THE EFFECTS OF FINE SEVERITY ON SPECIFIC DETERRENCE AND AVOIDANCE

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Introduction

Fines are a common sanction in sentencing systems throughout the world. The Israeli sentencing system is no exception, with about 38 percent of the non-traffic criminal cases in the Magistrates' Courts and 28 percent of cases in the District Court resulting in the imposition of a fine (Gazal-Ayal et al., 2012). In relation to traffic offences, fines are overwhelmingly the most common sanction, with 83 percent of traffic offenders receiving a ticket notice with a fixed fine and an option to contest the ticket in court; only 8 percent receive cautions and 9 percent are summoned to courts which have the power to impose more severe sanctions (Israel Police, 2014).

Israel is by no means the only country in which fines are a common penal sanction. In Australia for example, 65 percent of all offenders received a monetary order in 2012-13 (Australian Bureau of Statistics, 2014). In relation to summary motoring offences in England and Wales 95 percent of all offenders received a fine in 2013 (Ministry of Justice, 2014). Similarly, in Canada, 88 percent of all impaired driving offences resulted in a fine in 2011/12 (Statistics Canada, 2013). Given the prominence of fines in sentencing systems throughout the world, it is important that researchers scrutinise the extent to which manipulating the severity of fines affects the behaviour of those subject to these sanctions. In this paper we begin by considering the main sentencing rationales that underpin the use of fines, focusing in particular on deterrence. We also discuss a potential side effect of enhancing the severity of fines, namely, the potential to increase the propensity of defendants to engage in avoidance activities by challenging these fines in the courts. Next, we outline and present the findings of two empirical studies that examine the relationships between the severity of fines imposed for a selection of traffic offences and i) the reconviction rates for offenders who received these fines; and ii) rates of avoidance activities engaged in by defendants, which in this case involved defendants challenging their tickets through the courts. Finally, we discuss the implications of these findings for sentencing theory and practice.

Fines and sentencing rationales

As Weatherburn and Moffatt (2011) have argued, fines are a popular penal sanction for several reasons. First, their severity can be straightforwardly adjusted to reflect the seriousness of an offence as well as the means of an offender to pay the fine. This is important, since the principle of proportionality – that the severity of the punishment should match the seriousness of the crime –
underpins numerous sentences schemes around the world. Second, fines offer the opportunity to avoid the social and economic harms and stigma associated with other types of penal sanction, such as imprisonment (see Crewe, 2011; Durnescu, 2011). Third, the threat of fines provides, at least in theory, a means of deterring people from committing future criminal acts by increasing the costs associated with illegal behaviour. Finally, fines are relatively inexpensive penal sanctions since they involve, at least in theory, only a transfer of resources from one entity (the offender) to another (typically the state). In contrast, the implementation of other types of sanction such as imprisonment and probation are costly both for the offender and the state (Becker, 1980). The current study subjects the latter two of these rationales to empirical scrutiny by exploiting a novel, quasi-experimental design whereby traffic regulations doubled the fine severity for some traffic offences, whilst leaving the severity of others unchanged.

**Deterrence**

The work of Hobbes (2008 [1651]), Beccaria (2010 [1764]) and Bentham (2012 [1859]) served to initially popularise theories of deterrence, which later became central pillars in sentencing schemes around the world. Deterrence theories are based on rational choice models of human behaviour which assume that people act as if they were rational agents, calculating the costs and benefits of particular actions and choosing those that maximise benefits and minimise costs (Andenaes, 1974; Becker, 1968; Piliavin et al., 1986; Zimring and Hawkins, 1973). There are two fundamentally different types of deterrence. The first is general deterrence, which refers to the possibility that people will be deterred from committing certain acts by the threat of consequent sanctions. The other is specific deterrence, which concerns cases in which general deterrence has failed in the first instance. Specific deterrence therefore refers to the possibility that a person’s experience of punishment following the commission of an offence will deter that person from committing future offences (Nagin, 2013a, 2013b).

Fines seem to provide a straightforward and effective means of increasing the costs of crime in a literal sense. The extent to which sanctions provide an effective deterrent, however, is dependent on at least two things. First, it depends on the validity of the assumption that people behave as if they were rational agents. Second, it depends on the degree to which people are informed agents – in other words, the degree to which people are consciously aware of the actual levels of fines that are imposed for the commission of certain offences. This second factor concerning people's awareness and subjective perceptions of punishment severity is relatively important for theories of general deterrence, but is less relevant in relation to theories of specific deterrence. This is because specific deterrence concerns people who have already been punished, and therefore we can assume that these people are aware of the severity of the penal sanction attached to the crime that they committed, having already been subject to this sanction. This paper focuses on specific deterrence and
consequently avoids the issue of people's subjective perceptions and awareness of penal severity, which has the potential to complicate analyses of general deterrence.

Given the widespread use of fines, the lack of a robust evidence base regarding the deterrent effect of these sanctions is remarkable. Whilst it seems that increasing the probability of detection and the certainty of punishment for law breaking does increase general deterrence, research examining the effects of increasing sanction severity has produced mixed findings (see the recent meta-analysis by Dolling et al., 2009; Braga and Weisburd, 2012; Kennedy, 2009; von Hirsch et al., 1999; Webster & Doob, 2012). In relation to specific deterrence and fines, for example, Homel (1980) found that people convicted of driving offences in New South Wales who received relatively severe fines had lower reconviction rates than those who received relatively lenient fines. However, this finding applied only to those who had concurrent convictions for driving while disqualified. In another study based in New South Wales, Briscoe (2004) identified a marginal fall in reconviction rates for drink-driving offenders in non-urban areas following legislative reforms which doubled the maximum fine, prison term and period of licence disqualification. However, it was not possible to ascertain whether this decrease in reconviction rates had been caused by the increase in the fine amount, the prison term, the length of licence disqualification, or indeed any number of other exogenous factors between the two time periods in which reconviction rates were measured.

More recently, two studies in New South Wales failed to find a specific deterrent effect associated with higher fines. Moffatt and Poynton (2007) examined the effect of the severity of court-imposed fines for traffic violations on the likelihood of reoffending within a five year follow-up period. The study failed to find an enhanced deterrent effect associated with relatively severe fines. Yet, since the severity of the fines in this study were decided by the courts, the severity may have been the result of unobserved variables that also affected the likelihood of recidivism. The authors used a Hackman procedure in an attempt to overcome this potential selection bias, but as indicated in their conclusion they could not rule out the possibility that the failure to find a significant deterrent effect was a consequence of this methodological limitation.

Weatherburn and Moffatt (2011) used an alternative method to examine the effect of fine size on recidivism for offences which concerned drink-driving. They analyzed the reconviction rates of offenders fined for drink-driving by magistrates in 2003, and compared these reconviction rates to the rates associated with the imposition of relatively severe fines imposed in 2004 following a doubling of all statutory maximum penalties for prescribed concentration of alcohol offences. Again, they found no significant deterrent effect associated with increasing the severity of fines.

The fine as an efficient sanction
Aside from exploring the link between sanction severity and the likelihood of reoffending, research on deterrence has highlighted the potential for increased sanction severity to increase avoidance activities (Innes, 2001; Malik, 1990; Sanchirico, 2006). In other words, the more severe the punishment, the more that people will be incentivised to avoid being punished (Nussim and Tabbach, 2009). This does not necessarily mean that people will be more inclined to refrain from committing an offence, but instead might involve people expending more effort to avoid punishment, for example, by attempting to avoid detection or by contesting their penalties. In the current paper, we examine a form of avoidance which involved defendants challenging their ticket fines through the courts. This is important given that one of the main reasons for the popularity of fines is pragmatic: instead of imposing costs on the state (as is the case with other forms of criminal sanction such as imprisonment and community penalties), fines have the potential to generate state revenue. However, if the cost of administering and enforcing fines is high, much of the economic advantage of this sanction is lost.

When fines are contested, the court must conduct a trial to decide whether or not the offender is guilty, and if guilty, which sanction to impose. This process is costly - often costlier than the fine amount - and therefore can undermine the economic advantage of fines. In addition, as the rate of fine challenges increases, so too do court caseloads. When court resources become stretched, this can exert significant pressure on prosecutors to offer lenient plea bargains to defendants challenging their tickets to clear the court's docket and reduce caseloads to manageable levels. Notably, lenient plea bargains might not only be offered to defendants challenging their ticket fines, but also to defendants subject to more severe sanctions associated with more serious offences in the same court.

A situation in which high rates of avoidance activities produces an increased rate of lenient plea bargains is undesirable for a number of reasons. First, this would pose a threat to the principles of proportionality and procedural justice. People committing the same crimes could receive different levels of punishment depending on how much pressure courts are under to clear their caseloads. Decisions made by prosecutors might be influenced more by considerations of expediency than considerations of justice and fairness in a particular case. Second, increased ticket challenges and lenient plea bargains undermine a court's ability to generate revenue for the state due to the increased costs of court administration and the decreased revenue collected from the fines. And third, when the severity of sanctions is reduced due to plea bargains or successful challenges, this could further undermine any potential deterrent effect associated with these sanctions.

**Methodology**

*Study One*
The objective of the first study was to test the specific deterrent effect of the severity of fines on rates of reconviction. One of the problems associated with testing theories of general deterrence is that people may not be aware of the severity of sanctions attached to a particular offence, nor may they know about any increases in sanction severity that may be designed to increase deterrence. In relation to specific deterrence, however, subjective perceptions and awareness of sanction severity is less of an issue: it can reasonably be assumed that offenders have good knowledge of sanction severity - and indeed direct experience of it - having been subjected to such sanctions for a prior offence.

In September 2007, after proposals from the Israel Ministry of Transportation, the severity of fines for a number of traffic offences was increased. The (then) chairman of the Knesset Economics Committee, MK Gilad Erdan, stated that the increase in fine severity would ‘help deterrence’ (without distinguishing between specific and general deterrence) (Zukerman, 2007). This initiative enabled us to compare the reconviction rates of offenders in 2006 (i.e. those who received a relatively lenient fine) to the reconviction rates of offenders in 2008 (i.e. those who received a relatively severe fine). For two reasons, we used a one year follow-up period to capture rates of reconviction. First, using a longer follow-up period for the 2006 cohort would have complicated our analysis because of the possibility that reconviction rates might have been influenced by an increased general deterrent effect produced by the 2007 fine increase. Our analysis avoids this potential complication, because our follow-up period for the 2006 cohort ended before the 2007 fine increase.

Second, using a relatively short one year follow-up period maximised the likelihood of finding an increased specific deterrence effect associated with the fine increase, because it is during this time that the severity of the sanctions would have been most salient in an offender's memory. Consequently, if we failed to find a specific deterrent effect during this relatively short follow-up period, it is implausible that we would have found one using a longer follow-up period. To ensure that the study examined only offenders who had received the fine prescribed by law, we included only those offenders who did not contest the fine. It is important to reiterate that during the follow up periods for both the 2006 and 2008 cohorts the fine amount for the relevant offences did not change.

Had we relied solely on these data to examine the potential deterrent effect of increased fines, our conclusions would have been subject to significant limitations. Any number of factors might have influenced the rates of reconviction in 2008, aside from the fact that fines were more severe following the decision to increase their severity for a selection of traffic offences in 2007. To control for the potential influence of these exogenous factors, the current study utilised reconviction rates for matched control offences for which there was no fine increase in 2007. Table 1 outlines the test and control offences included in the current study, alongside the fine amounts in New Israeli Shekel attached to these offences.
In the first instance, we attempted to match each test offence with one or more control offences that had similar substantive characteristics. For example, the test parking offences were matched against a control parking offence, and the test seatbelt offence was matched against a control seatbelt offence. In relation to the test offence of driving while on a cell phone, however, there were no analogous control offences available. Therefore, we identified two control offences for which analogous fine amounts were imposed. As we show below, this control is admittedly not as robust as the control for the other two offence groupings.

In terms of testing the deterrent effect of penal sanctions, traffic fines have two main methodological advantages over other forms of penal sanction. First, when a fine is imposed through a traffic ticket its severity is fixed by law. Therefore, it cannot be the case that the severity of the sanction for traffic offences varies depending on the characteristics of the defendant or judicial discretion in a particular case. Consequently, we avoid the potential selection bias that is a limitation of other studies on deterrence and penal sanction severity (e.g. Moffatt and Poynton, 2007). Furthermore, fines do not entail the same incapacitation, rehabilitation or criminogenic effects associated with other sanctions, such as imprisonment and community sentences (Barbarino and Mastrobuoni, 2014; Hough et al., 2013). Therefore, any change in an offender’s propensity to offend following the imposition of the fine is more likely to be the result of deterrence, compared to other forms of penal sanction.

Based on theories of specific deterrence (see Nagin, 2013a, 2013b), we hypothesised that the reconviction rates for the test offences (which involved an increase in fine severity in 2007) would be lower for offenders who committed these offences in 2008 (when relatively severe fines were imposed) than for offenders who committed these offences in 2006 (when relatively lenient fines were imposed). More accurately, we hypothesised that any decrease in the reconviction rates of the test offence cohorts between 2006 and 2008 would be greater than any decrease in the reconviction rates of the control offence cohorts between 2006 and 2008.

Study Two

The objective of the second study was to examine the relationship between fine severity and the likelihood that ticket fines would be challenged through the courts. This is important, because if higher fines generate a higher rate of ticket challenge this could lead to an increased burden on the court system through higher caseloads. In turn, if caseloads become unmanageable for the courts, this could threaten the tenets of proportionality and procedural justice, whilst increasing the costs of administration and enforcement for the state. We hypothesised that the rate of fines challenged through the courts would be greater for the test offences in 2008 (when relatively severe fines were
imposed) compared to the test offences in 2006 (when relatively lenient fines were imposed). Again, more accurately, we hypothesised that any increase in the rate of fines challenged for the test offences would be greater than any increase in the rate of fines challenged for the control offences.

Data

The data from the study are drawn from the police criminal records database. The Criminal Register and Rehabilitation Law, 5741-1981 enables researchers to gain access to these data. The database contained a comprehensive set of variables that facilitated robust quantitative analyses, including a range of defendant demographics such as religion, family status, age and gender. The cases examined in this study comprise the total population of people that received a ticket fine in Israel for a selection of road traffic offences in the first nine months of 2006 and 2008 (see Table 2). It should be noted that because some offences go undetected, our analysis cannot examine precise rates of reoffending. Instead, we use the imposition of ticket fines as the best available proxy for rates of reoffending (see Lloyd et al. 1994). For terminological simplicity we refer to this as the 'reconviction rate'.

Dependent variables

For the first study examining the deterrent effect of fines, a binary dependent variable was created representing reconviction. For the first set of tests this was reconviction for the same offence as the original offence; for a second set of tests this was reconviction for any traffic offence.

The dependent variable for the second study was a binary variable representing the decision to challenge the fine through the courts. If the offender did not challenge the fine, the ticket became final and had to be paid.

Independent (predictor) variables

The key predictor variable for this study was an interaction variable, 'Year*Offence', which represented the interaction between fine severity (2006/2008) and offence type (test/control). This variable ruled out the possible influence of exogenous factors on reconviction rates and challenge rates. Other factors such as religion, family status, age and gender were also controlled for using categorical variables in the regression analyses. Both hypotheses were tested using multiple binary logistic regression analyses.

Results

Study One: Severity of fines and deterrence
Table 2 details the characteristics of the offenders in our study. The database includes 181,338 records, with 78,232 offenders in 2006 and 107,106 offenders in 2008 for both test and control offences. We excluded cases where the alleged defendant challenged their initial ticket, since the fine after a challenge might have been altered or cancelled. Since almost all of the offenders were either Jewish or Muslim, we excluded members of other faiths. The background characteristics of the offenders are as follows.

[Insert Table 2 here]

While the overall number of people paying ticket fines increased from 2006 to 2008, the demographic characteristics of the offenders were not substantially different across the two periods, with the notable exception of religion. The percentage of offenders who were Muslim was 18 percent in 2006, and 28 percent in 2008. One possible explanation for this change is that the police increased their enforcement activities near particular neighborhoods with high proportions of Muslim residents. We will return to the possible implications of this demographic difference below.

Consider Table 5, which shows the results of multiple binary logistic regression analyses outlining the relationships between same-offence reconviction rates for seatbelt test and control offences (see Table 1 for details of offence groupings).

[Insert Tables 3]

The most important variable for testing the first of our hypotheses was the Year*Offence interaction variable, which analysed the relationship between reconviction rates and fine severity. The odds ratios show that increased fine severity had a marginal deterrent effect for the seatbelt offence group (\( B = -0.157, \ SE = 0.179, \ OR = 0.854 \)). The results, however, did not reach the minimum level of statistical significance (\( p < 0.05 \)). Similar results were found in relation to the cell phone and other offence group. Furthermore, in relation to the parking offences group, the odds ratio indicated that increased fine severity was associated with a marginal increase in rates of reconviction. Again, however, the results did not reach the minimum level of statistical significance (\( B = -0.102, \ SE = 0.119, \ OR = 1.108, \ p = 0.390 \)). In summary, therefore, we could not reject the null hypothesis that fine severity had no effect on the likelihood of reconviction.

As indicated above, the percentage of Muslim offenders increased between 2006 and 2008. This raised a concern that something might have happened between 2006 and 2008 which threatened to undermine confidence in our findings, for example, a shift in police enforcement practices. In fact, it is very likely that the police decided to enhance their enforcement activities in areas with a high Muslim population, since 45% of the traffic accident fatalities are among the 20% Muslim population in Israel. However, the lack of a significant interaction effect cannot be attributed to this factor.
because the change in the percentage of Muslim offenders was broadly similar for both the test and control offences. For example, the percentage of Muslim offenders fined for not wearing a back seat seatbelt (test offence) was 35 percent in 2006 and 47 percent in 2008. Similarly, the percentage for not wearing a front seat seatbelt (control offence) increased from 33 percent in 2006 to 47 percent in 2008.

In relation to the other two offence groupings, the percentage changes followed a similar trend: for driving whilst on a cell phone (test offence) the increase in the percentage of Muslim offenders went from 14 percent in 2006 to 24 percent in 2008; for traffic interference (control offence) from 28 percent in 2006 to 36 percent in 2008; and for not stopping at a pedestrian right of way (control offence) the percentage went from 11 percent in 2006 to 12 percent in 2008. For the third offence grouping, the percentage of Muslim offenders for stopping on an interstate road (test offence) was 25 percent in 2006 and 43 percent in 2008; for parking on a pedestrian crossing (test offence): 6 percent in 2006 and 13 percent in 2008; and for parking that interferes with traffic (control offence): 14 percent in 2006 and 23 percent in 2008. The only exception to this increase was found for the offence of double parking (test offence), which decreased from 24 percent in 2006 to 14 percent in 2008.

To the extent that these changes are not fully captured by the control variable for religion in the regression, this might undermine the validity of our findings in relation to the latter two offence groupings outlined above. Yet, the similarity between the demographics of the offenders for the two seatbelt offences in both 2006 and 2008 assures us that at least in this case the control offence is similar in all relevant aspects to the test offence. Therefore, the lack of a significant deterrent effect associated with the fine increase cannot be attributed to any significant differences between the control and test offence.

All of the results reported above concern reconvictions for the same offence that was originally committed. We also tested whether fine severity was related to reconviction rates for any subsequent traffic offence. Again, however, the results for the Year*Offence interaction variable did not reach the minimum level of statistical significance for any of the offence groupings and therefore we could not reject the null hypothesis in any of these cases.

One possible challenge that could be raised regarding our interpretation of the data presented in this paper concerns the potential effect of differential levels of police enforcement of the offences included in our analyses. For example, if (for whatever reason) between 2006 and 2008 police enforcement increased more in relation to our test offences than to our control offences, then this might disguise any deterrent effect generated by the increase in fine severity. This is because the recidivism rate for our test offences might increase at a greater rate compared to our control offences, not because people convicted of test offences were more likely to reoffend, but because the police
were more likely to catch offenders committing these offences compared to offenders committing control offences. To examine this possibility, we obtained police enforcement data for the years 2006 and 2008 (see Table 4).

[Insert Table 4 here]

As illustrated by this table, in relation to two of the three offence groups - seatbelt offences, and cell phone and other offences - the rates at which people were charged by the police increased at a significantly greater rate for the control offences compared to the test offences. Importantly, since police enforcement increased a greater rate for the control offences compared to the test offences (for the two groups highlighted above) this would make it more likely that our analysis would (misleadingly) reveal a specific deterrent effect for the 2007 fine increase, given that test offence offenders would be less likely to be caught and charged by the police compared to control offence offenders. Considered in these circumstances, the fact that we could find no statistically significant deterrent effect of the 2007 fine provides an even stronger indication that increasing fine severity did not generate an increased specific deterrent effect.

The question remains why the increase in the rates at which people were charged for the control offences was generally higher than the increase in the rates at which people were charged for the test offences. We think that police enforcement practices, as opposed to changes in the actual number of offences being committed, are responsible for these trends. The police in Israel were instructed to increase their enforcement of all traffic offences between 2006 and 2008. In relation to the cell phone and other offences grouping, the reason why the control offence of not stopping at a pedestrian right-of-way increased at a significantly greater rate than the other control and test offences is that the police were specifically instructed to focus on increasing their enforcement of this offence. It is less obvious why the rate of offenders committing the control offence of failing to wear a front-seat seatbelt increased at a greater rate than the test offence of failing to wear back-seat seatbelt. However, we suggest that there are at least two plausible explanations. First, given that the test offence was accompanied by a relatively lenient fine in 2006, it is possible that the police enforced this offence more readily than the control offence, which was accompanied by a relatively severe fine. For example, it might have been the case that in 2006, after stopping cars in which people were wearing neither a back-seat seatbelt nor a front-seat seatbelt, the police decided only to issue a ticket for the offence that attracted the lesser fine - the failure to wear the front-seat seatbelt (our test offence). In 2008, after the severity of the front-seat seatbelt fine had been increased by 150 percent to match that of the control offence, police enforcement of the test and control offences became more uniform, hence the increase in the rate of enforcement for the control offence was higher than that associated with the test offence, because the latter had a higher 2006 baseline. Moreover, in cases where only one of the two seatbelt offences had been committed, the police might have been more sensitive to
pleas from drivers violating the control offence because the fines in these cases were relatively severe; hence, the police in these cases may have been less willing to impose a fine that they perceived as disproportionate to the offence.

Second, looking solely at the rate of increase masks the fact that the increase in the absolute number of test offence fines being imposed from 2006 to 2008 was +19,218, an increase two times larger than the increase in the absolute number of control offence fines: +8,109. Indeed, exempting the anomaly of the offence of double parking, it seems no coincidence that the lowest increases in the rates of fines imposed between 2006 and 2008 applied to the offences with the highest absolute numbers of fines imposed in 2006. In order for the increase in the rate of fines for the test offence of failing to wear a back-seat seatbelt to rise by the same magnitude as that concerning the control offence (98%), this would have required an extraordinary increase in police enforcement activity - an additional 105,629 fines for this test offence to be precise. It is unsurprising, therefore, that the increase in police enforcement activities appears not to have materialised in direct proportion to the absolute number of fines imposed in 2006. Instead, the instruction to increase the enforcement of traffic offences appears to have been applied by the police more uniformly across each of the offence types.

There remains one alternative explanation for the particularly high increase in the rate of control offences committed between 2006 and 2008 compared to the increase concerning the test offences: general deterrence. However, we regard general deterrence to be an unlikely explanation. First, it seems implausible that an increase in fine severity would fail to increase specific deterrence (when offenders would have been very much aware of fine severity having recently paid the fine for their offence), but succeed in increasing general deterrence (when members of the public would almost certainly have been less aware of fine severity). Second, given that previous studies have indicated that fine increases do not generate substantial reductions in offending (or, in fact, any decrease in offending whatsoever), this suggests that it is highly unlikely that general deterrence is responsible for such substantial effects in the current case. All in all, we are confident in excluding general deterrence as an adequate explanation due to the existence of alternative, more plausible explanations regarding police enforcement (outlined above).

In summary, therefore, none of our analyses revealed a statistically significant result for the Year*Offence interaction variable. Moreover, the 2007 fine increase was associated with both non-significant decreases and increases in the rates of reconviction for different offences. Therefore, in addition to the lack of statistically significant results, this provides a further reason to reject the hypothesis that an increase in fine severity increases specific deterrence.

Study Two: Severity of fines and avoidance
The database for study two includes 193,519 records, with 80,066 cases in 2006 and 113,453 cases in 2008 for both test and control offences. The findings relating to ticket challenge revealed a similar pattern for all three offence groups. Jewish defendants, for example, were more likely to challenge their tickets than Muslim defendants in relation to all offence groups, and males were more likely to challenge their tickets than females. Consider Table 5 which shows the results of multiple binary logistic regression analyses outlining the relationships between a number of variables and the likelihood of a ticket being challenged for seatbelt test and control offences.

*Insert Table 5 here*

Again, the most important variable for the purpose of testing our second hypothesis was the Year*Offence interaction variable that tested for the relationship between the likelihood of ticket challenge and fine severity, while controlling for the influence of exogenous factors that might have affected people’s decisions to challenge their tickets. In relation to all three offence groups, the increase in fine severity concerning the test offence was associated with a statistically significant increase in the likelihood that tickets would be challenged. For example, people were over four times more likely to challenge their tickets when they received the higher fine for the parking offence (\(B = 1.416, SE = .333, OR = 4.122, p < .001\)). In relation to the seatbelt offence and driving on a cell phone, people were around twice as likely to challenge the higher ticket fines (\(B = .784, SE = .356, OR = 2.190, p < .05; B = .664, SE = .083, OR = 1.943, p < .001\)).

It is worth noting that people were generally more likely to challenge fines in 2008 than in 2006, even in relation to offences for which the fine severity did not increase in 2007. We cannot be certain what caused this increase, but there are a number of plausible explanations. Given that police officers were instructed to increase enforcement activities in 2008, it may be that they issued fine notices when it was less justified, leading the drivers to contest the fines more often. The increase in challenges may also have been due in part to the increased caseloads in traffic courts. If the courts were offering better plea bargains due to the need to clear a high volume of cases, then defendants might have found challenging tickets more appealing. Whatever the exogenic reason for the overall increase in challenges, it cannot explain the excess increase in the likelihood of ticket challenges for the test offences which was revealed by the Year*Offence interaction variables.

**Discussion**

The purpose of this research was twofold. First, it was designed to test theories of specific deterrence by examining whether fine severity had an impact on rates of recidivism. Second, it examined whether the likelihood that people would challenge tickets for a selection of traffic offences was significantly related to fine severity. We used two strategies to counteract the possibility of the
findings being biased by the potential influence of exogenous factors. First, we controlled for a number of key variables, including religion, family status, age and gender. Second, the decision by the regulator to increase fine severity for a number of traffic offences in 2007, but not others, enabled us to match test offences (offences for which the fines were increased) with control offences (offences for which there was no change in fine severity). Therefore, if reconviction rates for the test offences varied between 2006 and 2008 for factors unrelated to the fine increase in 2007, then these factors would presumably also influence the reconviction rates for the control offences. The interaction variable used in the regression models served to control for the influence of exogenous factors.

**Fines and Deterrence**

We found no statistically significant relationships between reconviction rates and fine severity, despite the large sample sizes used in the regression models (ranging from n=41,742 to n=175,859). While our findings must be considered in light of the potential differences between the control and test offences in two of the offence groupings (discussed above), in relation to the seatbelt control and test grouping no such limitations exist. The demographics for front-seat seatbelt offenders (the control offence) and back-seat seatbelt offenders (the test offence) were very similar, and the similarity between the two offences reduces the risk that something unique happened with regard to one offence but not the other between 2006 and 2008.

One might be tempted to argue that the increase in fine amounts was not large enough to produce a significant deterrent effect. It is worth noting, however, that the fine increase was substantial – for driving on a cell phone the fine increased by 100 percent in 2007, while for the seatbelt and parking offences the fine increased by 150 percent. Moreover, in absolute terms, the fine amounts for the selected traffic offences were not trivial. According to the OECD (2014), the average household net-adjusted disposable income per capita in Israel is 20,434 USD. In this context, it seems reasonable to suggest that fine increases from 100 NIS (about 26 USD) to 250 NIS (about 65 USD) ought to have been large enough to exert some level of deterrent effect. In addition, the results of the second study which show that the increase in fines led to a substantial increase in the likelihood of ticket challenges, also indicate that the fine increases were not considered to be trivial by those fined. Nevertheless, it is impossible to rule out the argument that had the fine increases been larger, a specific deterrent effect might have been generated (see Beyleveld 1979). But even if this one accepts this argument, our second study indicates that any deterrent benefit must be considered in light of the fact that increasing fine severity appears to simultaneously increase rates of avoidance, which are costly for the state and potentially deleterious to established principles of justice. Increasing fine severity by even greater amounts than those examined in the current paper threatens to undermine the principle of proportionality which underpins many sentencing regimes in criminal justice systems around the world.
In summary, our study provided no support for the theory of specific deterrence which suggests that more severe penalties should decrease the propensity of people to reoffend (Andenaes 1974; Becker 1968; Piliavin et al. 1986; Zimring and Hawkins 1973). Our findings are largely consistent with previous empirical research on fine severity and specific deterrence (Weatherburn and Moffatt 2011).

Fines and Challenge

Although the increase in fine severity appeared not to have a significant influence on specific deterrence, it did have a substantial effect on rates of ticket challenge. We found that higher fines were associated with higher rates of ticket challenge, and people were more likely to refuse to pay higher fines by requesting their day in court. It is not possible to ascertain the reason for this increased challenge rate from the quantitative data used in this study. Perhaps, for example, people felt that the severity of the fine was disproportionate to the seriousness of their offence, and therefore opted to challenge the fine on the grounds of fairness. Alternatively, perhaps people did not want to bear the cost of court proceedings to avoid relatively low fines, but decided that the costs of a challenge were worthwhile when the fine was relatively high. Further research exploring people's views on their decisions to accept or challenge their fines is needed to address this question. Still, it is clear that the increase in fine severity increased the rate at which people attempted to avoid paying the fine and in turn the consequent cost of fine administration and enforcement.

Regardless of the reason for ticket challenge, the fact that more severe fines produced higher rates of ticket challenge means that fines cannot be viewed as a mere transfer of wealth. The higher the fine, the costlier it is to collect. If a higher proportion of people refuse to pay their fine in the first instance, opting instead to challenge their tickets via the courts, then any gains in reducing offending created by increasing fine severity may be offset by the costs of administration and enforcement. In fact, given the high caseloads that typically burden the courts and the courts' consequent need to alleviate these caseloads, it is reasonable to assume that an increased volume of cases resulting from ticket challenges would further incentivise prosecutors and judges to offer more attractive plea bargains to defendants. In other words, if ticket challenges increased the pressure on courts to process high volumes of cases, not only might this result in lower fines being imposed for cases involving these challenges, but it might also mean that the courts impose lower fines more widely by increasing the plea discounts in all cases brought to the traffic court. Even if higher fines were associated with an increased deterrent effect - an idea challenges by the empirical data presented in this paper - the fact that ticket challenges might ultimately lead to the imposition of more lenient sanctions - an idea supported by the empirical data presented in this paper - would serve to undermine any expected increased deterrent effect. Admittedly, without knowledge of the precise costs entailed by an increasing rate of ticket challenges, as well as other potential factors such as its effect on general deterrence, we cannot provide a full cost-benefit analysis of the increase in fine severity. However,
the current research provides clear evidence that increasing fine severity is liable to produce negative consequences beyond the mere absence of a deterrent effect.

The rise in challenge rates associated with higher fines might be welcomed as a useful tool for clarifying the law and ensuring continued court monitoring of police activity. However, given that prior to the fine increase there were already a significant number of people challenging their tickets (see Table 10), we would regard any marginal benefit of an increased number of challenges to be low. In fact, given that a higher volume of ticket challenges cases is likely to lead to higher plea discounts (due to increased pressures on courts to clear high caseloads), this would likely lead to even fewer full trials and hence fewer cases in which the courts are able to clarify the law and monitor police activities.

Finally, it is worth considering from a theoretical perspective why people appear to be behaving rationally in terms of their propensity to challenge fine tickets, but irrationally in terms of their propensity to reoffend. Findings from previous research which highlight the importance of the probability of detection and certainty of punishment are relevant here (Braga and Weisburd 2012; Dolling et al. 2009; von Hirsch et al., 1999). In relation to study two which examined rates of ticket challenge, people were faced with the certainty of having to pay fine tickets. Therefore, it seems the different levels of fine severity consequently exerted a significant influence on people's decisions regarding ticket challenge. In relation to study one which examined reconviction rates, on the other hand, there was an inherent level of uncertainty regarding the likelihood that someone would be caught and punished for committing a further offence. This uncertainty may well have undermined the potential influence of fine severity on people's propensity to reoffend.

In summary, the data presented in this paper poses a strong challenge to the case for increasing fine severity, given that doing so appears not to produce any significant deterrent benefit, but does produce increased costs associated with avoidance.

**Conclusion**

The current research adds to a growing body of empirical evidence which indicates that increasing punishment severity does not enhance specific deterrence (Drago et al. 2009; Green and Winik 2010; Maurin and Ouss 2009; Nagin 2013a, 2013b; Weatherburn and Moffatt 2011). Crucially, the evidence presented in this paper also shows that increasing the severity of fines is liable to produce negative consequences beyond the mere absence of a deterrent effect - a neglected factor in the empirical literature to date. We found that increasing the fine severity for a range of traffic offences led to a significant rise in avoidance, namely, an increase in people's propensity to challenge their ticket fines. By increasing the burden on court caseloads, this in turn threatens to undermine the effective
functioning of the court system as well as the principles of proportionality and procedural justice that underpin many sentencing regimes around the world. It is of course possible that greater increases in fine severity than those involved in the current study might generate enhanced deterrent effects. Even if this is the case, however, policy makers contemplating such increases must balance any potential benefits arising from enhanced deterrence against the likely drawbacks associated with people attempting to avoid punishment.

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References


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1 All data relevant to this paper have been made available at: http://weblaw.haifa.ac.il/he/Documents/Tables.pdf