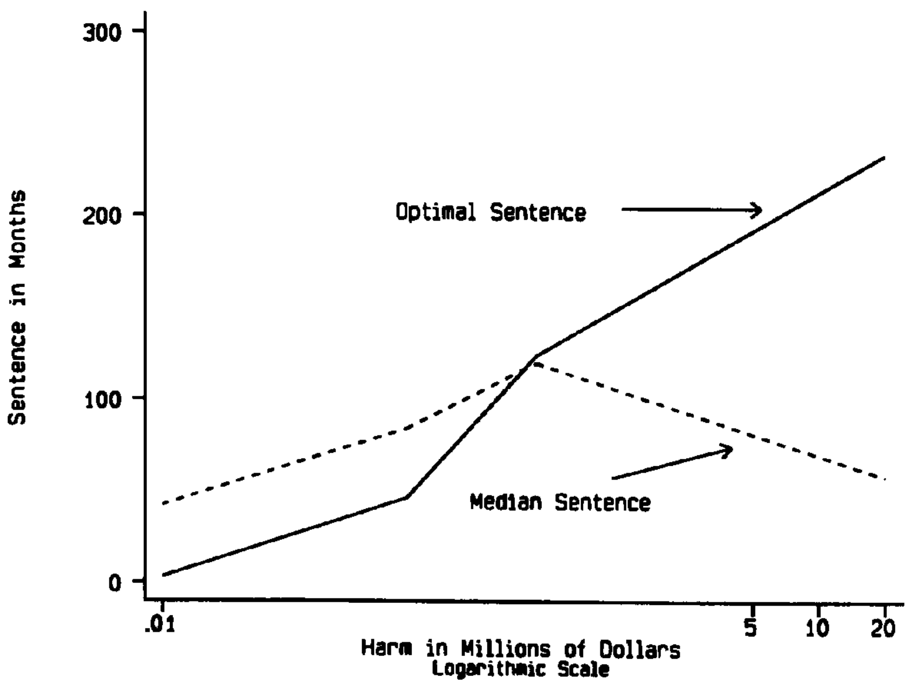
12 Note that in the context of this model the supply of crimes cannot be elastic. An elastic supply of crimes would imply that the direct harms from crime and the incarceration cost could be reduced simultaneously through longer sentences.

Optimal sentences

The calculated optimal sentences for manslaughter, rape, robbery, and burglary are shown in row 7 of Table 1. In addition to the calculated optimal sentences, we also show the tariff starting point sentences in row 5 and the median average of a sample of actual sentences in row 6.[13] Our results indicate that the optimal sentence for manslaughter, the crime with the highest direct harm, is much higher than either the tariff or the median sentence for this crime. The optimal sentence for rape is about 50 per cent larger than the tariff starting-point sentence, but nearly the same as the median sentence. For robbery, the optimal sentence is nearly the same as the tariff sentence, but about half of the median sentence. Finally, the optimal sentence for burglary is calculated to be only one tenth as much as the tariff sentence, and an even smaller proportion of the median sentence.

Actual criminal sentences in Hong Kong, whether taken as tariff starting points or as median sentences from our sample, appear to differ from the optimal sentences for crimes which have especially large or small harms (see Figure 1). The actual sentence for manslaughter, the crime with the largest harm, is much

Figure 1 Optimal and Median Sentences versus Harm



[13] The sample we use is all criminal sentences which were put under appeal (by defence) or review (by the Crown) and were reported in the Hong Kong Law Journal from Part 1 1988 to Part 2 1994. For each crime, some original sentences were increased and some decreased. Most were left unchanged. See also notes to Table 1.

lower than the optimal sentence. And the actual sentence for burglary, the crime with the lowest harm, is an order of magnitude larger than the optimal sentence length. To make this more clear, we can normalise the optimal sentences for all crimes to the sentence for burglary; the resulting normalised sentences, shown in row 8 of Table 1, show the multiplicative factor by which the sentences for the other crimes should be increased over the sentence for burglary. The normalised sentences for robbery, rape, and manslaughter are 15.5, 41.6, and 78.4, respectively. The criminal sentence for manslaughter should be 78.4 times as high as the sentence for burglary. However, the actual criminal sentence for manslaughter is only about 1.7–2.9 times higher than the sentence for burglary. These results would indicate that, in comparison to the optimal sentences, the current sentences for severe crimes are far too lenient while the current sentences for minor crimes are far too harsh.

The hypothesis that current sentences (median or tariff) are consistent with efficient deterrence can be examined formally by using a Chi-squared goodness of fit test.[14] If actual and optimal sentences are very close to one another then the Chi-squared test statistic should be very small. The goodness-of-fit statistic between the optimal sentences and tariff sentences was 91.48; this rejects the hypothesis of efficient deterrence at the 1 per cent marginal significance level. The test statistic between the optimal sentences and the median sentences was 111.25; again, the hypothesis of efficient deterrence is rejected at the 1 per cent marginal significance level. Thus, we can say with a high degree of confidence that criminal sentences in Hong Kong are not consistent with efficient deterrence.

Implicit harms

In the above section we calculated optimal sentences given the estimates of harms, elasticities, incarceration cost, and probability of incarceration. Relative to the optimal sentences, the current sentences for severe crimes are far too lenient and the sentences for minor crimes far too harsh. We now invert the calculation and ask: assuming current sentence lengths are optimal, what does this imply about the harm from the different types of crimes? Tables 2 and 3 calculate and compare the implied harms assuming that sentences (tariff or median) are optimal. These implicit harms can be compared to Cohen's[15] harm estimates reported in row 1 of Table 1.

14 The Chi-squared test statistic, x^2, is calculated as

$$x^2 = \sum_{i=1}^{k} (o_i - e_i)^2 / e_i$$

where o_i and e_i denote the observed and expected frequencies, respectively, for the ith observation, and k denotes the number of observations. For a more detailed discussion of the Chi-square distribution see P G Hoel, *Elementary Statistics* (New York: Wiley, 4th ed 1976), ch 10.

15 M Cohen, 'Pain, Suffering and Jury Awards: A Study of the Cost of Crime to Victims' (1988) 22 Law and Society Review 537.

the last two columns of Tables 2 and 3. The columns labelled 'relative harm' report the harm for each crime in proportion to the harm for burglary. The columns labeled 'relative sentence' report the sentence length for each crime in proportion to the sentence for burglary. If criminal sentences are consistent with the proportional justice hypothesis, then we should find a linear relationship where crimes with twice as much harm have twice as long a sentence. The relative harms and tariff sentences in Table 2 are clearly inconsistent with the proportional justice hypothesis. The harm of a robbery is 7.3 times as high as for a burglary, yet the tariff sentence is only 1.6 times as high. Rape harms the victim 9.9 times as much as a burglary, yet the sentence is only 2.7 times as high. Finally, the relative harm of manslaughter is about 175 while the relative tariff sentence is only 2.9. Similar results with median sentences are reported in Table 3. As with tariff sentences, median sentences, especially at the ends of the harm spectrum, are very much at odds with the proportional justice hypothesis.

More formally the proportional justice hypothesis can be expressed as

$$\text{Relative sentence} = \beta \text{ Relative harm} \qquad (7)$$

where β represents the proportionality between the harm and the sentence. Strictly proportional justice implies that $\beta = 1$; a value of β which differs from one would lead to rejection of the proportional justice hypothesis. From the relative harms and sentences reported in Tables 2 and 3 we have estimated the value of β to be 0.0178 and 0.0204, respectively. In each case we can reject the hypothesis that $\beta = 1$ at a marginal significance level of 1 per cent.[16]

We can conclude with a high level of confidence that criminal sentences in Hong Kong are inconsistent with the proportional justice hypothesis. However, rejection of this hypothesis does not imply that the alternative hypothesis of efficient deterrence is necessarily correct. As we discussed above, criminal sentences in Hong Kong do differ from the optimal sentences implied by the model of efficient deterrence. However, current sentences would appear to be closer to those predicted by the model of efficient deterrence than those predicted by proportional justice: a certain amount of proportionality would have to be added to the current sentences to make them consistent with the optimal sentences.[17] We can more precisely evaluate whether the existing

[16] From the relative harms and sentences reported in Table 2, the point estimate of β is 0.0178 with an estimated standard error of 0.0102. Thus, the *t*-statistic for the null hypothesis that $\beta = 1$ is 96.3. For the harms and sentences in Table 3 the point estimate of β is 0.0204 with an estimated standard error of 0.0181; this yields a *t*-statistic of 54.1.

[17] This follows from the results reported in rows 5–7 of Table 1 because sentences for the most harmful crimes would have to be increased and sentences for the least harmful crimes would have to be reduced for optimality to be obtained.

sentencing system is more optimal or more just by comparing actual harms with actual sentences, and by comparing actual harms with implicit harms. If we denote actual harms as H, implicit harms as U, and sentences as S, then the question becomes whether $H = \beta_0 U$ fits the data better than $H = \beta_1 S$[18] The results of our statistical analysis lead us to conclude that actual sentences are more optimal than just.[19]

Summary and conclusion

Criminal sentences are an important instrument in the justice system. We have examined criminal sentences in Hong Kong to make an inference on whether they are consistent with proportional justice or with efficient deterrence. Optimal sentences were calculated from a model of efficient deterrence and these sentences were found to differ from current sentences. The empirical results also led to a clear rejection of the proportional justice hypothesis. However, the results of a nonnested hypothesis test indicate that criminal sentences in Hong Kong appear to be more efficient than just. Somewhat paradoxically, current criminal sentences in Hong Kong would have to be made more proportional to the harm involved to approach the estimated optimal sentences.

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Taxation Rulings: Practice and Policy in Hong Kong

Introduction

Tax planning can be demanding for both the client and the professional. Both parties, and in particular the client, would like to know how a planned

18 The reader will note that these hypotheses are nonnested, and therefore cannot be tested using standard hypothesis testing procedures. The nonnested hypotheses can be tested using the *J*-test proposed by R Davidson and J MacKinnon, 'Several Tests for Model Specification in the Presence of Alternative Hypotheses' 49 Econometrica 781. The *J*-test is applied to the data by first estimating the two models separately and then calculating the fitted values for each model, $\hat{H}_u$ and $\hat{H}_s$. We test the first model against the second by regressing H on U and $\hat{H}_s$ and testing the significance of the coefficient of $\hat{H}_s$ using a standard *t*-test; if the *t*-statistic is significant, then we can reject the first model in favor of the second. The second model can be tested against the first using the same procedure.

19 Using the *J*-test described in note 18 above, we could not reject efficiency in favor of proportionality: the relevant *t*-statistic has a value of 1.496. However, we could reject proportionality in favor of efficiency at the 1% marginal significance level: the relevant *t*-statistic had a value of 24.573. Thus, actual criminal sentences in Hong Kong appear to be more optimal than just.

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