# Is a Plea Really a Bargain? An Empirical Study of Six Cities in China

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## Abstract

There is a belief in the criminal justice system that it is better to take a plea offer to avoid uncertain consequences than risk going to trial. Prior studies using the data in Anglo-American courts have suggested that many legal and extralegal factors influence the decision of a guilty plea versus trial. China developed its own plea-bargaining system in 2016. Using 6826 DUI cases adjudicated in six cities, this study examines what factors affect the decision of a guilty plea and whether the guilty plea brings true benefits in Chinese courts. The results show that more serious crimes and more dangerous defendants were less likely to be disposed of through guilty pleas (as opposed to going to trial). One possible explanation is that prosecutors may make more punitive offers in these cases, which in turn discourages defendants from accepting them. In addition, using a propensity score weighting technique to control for potential confounding variables, this study finds that defendants who pleaded guilty were more likely to receive favorable case outcomes regarding pretrial detention and probation decision, which supports the argument that a guilty plea could help a defendant to avoid the "trial penalty" in Chinese criminal justice system.

**Keywords** Guilty plea · Case outcomes · Victim compensation · Plea discounts · Trial penalty

## Introduction

In the criminal justice system, legal actors' decision-making is supposed to be guided by several focal concerns such as the severity of the crime, the blameworthiness of the defendant, and other practical considerations (Kutateladze and Lawson 2018; Steffensmeier 1980; Steffensmeier et al. 1998). Plea bargaining is usually defined as a process in which a defendant agrees to plead guilty in exchange for some concession from the prosecutor. A wealth of literature, mostly using data from American courts, has confirmed that many factors play a role

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in the decision-making about which cases are disposed by guilty plea versus proceeding to trial. These factors include legal factors such as crime severity, and prior criminal record, as well as extralegal factors such as the gender and race of the defendant (Boylan 2012; Dervan and Edkins 2013; Meyer and Gray 1997).

One common reason for most defendants to plead guilty is to avoid the "trial penalty." They expect that pleas could lead to a more favorable outcome in case dispositions—as getting a "bargain" (Bushway et al. 2014; Bushway and Redlich 2012). Most jurisdictions also acknowledge that defendants entering a guilty plea could receive a reduction in the sentence compared with similarly placed defendants entering a trial (Langer 2004; Rauxloh 2011; Soubise 2018). The law in practice, however, could be different from the law on the books. Several empirical studies indicate that pleading guilty is not always the better choice. In other words, whether defendants who pleaded guilty received true benefits remains contradictory (Albonetti 1998; Brereton and Casper 1981–1982; Bushway and Redlich 2012; Uhlman and Walker 1979).

In contrast, the opportunity for defendants to plead guilty and thereby avoid a full trial was alien to the Chinese criminal justice system for decades. The inquisitorial culture and socialist law tradition derived from the Chinese criminal justice system both conceive that the truth in a case cannot be bargained with or compromised. Nevertheless, due to the increasing caseload, recent reforms in China have introduced a new system to expedite the dispositional process of "simple" cases. On September 3, 2016, the Supreme People's Court (SPC) and the Supreme People's Procuratorate (SPP) started a program called *renzui renfa congkuan* (Imposing Lenient Punishments on Those Pleading Guilty and Accepting Punishments) in several pilot cities, which is cited by some scholars as the Chinese version of plea bargaining (Gu 2016; Jia 2018). This program allows prosecutors to propose a sentence recommendation for a defendant who pleads guilty. Negotiations over pleas between defense and prosecution are also allowed thereafter. Finally, certain regulations explicitly state that leniency could be offered to defendants who plead guilty, agree with the prosecutor on the sentencing recommendation, and sign a plea agreement (SPC 2016a, b).

The *renzui renfa congkuan* program was described as a legal transplant from the plea-bargaining system in Anglo-American courts (Chen 2016a; Gu 2016). Consequently, some Chinese scholars have expressed similar concerns discussed in the Anglo-American practice of plea bargaining, that is, whether the sentence reduction truly happens in practice. Specifically, considering that China has a reputation for its unbalanced justice system in favor of the police and prosecutors, it is possible that the guilty plea is manipulated by the police and prosecutors and that defendants do not have the bargaining power to obtain a lighter sentencing outcome (Chen 2016a; Xiong 2016; Wang 2017). Also, because poor accused persons who are not familiar with the criminal justice system tend to accept the prosecutor's offer without negotiation, this raises further questions about whether a guilty plea could lead to more favorable results for defendants (Jia 2018; Zuo 2017). While these theoretical discussions offer an interesting insight to understand the implementation of the Chinese version of plea bargaining, they do not provide empirical evidence on what actually happens in practice.

This study fills this gap by providing an empirical study of the mode of decision-making and its effect on case outcomes in the Chinese version of plea bargaining. Specifically, this study aims to answer two questions: what factors play a role in the decision of a guilty plea versus proceeding to trial and whether the decision of a guilty plea leads to more favorable results. I use data on DUI cases tried by courts located in six cities where the *renzui renfa congkuan* program was carried out. The influences of legal and extralegal factors in

determining which cases are disposed of by plea versus trial were examined. The results show that defendants without a prior criminal record, having a lower level of blood alcohol concentrations (BACs), or having confessed were more likely to plead guilty. However, the findings suggest that defendants who failed to compensate for the victims were more likely to enter a guilty plea. Furthermore, using a propensity score weighting technique to control for potential confounding variables, this study answers the question of whether the defendants who pleaded guilty received leniency compared with the similarly situated defendants who were disposed of through full trial. Generally, my results support the conclusion that a guilty plea could lead to more favorable case outcomes. Defendants who pleaded guilty were more likely to be released before the trial and be granted probation. In addition, although defendants who pleaded guilty, on average, received a longer declared sentence length, their actual time served in jail was significantly shorter than defendants who did not plead guilty because a higher percentage of these defendants had their sentences suspended. Finally, whether a defendant pleaded guilty was not a significant predictor of the fine amount imposed on defendants.

This remaining article has six parts: "Development of Plea Bargaining in China" introduces the background information of what the Chinese version of plea bargaining is like. "Theoretical Framework and Prior Literature" discusses theoretical framework and prior literature. "Data" presents the data. "Methodology" describes the methodology. "Results" presents empirical results. "Discussion" reviews the findings and the limitations of this research.

## Development of Plea Bargaining in China

Two features of the Chinese criminal justice system explain why the formal plea-bargaining system did not exist in China for decades. First, Chinese criminal procedure is inquisitorial in nature, which assumes that the criminal process is a neutral investigation conducted by the state to find factual truth. In this model, prosecutors are supposed to represent the wider public interest rather than pursuing the narrow interests of the prosecution side (Rauxloh 2014; Soubise 2018). They play a role as state officials in supervising the criminal investigation. Therefore, the idea that case outcomes can be negotiated between the prosecutor and the defendant is alien to the inquisitorial system. In practice, prosecutors document all the results of a criminal investigation in the dossiers. The judge conducts fact-finding through verifying the dossiers that have been prepared before trial (Chen 2006; Goldstein and Marcus 1977). Hence, while the fact that the defendant admits guilt is often recorded in the dossiers by the prosecutor and may be crucial to the judge's decision, the case must still go to trial before the judge can make a final determination (Soubise 2018).

Second, as a socialist country, China's legal culture is also deeply influenced by the former Soviet Union's legal tradition and has a reputation for its unbalanced justice system in favor of the police and prosecutors. In this model, prosecutors play a role as a "provider of justice," who cooperate with the police and the court to crack down on crime.[1] The judge does not require the prosecutor to present much evidence in the dossier and convictions heavily rely on

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[1] Packer (1964, p. 11) vividly described this kind of criminal process as the crime control model: "The image (of this model) that comes to mind is an assembly line or a conveyor belt down which moves an endless stream of cases, never stopping, carrying the cases to workers who stand at fixed stations and who perform on each case as it comes by the same small but essential operation that brings it one step closer to being a finished product, or, to exchange the metaphor for the reality, a closed file."

defendants' confessions. Guided by the criminal justice policy of *leniency to those who confess, severity to those who resist* (*tanbai congkuan, kangju congyan*), defendants are encouraged to confess at a very early stage of a criminal process. As a result, most confessed defendants have no legal rights to trade in return for a reduced sentence with the prosecutor (Biddulph et al. 2017; Li 2015; Lu and Kelly 2008; Yan 2013).

For a long time, this model of criminal proceedings has been criticized by many scholars for disregarding the defendant's rights and more likely leading to a miscarriage of justice (Chen 2016b; Biddulph et al. 2017). In practice, several remarkable wrongful convictions such as She Xianglin,[2] Zhang Gaoping,[3] and Huugjilt[4] were exposed and suggested the necessity of fundamental reforms in the criminal justice system.

On October 29, 2014, the Fourth Plenary Session of the 18th Central Committee of the Communist Party of China (CPC) released the Decision of the CPC Central Committee on Major Issues Pertaining to Comprehensively Promoting the Rule of Law. This decision was interpreted as a signal that the central government planned to start several reforms in the legal system. On the one hand, to increase the fairness of the criminal justice system, the decision proposed that placing the trial at the center (*yi shenpan wei zhongxi*) should be one of the future organizing principles of the justice system (CPC 2014). This reform emphasized that in complicated cases, the judge should invest enough time in court hearing to conduct fact-finding process rather than heavily relying on dossiers to determine the facts of a case (Shen 2015; Zhang 2015; Biddulph et al. 2017).

On the other hand, however, the criminal justice system in China also encountered increasing caseload pressures. This issue has been especially prominent for minor cases. First, China abolished its re-education through labor system on December 23, 2013. This system used to utilize administrative detention to punish people who committed minor crimes. After this system was abolished, a portion of these people were prosecuted within the criminal justice system, leading to a significant increase of cases handled by courts (Biddulph et al. 2017). Second, recent legal reforms also accelerated the professionalism of judiciary in China. One of these measures was the internal reallocation of personnel roles within the courts (*yuan'ezhigaige*). This program set a mandatory quota of legal staff to be selected as judges to adjudicate cases while assigning the administrative work to other personnel (Li 2016). As some scholars suggested, after this program was carried out, the number of legal staff with the title of judges decreased significantly, and thus, the number of cases handled by each judge increased drastically (Feng 2015). Finally, the trial-centerness reform also required that the criminal justice system has sufficient resources to handle complicated and serious cases, consequently limiting resources available to deal with minor crimes. Therefore, the CPC decision also stated that China aims to improve the justice system to help the justice system to handle simple or straightforward cases in a more efficient manner. One solution is to establish the *renzui renfa congkuan* (imposing lenient punishments on those pleading guilty

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[2] She Xianglin was convicted of murder in 1998 after he was tortured by the police and confessed. After he had spent seven years in prison, his wife re-emerged and his conviction was overturned.

[3] Zhang Gaoping and his nephew Zhang Hui were convicted of rape and murder in 2003 due to forced confession. In 2013, another suspect's DNA was found to match their case. Their conviction was subsequently overturned.

[4] Huugjilt was an Inner Mongolian who was executed on June 10, 1996, for the rape and murder of a woman. On December 5, 2006, ten years after the execution, another suspect Zhao Zhihong admitted he had committed the crime. Huugjilt was posthumously exonerated and Zhao Zhihong was sentenced to death in 2015.

and accepting punishments) system in the criminal justice system (CPC 2014). This system is described as a Chinese version of plea bargaining.

Two years later, the idea of developing a Chinese version of plea bargaining was implemented. On September 3, 2016, the Standing Committee of the National People's Congress formally passed a decision to authorize the Supreme People's Court and the Supreme People's Procuratorate to carry out the *renzui renfa congkuan* program, which is also known as the Chinese version of plea bargaining. This program was first carried out in 18 cities as a pilot program for 2 years and then expanded nationwide.

According to official regulations, the core idea of the *renzui renfa congkuan* program is to impose leniency on defendants who plead guilty, agree with the prosecutor on the sentencing recommendation, and sign a plea agreement (SPC 2016a, b). Several characteristics of this program indicate its similarities to the conventional model of plea bargaining in Anglo-American courts. First, this program allows defendants and prosecutors to reach a formal agreement on charges and sentences, which will be delivered to the judge for validation. Second, this program firstly acknowledges that the defendant and the prosecutor can negotiate as two parties over pleas and sentences (SPC 2018).[5] Last but not the least, this program allows defendants to plead guilty in exchange for some concession from the prosecutor by stating that a lenient disposition could be imposed on defendants who reach an agreement with the prosecutor (SPC 2016a, b).

Nevertheless, some scholars underline two important differences between the Chinese version of plea bargaining and plea bargaining in Anglo-American courts. First, the scope of plea bargaining in China is narrower than that in Anglo-American courts. While sentence bargaining is at the center of the Chinese plea-bargaining system, charge bargaining is not permitted. This means defendants cannot bargain with the prosecutor for lesser charges or having some charges dropped (Gu 2016; Zuo 2017). Second, because the Chinese criminal justice system is inquisitorial in nature and based on the notion that the factual truth, rather than the legal truth should be found in the courtroom, some scholars argue that the proof standard cannot be lowered even in cases whereby defendants plead guilty (Chen 2017; Sun 2018).

After implementing this program in 18 pilot cities for 2 years, the Chinese version of plea bargaining was expanded nationwide. On October 26, 2018, the Standing Committee of the National People's Congress in China revised the criminal procedure law (CPL). One notable feature of the 2018 CPL is that it added several articles on the criminal proceedings of *renzui renfa congkuan*. Specifically, the first amendment of the 2018 CPL stated that "criminal suspects or defendants who voluntarily and truthfully plead guilty, admit the facts of the crime as charged, and are willing to accept punishment could receive a lenient disposition." (Article 15). In addition, the 2018 CPL added some detailed articles on how this new criminal process should be operated, such as the obligation of police to inform suspects of their rights of guilty plea (Article 120), the obligation of the prosecutor to record and transfer the plea agreement (Article 162), and the obligation of the judge to review the voluntariness of guilty plea (Article 190). Moreover, the 2018 CPL also addressed the role of attorneys in plea bargaining by

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[5] Previous qualitative studies indicate that, in practice, prosecutors decide whether to initiate the plea bargain process right after cases are sent to them. They would meet with the defendant when they think a plea bargain is applicable in this case (Gu and Xiao 2017).

stating that a retained lawyer or an on-duty lawyer (*zhiban lvshi*) should be present when defendants sign a plea agreement with the prosecutor (Article 173).[6]

## Theoretical Framework and Prior Literature

Given that plea bargaining is a newly established system in China, there has not yet been a quantitative study on plea bargaining in China. By contrast, plea bargaining has been widely used in criminal cases in the USA since the late nineteenth century (Alschuler 1979; Vogel 1999). Now, most criminal cases in the USA are resolved through guilty pleas rather than trials.[7] Consequently, there has been considerable literature devoted to the empirical legal study of the practice of plea bargaining in US academia. There are two research questions concerning the empirical study of decision-making in plea-bargaining system: first, what factors influence a guilty plea versus a trial decision, and second, whether the decision of pleading guilty results in favorable case outcomes.

### Factors Affecting a Guilty Plea Decision

The decision of a guilty plea is normally believed to be a result of the discretion exercised by both the prosecutor and the defendant. Prior research has acknowledged that both legal and extralegal factors influence the decision-making of plea bargaining.

Among the legal factors, crime severity has been considered to play a critical role. Some qualitative studies in the US courtroom indicate that prosecutors differentiate between serious and non-serious cases. Specifically, prosecutors tend to deliver more serious cases to the trial because they believe these cases deserve much more resources and time than those of non-serious cases (Burke 2007; Ulmer 1997). This hypothesis was also supported by several quantitative studies. Meyer and Gray (1997) found that in DUI cases, defendants facing longer jail sentences were more likely to plead not guilty. Similarly, using the effect of judge assignment, Boylan (2012) found that a 10-month increase in prison sentences raises trial rates by 1 percentage point.

Whether a defendant had a prior criminal record is another potential legal factor that could influence the plea-bargaining decision. However, evidence provided by prior empirical work is mixed. Some found that defendants with prior arrests or convictions more often pleaded guilty than those without prior criminal records (Kutateladze and Lawson 2018; Myers 1982), while other studies indicated that prior convictions do not affect plea bargaining (Meyer and Gray 1997), or affect it in the opposite direction (Myers and Hagan 1979).

Last but not the least, previous studies have also suggested that some extralegal characteristics of defendants, such as race, gender, and age, could also influence the decision to go to trial. For example, there is evidence showing that males and older defendants are more likely to proceed to trial (Myers and Hagan 1979). Besides, previous studies indicated that

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[6] However, these on-duty lawyers do not act as a defense attorney and they will not appear in the court on behalf of the defendant. For example, in my sample, only around 12% of defendants had a lawyer to represent them. For the remaining defendants, according to the 2018 CPL, although an on-duty lawyer would give them some legal advice before the trial, these defendants would still be labeled as unrepresented during the trial.

[7] In the federal system, out of 78,155 convictions from October 1, 2013, to September 30, 2014, 76,163 were obtained through guilty plea. This proportion has reached 97.5%. In the state system, 94% of felony offenders sentenced in 2006 pleaded guilty (Bureau of Justice Statistics 2017; Bureau of Justice Statistics 2009).

Caucasians were more likely than other ethnic groups to plead not guilty (Meyer and Gray 1997). However, several other studies have found no influence of race (Ball 2006; Frenzel and Ball 2007; Kutateladze and Lawson 2018).

This study anticipates that legal and extralegal factors might influence the plea-bargaining decision in the Chinese context. Instead of using the prison sentence, this paper uses several characteristics of DUI crimes such as the BACs and the harm caused by DUI as a proxy for offense severity. In addition, other legal factors indicating blameworthiness such as victim compensation and confession[8] are also included in my model. Finally, whether extralegal factors such as gender and ethnicity have an impact on the discretion of plea bargaining were also tested in this study.

## Plea Bargaining and Case Outcomes

There are several theoretical frameworks to understand why sentence disparities exist between cases disposed by guilty plea and cases convicted at a trial. First, a guilty plea indicates that defendants acknowledge guilt and manifest a willingness to assume responsibility for their actions. Therefore, the sentence imposed on these defendants should be more lenient because they have expressed remorse and thus are less blameworthy (Bowers 2008; Church 1979).

Second, regarding practical issues, prosecutors need to maintain the expeditious movement of case dispositions to overcome increasing caseload pressures. Plea bargaining makes prosecutors more administratively efficient and gives them a better chance of securing convictions for those cases that do still go to trial. Consequently, the criminal justice system should reward defendants who plead guilty with better case outcomes (Bowers 2008; Easterbrook 1983; Guidorizzi 1998; Fisher 2000).

Finally, some criminologists posit that the plea offer made by prosecutors is a function of perceived probable outcomes of a trial. This "shadow of the trial" theory indicates that defendants pleading guilty receive a sentence discount because a defendant may not be convicted at trial. Specifically, according to this theory, a plea sentence reached by prosecutors and defense attorneys equals the possible sentence at trial, discounted by its conviction probability (Bushway and Redlich 2012; Bushway et al. 2014; Yan and Bushway 2018).

In summary, all these theories suggest that better case outcomes associated with a guilty plea have legitimate foundations. Previous quantitative studies in the USA also show that defendants who pleaded guilty, on average, received better case outcomes than similarly situated defendants who are convicted at trial (Brereton and Casper 1981–1982; Bushway et al. 2014; Meyer and Gray 1997; Yan 2020).

However, China has a criminal justice system that is significantly different from that in the USA. For example, in China, the criminal justice system has a conviction rate that exceeds 99.9% (China Law Society 2018). Consequently, the "shadow of the trial" theory can hardly be applied in the Chinese context. Also, many scholars are concerned that China has a reputation for the bias of its justice system in favor of the police and prosecutors. Therefore, it is possible that the guilty plea is coerced by the police and prosecutors and that defendants do not have the bargaining power to obtain a lighter sentencing outcome (Chen 2016a; Xiong 2016; Wang 2017). Therefore, empirical studies conducted in the American criminal justice

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[8] In China, most confessions occur in the investigation stage. Police records whether the suspect confessed and delivers dossiers to prosecutors. Therefore, confession is believed to affect a set of prosecutorial discretion including plea bargaining (Chen 2006; Goldstein and Marcus 1977).

system cannot offer straight ex ante prediction for the decision-making in the Chinese plea-bargaining system.

The current study is the first one to quantitively assess the effect of a guilty plea on sentence outcomes in the Chinese context. Specifically, a propensity score weighting technique is used to determine the treatment effect of plea bargaining. This methodology allows the comparison between the defendants who pleaded guilty and the defendants who did not plead guilty but had the same joint distribution of observed legal and extralegal features. Additionally, apart from the sentencing outcome, this paper examines other treatment effects such as pretrial detention and fines imposed on the defendants to answer whether the decision of a guilty plea brings true benefits to the defendant.

## Data

This study uses data on 6826 DUI cases processed by courts located in six cities—Beijing, Shanghai, Hangzhou, Fuzhou, Xiamen, and Qingdao. All six cities are located along the east coast, which is the most developed area in China. They are among the 18 pilot cities in which the Chinese version of plea-bargaining program was initially carried out in 2016. Besides, compared with other cities, these cities did a relatively better job on online publications of court judgments.[9]

My sample is constructed in two steps: First, I downloaded all the DUI case files adjudicated in these six cities from a website established by the Supreme People's Court in China: China Court Judgments (*zhongguo caipan wenshuwang*).[10] Starting from July 2013, the SPC requested that local courts upload all documents that reflect the disposition of a case on this website.[11] Therefore, I assume that case files downloaded from this website should cover most DUI cases adjudicated in my sample cities. Second, from each case file, I coded a series of legal and extralegal variables including prior criminal record, crime severity, gender, and ethnicity.[12] Additionally, case outcome variables including the pretrial detention decision and sentencing outcomes were also included. Most importantly, each judgment also recorded the information about whether the offender pleaded guilty and reached a deal with the prosecutor. Because the plea-bargaining pilot program was implemented on November 11, 2016, I began the observation period exactly on that day. The last judgment in my dataset was tried on July 22, 2018.

Drunk driving behavior has been criminalized in China since 2011 when the eighth amendment of criminal law was enacted. According to the current Chinese law, drivers would be sentenced to jail time from 1 to 6 months if the alcohol level in their blood surpasses 80 mg

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[9] For example, I found that in some other pilot cities such as Xi'an, courts removed some important information such as the pretrial detention and criminal attorney before uploading these judgments online.

[10] For other recent work using this database, see Liebman (2015) and Wei and Xiong (2019).

[11] The latest version of regulation states that local courts should upload any judgment online within seven days from the date of the case is disposed (Article 7) unless this case falls into an excluded category including cases involving state secrets, juvenile criminal cases, disputes concluded through mediation, divorce, and adoption cases (Article 4). Moreover, the regulation requires local courts to disclose the Case ID, the name of the court, the filing date, and the explanation whenever they decide not to release a specific case (Article 6) (SPC 2016a, b). This rule further institutionalized the publicizing of the court decision.

[12] Ethnic minorities in China are the non-Han Chinese population in China. China officially recognizes 55 ethnic minority groups within China in addition to the Han majority. As of 2010, the combined population of officially recognized minority groups comprised 8.49% of the population of mainland China.

per 100 ml. This study focuses on DUI cases for two primary reasons. First, as noted previously, China established plea-bargaining system to expedite the disposition of minor cases. DUI is one of the most common misdemeanors across the world. According to a Chinese annual report, the number of DUI cases disposed of through plea bargaining is the largest among all the crime types (Shangquan Law Office 2018). Therefore, how the courts dispose the DUIs would be a good indicator of the decision-making in plea versus trial.[13] Second, from the perspective of empirical design, compared with other criminal cases, the judgment of the DUI cases is relatively simple to code. Few DUI cases involve co-offenders. Moreover, in every DUI case, the judgment lists the blood test result of the defendant, which is the most critical indicator of the defendant's crime severity. The existence of this evidence enables us to control the decisive factor that influences the sentencing outcome in our empirical analysis, helping to identify the real effect of the guilty plea decision itself.

Table 1 provides summary statistics of my data. As can be seen from the table, among 6826 DUI cases, there are 1388 DUI cases in which the defendant pleaded guilty. According to the current version of criminal procedure law in China, there are three types of criminal procedure in the Chinese criminal justice system: from the most complete to the most compacted, namely, the ordinary procedure, the summary procedure, and the speedy trial.[14] Compared with other cases, plea-bargaining cases are more likely to be disposed of through speedy trial and less likely to be disposed of through the ordinary and summary procedure.[15] In addition, Table 1 shows that there exist several differences in legal factors between the cases in which defendants pleaded guilty and in which defendants did not. On average, defendants who pleaded guilty had a lower level of blood alcohol concentrations (BACs) and their DUI behaviors were less likely to cause accidents, which indicates their crimes were overall less serious. Finally, regarding sentencing outcomes, it is surprising to find that the mean sentence declared by the judge for defendants who pleaded guilty was longer than other defendants. However, this does not necessarily indicate that their sentence was harsher. In the meanwhile, the table shows that a higher percentage of plea-bargaining defendants (41.5%) were granted probation.

## Methodology

This study has two goals: First, it assesses what factors affect the decision of whether to plead guilty or go to trial. Second, it tests whether the decision of a guilty plea results in better case outcomes for defendants.

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[13] Admittedly, according to the 2018 CPL, plea bargaining could be applied in felony crimes as well. However, in practice, plea bargaining is much less used in felony crimes than in minor crimes such as DUI.

[14] In the ordinary procedure, the defendant is supposed to receive a full trial. In the summary procedure, cases are allowed to be tried by a single judge, thus eliminating several criminal procedures such as interrogating the defendant, questioning the witnesses and expert witnesses, and cross-examination. In addition, the time required for trial are reduced from three months to twenty days. In the speedy trial, defendants plead guilty, agree with the prosecutor on the sentencing recommendation, and sign a plea agreement before the trial. Cases disposed of through the speedy trial can be expedited by omitting both court investigation (*fating diaocha*) and court debate (*fating bianlun*).

[15] Summary procedure and speedy trial apply to cases in which the facts are clear, the evidence is concrete and sufficient, and the defendants have no objection to facts of the crime. Therefore, the case procedure type variable is used to control for how complex a case is. However, it is admitted although plea bargain could apply in all types of criminal procedures, in certain circumstances, whether a defendant pleads guilty could influence the criminal procedure as well, which raises a question on the causal relationship between case procedure and plea bargaining. I will return to this point in the discussion part.

**Table 1** Summary statistics of DUI cases in six cities

| Case disposition | Full sample (N = 6826) (I) | Plead guilty (N = 1388) (II) | Not plead guilty (N = 5438) (III) | T-STAT p value (II)–(III) |
|---|---|---|---|---|
| Case procedures | | | | |
| Ordinary procedure | 3.28% | 2.52% | 3.48% | 0.05 |
| Summary procedure | 36.13% | 18.37% | 36.52% | < 0.01 |
| Speedy trial | 60.69% | 79.68% | 55.72% | < 0.01 |
| Legal factors | | | | |
| Having prior record | 9.29% | 8.86% | 9.40% | 0.54 |
| BACs (mg/100 ml) | 154.13 | 147.84 | 155.69 | < 0.01 |
| Accident involved | 38.64% | 29.03% | 41.09% | < 0.01 |
| Confession | 92.98% | 96.97% | 91.94% | < 0.01 |
| Victim compensation | 16.64% | 11.82% | 17.86% | < 0.01 |
| Having a criminal attorney | 12.48% | 10.66% | 12.93% | 0.02 |
| Extralegal factors | | | | |
| Male | 97.26% | 97.05% | 97.32% | 0.59 |
| Minority | 3.69% | 3.60% | 3.71% | 0.84 |
| Pretrial detention | 68.25% | 60.81% | 70.15% | < 0.01 |
| Sentencing outcome | | | | |
| Declared sentence (months) | 2.19 | 2.32 | 2.15 | < 0.01 |
| Probation decision | 31.20% | 41.50% | 28.50% | < 0.01 |
| Fine (yuan) | 3464 | 3216 | 3527 | < 0.01 |
| Cities | | | | |
| Beijing | 32.98% | 35.23% | 32.40% | 0.05 |
| Shanghai | 23.18% | 14.12% | 25.49% | < 0.01 |
| Hangzhou | 9.79% | 13.54% | 8.83% | < 0.01 |
| Fuzhou | 8.88% | 2.45% | 10.52% | < 0.01 |
| Xiamen | 19.65% | 27.67% | 17.60% | < 0.01 |
| Qingdao | 5.54% | 6.99% | 5.17% | 0.01 |

Column I displays the descriptive statistics of variables regarding the characteristics of the full sample. Column II and Column III show average characteristics of defendants pleading guilty and not pleading guilty, respectively. The last column reports the associated $p$ value for a test of the null hypothesis of equal means across these two groups of defendants for each variable

To examine the factors affecting a guilty plea decision, I use logistic regression and the odds ratio to estimate a series of legal and extralegal factors on the likelihood that plea bargaining occurs to a specific type of case. The model is presented in the following form:

$$\log \frac{P_i(\text{plead guilty})}{1 - P_i(\text{plead guilty})} = \beta_0 + \beta_1 \text{criminal procedure}_i + \beta_2 \text{prior record}_i + \beta_3 \text{BACs}_i$$

$$+ \beta_4 \text{accident}_i + \beta_5 \text{confession}_i + \beta_6 \text{victim compensation}_i$$

$$+ \beta_7 \text{legal representation}_i + \beta_8 \text{gender}_i + \beta_9 \text{ethnicity}_i$$

$$+ \text{court}_{c(i)} + \epsilon_i \qquad (1)$$

plead guilty is a variable to indicate whether the defendant, in this case, pleaded guilty. And $\exp(\beta_1)$ to $\exp(\beta_9)$ indicate the effects of a series of legal and extralegal factors on the odds of the cases being plea bargained (versus not being plea bargained).

Table 1 shows that defendants who pleaded guilty tended to have a lower level of BACs and were less likely to cause an accident. If defendants who committed less severe crimes were

more likely to plead guilty, the leniency of case outcomes cannot be attributed to the decision of pleading guilty.

Therefore, in order to examine the relationship between a guilty plea and better case outcomes, statistical adjustments need to be used to control alternative explanations. One conventional way to address this methodological issue is to include these confounding variables in a simple linear regression. However, this method was criticized as being highly sensitive to the form of the model and the inclusion of important interaction terms (Imbens 2004; Ridgeway 2006).[16] Therefore, this study uses the methodology of doubly regression estimation to identify the effect of the guilty plea on case outcomes. This method combines a form of outcome regression with a model for the exposure (i.e., the propensity score) to estimate the causal effect of an exposure on an outcome (Funk et al. 2011). It has been widely used in natural and social science (Jiang et al. 2017; Uysal 2015) and was applied in criminology research to assess the effect of race bias in post-traffic stops (Ridgeway 2006). In my study, applying this methodology includes two steps: First, I used a propensity score weighting technique to construct a "comparison group" (e.g., defendants who did not plead guilty) whose distribution of potential confounding variables equals the "target group" (e.g., defendants who pleaded guilty). Generalized boosted model (GBM), a multivariate non-parametric regression technique, was used to estimate the propensity score. Specifically, I included all the legal and extralegal factors listed in Table 1 to calculate the propensity score.[17] Because the GBM modeling algorithm allows for flexible, non-linear relationships between all these control variables, this method would overcome the pitfalls of using multicollinearity model, which requires variable selection and thus is highly sensitive to the form of the model.[18]

Second, after the new sample was constructed, several regression models were applied to identify the effect of a guilty plea on case outcomes. In regression models, the same set of legal and extralegal variables were included. Notably, however, the propensity score weighting technique in the first step already allows two groups of defendants (plea versus trial) to have the same distribution of these confounding variables. Therefore, including these legal and extralegal variables would no longer change the estimation of the effect of a guilty plea on case outcomes. All estimates of these variables reveal their direct effect on case outcomes.

Table 2 shows the first step of doubly robust estimation. Different from the conventional propensity score matching method, propensity score *weighting* does not abandon any observation. This method weights each observation according to a propensity score. The effective sample size (ESS) gives an estimate of the number of comparison participants that are comparable with the target group after weighting. In my sample, after propensity score weighting, there are effectively 2587 non-plea-bargaining cases that have features similar to the plea-bargaining cases.

In Table 2, the fourth column displays the raw percentages. It indicates that the plea-bargaining cases and non-plea-bargaining cases indeed have different features. However, after using the propensity score weighting technique, the third column shows that the weighted percentages for the comparison group are uniformly close to the percentages for the target

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[16] For example, in my research context, the effects of some legal factors such as blood alcohol concentrations on case outcomes may not be linear. Also, some control variables may correlate with each other, thus making certain interactive effects possible. Therefore, simply applying multicollinearity models on the raw sample could be problematic.

[17] These variables include as the BACs of the defendant, whether an accident was involved, whether the defendant has a prior criminal record, whether the defendant confessed, and whether the defendant compensated the victim. Also, I include extralegal factors reflecting personal characteristics, including gender and ethnicity

[18] For a more detailed technical explanation of GBM propensity score calculation, see Ridgeway (2006).

**Table 2** Assessment of the comparison samples of defendants who did not plead guilty for a target sample of defendants who pleaded guilty from the propensity weighting

|  | Plead guilty, $N = 1388$ | Not plead guilty (weighted), ESS = 2587.1 | Not plead guilty (unweighted), $N = 5438$ |
|---|---|---|---|
| Legal factors |  |  |  |
| Having prior record | 8.86% | 9.05% | 9.40% |
| BACs (mg/100 ml) | 147.84 | 148.40 | 155.75 |
| Accident involved | 29.03% | 29.89% | 41.10% |
| Confession | 96.97% | 96.59% | 91.96% |
| Victim compensation | 11.82% | 12.49% | 17.87% |
| Having criminal attorney | 10.66% | 11.20% | 12.93% |
| Procedures |  |  |  |
| Speedy trial | 79.68% | 78.66% | 55.72% |
| Summary procedure | 18.37% | 18.60% | 36.52% |
| Extralegal factors |  |  |  |
| Minority | 3.60% | 3.40% | 3.71% |
| Male | 97.05% | 97.47% | 97.32% |
| Cities |  |  |  |
| Beijing | 35.23% | 36.89% | 32.40% |
| Shanghai | 2.45% | 2.92% | 10.52% |
| Hangzhou | 13.54% | 11.92% | 8.83% |
| Fuzhou | 6.99% | 6.61% | 5.17% |
| Xiamen | 14.12% | 14.85% | 25.49% |
| Qingdao | 27.67% | 26.81% | 17.60% |

group. Whether the defendant pleaded guilty, therefore, is the only factor differing between the groups by design.

Assuming the decision of a guilty plea is now the only factor differing between the groups of defendants and no other factors are affecting both the decision of whether to plead guilty and case outcomes, I use the following models to assess the effect of a guilty plea on case dispositions. To examine the effect of the decision of a guilty plea on pretrial decisions and probation decisions, I use logistic regression and the odds ratio to estimate the likelihood that one outcome will occur. For example, the model of effects on pretrial decisions is:

$$\log \frac{P_{it}(released\ before\ trial)}{1-P_{it}(released\ before\ trial)} = \beta_0 + \beta_1 plead\ guilty + \beta_2 criminal\ procedure_i$$
$$+ \beta_3 prior\ record_i + \beta_4 BACs_i + \beta_5 accident_i$$
$$+ \beta_6 confession_i + \beta_7 victim\ compensation_i$$
$$+ \beta_8 legal\ representation_i + \beta_9 gender_i$$
$$+ \beta_{10} ethnicity_i + court_{c(i)} + \epsilon_i \qquad (2)$$

released before trial is a dummy variable to indicate whether the defendant, in this case, is released before trial. The variable guilty plea is the coefficient of interest. It is a dummy variable which becomes 1 if this defendant pleaded guilty. Consequently, $\exp(\beta_1)$ indicates the effect of plea bargaining on the odds of the defendant being released (versus not being released). Also, a

number of legal and extralegal variables were included in the model. $\beta_2$ to $\beta_{10}$ reveal the direct effect of these factors on case outcomes. As noted previously, due to the design of doubly robust estimation, including these variables does not affect the estimation of $\beta_1$.

Regarding the effect of a guilty plea on sentence length and fine amount, similar OLS models are used:

$$\text{sentence length} = \beta_0 + \beta_1 \text{plead guilty} + \beta_2 \text{criminal procedure}_i + \beta_3 \text{prior record}_i$$
$$+ \beta_4 \text{BACs}_i + \beta_5 \text{accident}_i + \beta_6 \text{confession}_i$$
$$+ \beta_7 \text{victim compensation}_i + \beta_8 \text{legal representation}_i + \beta_9 \text{gender}_i$$
$$+ \beta_{10} \text{ethnicity}_i + \text{court}_{c(i)} + \epsilon_i \qquad (3)$$

sentence length is a continuous variable to indicate the length of sentence imposed on the defendant. Similarly, $\beta_1$ is the coefficient of interest, suggesting the average difference of sentence length between defendants who plead guilty and defendants who did not after controlling for a series of variables.

However, it is admitted that although this study uses an adaptive and flexible method—that is, doubly robust estimation to control for confounding variables, there is still potential concern that the estimates of a guilty plea's effect on case outcomes may be biased because defendants who pleaded guilty could have some unobserved characteristics from defendants who went to trial. This is a universal limitation in cross-sectional analysis (Baumer 2013; Yan 2020). I will return to this point in the "Discussion" section.

## Results

### Factors Affecting a Guilty Plea Decision

To answer the first question of which variables affected the decision of a guilty plea, I applied logistic regression analysis using the full sample. Table 3 shows the regression results. As can

**Table 3** Legal and extralegal factors affecting plea bargaining ($N = 6826$)

| | Plea bargain | | |
| --- | --- | --- | --- |
| | Odds ratio | 2.5% | 97.5% |
| Legal factors | | | |
| Having prior criminal record | 0.78*** | 0.60 | 0.92 |
| BACs higher than 80 (mg/100 ml) | 1.00 | 1.00 | 1.00 |
| Accident involved | 0.76*** | 0.61 | 0.95 |
| Confession | 3.00*** | 1.98 | 4.64 |
| Victim compensation | 0.76** | 0.59 | 0.99 |
| Having defense attorney | 0.91 | 0.69 | 1.19 |
| Summary procedure | 2.68*** | 1.86 | 3.92 |
| Speedy trial | 9.48*** | 6.52 | 13.98 |
| Extralegal factors | | | |
| Female | 1.24 | 0.84 | 1.80 |
| Minority | 0.94 | 0.61 | 1.44 |
| Court fixed | Yes | | |

**p < 0.05; ***p < 0.01

be seen in the table, the prior criminal record does affect the odds of defendants being disposed of through plea bargaining. For a defendant who had a prior criminal record, the odds of pleading guilty (versus not pleading guilty) decrease by a factor of 0.78. In addition, certain variables regarding offense severity influence whether defendants plead guilty. For example, for a defendant whose DUI offense caused an accident, the odds of plea bargaining decrease by a factor of 0.76. However, another determinant of crime severity, such as the blood alcohol concentration, is not associated with the decision of pleading guilty. In conclusion, I do find that defendants who had a criminal record and caused harm were less likely to plead guilty and reached an agreement with the prosecutor.

Also, confession does increase the likelihood that the defendant pleaded guilty. The odds of pleading guilty for confessed defendants are 3 times that of defendants who did not plead guilty. Victim compensation decreases the likelihood of plea bargaining. After controlling for the *accident* variable, for a defendant who compensated the victim, the odds of plea bargaining decrease by a factor of 0.76. This echoes concerns of some scholars, that is, victim compensation is not so readily incorporated into plea negotiations (Chen 2016a; Xiong 2016).

Finally, extralegal factors such as gender and ethnicity do not significantly affect the decision to plead guilty. Perhaps it is because of the negligible role that the small number of defendants with certain characteristics could play in a multivariate model. Indeed, less than 3% of defendants in our data are either female or minorities.

## Plea Bargaining and Pretrial Detention

After assessing the effects of legal and extralegal factors on the decision of a guilty plea, I examine whether a guilty plea resulted in better case outcomes using the sample created by propensity score weighting. As noted in the "Methodology" part, the propensity score weighting technique effectively created 2587.1 non-plea-bargaining cases that have features similar to the plea-bargaining cases. My target group has 1388 defendants who did not plead guilty. Therefore, the effective sample size (ESS) for my analysis becomes 3975.1.

First, I examine whether the guilty plea is associated with a lower likelihood of pretrial detention. The excessive use of pretrial detention was addressed and criticized by many scholars (Yi 2016; Lin and Shen 2016). In practice, more than 85% of defendants were detained before trial and this percentage was even higher in felony crimes such as robbery (Xiong and Wei 2017). Even for misdemeanor cases like DUI in my sample, only 31% of defendants were released before the trial.

Pretrial detention in China is not subject to judicial review and prosecutors serve as decision-making agents to evaluate the necessity of continued detention of the defendant (Yi 2016; Lin and Shen 2016). In the meantime, qualitative studies indicate that, in practice, prosecutors decide whether to initiate the plea bargain process right after cases are delivered to them and pretrial detention is one area of negotiation in plea bargaining (Gu and Xiao 2017; You 2016).

Therefore, if prosecutors offer concessions in pretrial-detention decisions due to a plea, the decision of a guilty plea is expected to increase the likelihood of a defendant being released before the trial. The first three columns in Table 4 display the results of the logistic regression model of the effect of plea bargaining on pretrial decisions using a doubly robust estimation. Column 2 shows the odds of being released before trial for plea cases is 6.35 times that of trial

**Table 4** Weighted logistic regression models of the effect of plea bargaining on case outcomes using the doubly robust estimation (ESS = 3975.1)

| | Released prior to trial | | | Probation granted | | |
|---|---|---|---|---|---|---|
| | Odds ratio | 2.50% | 97.50% | Odds ratio | 2.50% | 97.50% |
| Plea bargain | 6.35*** | 4.45 | 9.05 | 2.43*** | 2.01 | 2.94 |
| Having prior criminal record | 1.39 | 0.81 | 2.37 | 0.28*** | 0.18 | 0.44 |
| BACs higher than 80 (mg/100 ml) | 1.00 | 1.00 | 1.00 | 0.99*** | 0.99 | 0.99 |
| Accident involved | 1.71** | 1.07 | 2.73 | 0.27*** | 0.18 | 0.39 |
| Confession | 2.44*** | 1.28 | 4.67 | 0.56* | 0.31 | 1.02 |
| Victim compensation | 1.42 | 0.76 | 2.62 | 0.91 | 0.56 | 1.51 |
| Having defense attorney | 1.05 | 0.51 | 2.15 | 0.91 | 0.59 | 1.41 |
| Speedy trial | 1.11*** | 1.05 | 1.24 | 1.08 | 0.61 | 1.93 |
| Summary procedure | 1.65 | 0.78 | 3.53 | 0.83 | 0.47 | 1.45 |
| Minority | 0.77 | 0.39 | 1.53 | 0.53** | 0.29 | 0.98 |
| Female | 1.18 | 0.63 | 2.21 | 1.2 | 0.61 | 2.37 |
| Court fixed | Yes | | | | | |

ESS effective sample size

*p < 0.1; **p < 0.05; ***p < 0.01

cases. This suggests that plea bargaining results in a more lenient disposition in pretrial detention.

For other legal factors, I find that those who confessed had odds of pretrial release 2.44 times as high as those who did not confess. Surprisingly, defendants in cases involving an accident are more likely to be released before a trial. In addition, case disposition could also influence pretrial detention. Specifically, defendants disposed of through the speedy trial procedure are less likely to be granted a pretrial release. Finally, neither gender nor ethnicity has an effect on pre-trial detention.

### Plea Bargaining and Probation Decision

A common indicator of the fact that a defendant in misdemeanor cases received lenient sentencing outcome is that he or she was not incarcerated after the trial. According to Chinese criminal law, defendants who are sentenced to fewer than 3 years' imprisonment are eligible for probation (*huanxing*). These defendants do not serve their declared sentence in jail *from the very beginning* unless they commit new crimes or seriously violate rules of probation during the probationary period, which rarely happened in practice.

In misdemeanor cases, the probation recommendation is a main area of plea negotiation. A large portion of defendants tend to plead guilty in exchange for the concession that a probation recommendation would be written in the plea deal (Gu and Xiao 2017; You 2016). Given that more than 92% of sentencing recommendations offered by prosecutors would be accepted by judges in the Chinese plea-bargaining context (SPC 2017), this plea agreement, if reached, is very likely to bring true benefits.

To examine whether the decision of plea bargaining had an effect on probation decisions, the last three columns in Table 4 show the logistic regression results. As can be seen in the table, the fifth column shows that the odds of being granted a probation for plea cases is 2.43 times that of trial cases. This supports the argument that plea bargaining results in lenient sentencing outcomes.

In addition, many other legal and extralegal factors are also significant predictors of the probation decision. For example, I find that having a prior criminal record and a previous accident could decrease the odds of probation by a factor of 0.28 and 0.27, respectively. Interestingly, being a minority decreases the odds of receiving probation by a factor of 0.53.

## Plea Bargaining and Sentence Length

According to Chinese criminal law, DUI is subject to punishment of fewer than 6 months in jail. In my sample, every defendant received a declared jail sentence between 1 and 6 months. If a guilty plea resulted in leniency in the sentencing outcome, the average declared sentence length is expected to be shorter for defendants who pleaded guilty than for defendants who did not after controlling for all confounding variables.

The first three columns in Table 5 display the results of the OLS regression of the effect of plea bargaining on declared sentence length. Contrary to our expectation, I find that, on average, defendants who pleaded guilty received 0.27 months longer declared sentence length than defendants who did not.

Therefore, Tables 4 and 5 interestingly suggest contradictory conclusions on whether the guilty plea results in leniency. While Table 4 shows that defendants who pleaded guilty are more likely to be granted probation, Table 5 suggests that they received longer declared sentence length. To resolve this contradiction and examine whether plea bargaining results in greater leniency, I created a new variable: actual time served in jail. For defendants who did not receive probation, their actual time served in jail equals the sentence declared by the judge. However, as noted before, defendants who were granted probation do not need to serve their

**Table 5** Weighted OLS regression models of the effect of plea bargaining on case outcomes using the doubly robust estimation (ESS = 3975.1)

|  | Declared sentence length (month) | | | Actual time served in jail (month) | | | Fine amount (yuan) | | |
|---|---|---|---|---|---|---|---|---|---|
|  | Estimate | Std. error | p value | Estimate | Std. error | p value | Estimate | Std. error | p value |
| Plea bargain | 0.27*** | 0.03 | <0.001 | −0.22*** | 0.03 | <0.001 | 5.1 | 60.41 | 0.93 |
| Having prior criminal record | 0.14* | 0.09 | 0.09 | 0.54*** | 0.09 | <0.001 | 196.37 | 129.44 | 0.13 |
| BACs higher than 80 (mg/100 ml) | 0.01*** | 0.001 | 0.00 | 0.01*** | 0.00 | <0.001 | 15.81*** | 1.43 | 0.00 |
| Accident involved | −0.05 | 0.06 | 0.48 | 0.42*** | 0.07 | <0.001 | 133.81 | 116.12 | 0.25 |
| Confession | 0.26*** | 0.08 | 0.001 | 0.37*** | 0.08 | <0.001 | 397.71** | 158.68 | 0.01 |
| Victim compensation | 0.1 | 0.09 | 0.24 | 0.06 | 0.08 | 0.45 | 195.86 | 166.08 | 0.24 |
| Having defense attorney | −0.11** | 0.07 | 0.10 | −0.07 | 0.07 | 0.28 | 694.73*** | 127.72 | 0.00 |
| Speedy trial | −0.21 | 0.22 | 0.33 | −0.17 | 0.2 | 0.39 | −433.8 | 475.25 | 0.36 |
| Summary procedure | −0.15 | 0.22 | 0.50 | −0.02 | 0.2 | 0.93 | −819.96* | 472.91 | 0.08 |
| Minority | −0.21** | 0.09 | 0.01 | 0.04 | 0.07 | 0.52 | −78.79 | 119.11 | 0.51 |
| Female | −0.05 | 0.12 | 0.68 | −0.27*** | 0.09 | <0.001 | −71.53 | 234.26 | 0.76 |
| Court fixed | Yes | | | | | | | | |

*ESS* effective sample size

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$

declared sentence in jail. Therefore, their actual time served in jail equals to zero.[19] The middle three columns in Table 5 show the OLS regression results of a plea on this dependent variable: for defendants who pleaded guilty, the average actual time served in jail decreases by 0.22 months.

In addition, I also find a number of legal variables have a significant effect on sentence length. For example, having a prior criminal record increases the actual time served in jail, on average, by 0.54 months. One unit increase of BACs could result in an increase of actual time served in jail by 0.01 months. A prior accident increases actual time served in jail, on average, by 0.42 months. Finally, I also find that male defendants have 0.27 months longer actual time served in jail than female defendants.

### Plea Bargaining and Fine Amount

Finally, I examine whether the guilty plea had an effect on fine amounts imposed on defendants. The last three columns in Table 5 show the OLS regression results of the effect of plea bargaining on the amount of the fine. They suggest that whether the defendants pleaded guilty is not a significant predictor of the amount of fine. In contrast, other variables indicating the severity of crime could significantly influence the amount of the fine. Specifically, one unit increase of BACs of the defendant could increase the fine amount by 15 yuan.

## Discussion

One practical issue, which is true all over the world, is that the criminal justice system needs to maintain its efficiency without significantly compromising the rights of defendants. Plea bargaining is believed to be a potential solution because it can help lighten the caseload for prosecutors, save defendants from the discomfort of trial proceedings, and provide an extra opportunity of more favorable case outcomes (Bowers 2008; Easterbrook 1983; Guidorizzi 1998; Fisher 2000).

China is a country where the plea-bargaining system did not exist before. However, driven by similar motivations, such as expediting the dispositional process of "simple" cases and providing the defendants an extra opportunity to receive lenient sentencing, in September 2016, China started to carry out its own version of plea-bargaining program in several pilot cites. The present study is the first study to examine what factors influence a guilty plea decision and its relationship with case outcomes in the Chinese criminal justice system.

Using DUI cases in six cities as my research context, my study finds that several legal factors such as prior criminal record and crime severity have a significant effect on whether cases were disposed of through guilty pleas versus trial. Specifically, more serious crimes such as DUIs causing an accident and more dangerous offenders such as those with a criminal record are less likely to be disposed of through guilty pleas (as opposed to going to trial). This finding is consistent with prior studies done in American courts (Kutateladze and Lawson 2018; Meyer and Gray 1997). There exist several possible explanations for this. First, due to

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[19] Theoretically, the probation could be revoked if defendants commit a new crime or seriously violate probation rules. In this case, defendants need to serve their declared sentence in jail. However, in practice, this rarely happened. Empirical studies suggest that the overall revocation rate in China is below 1% (Zhao 2018). Therefore, given the actual data on the actual time served by defendants is not available, labeling their actual time served in jail as zero, though not completely precise, would not cause much bias.

the actual harm of certain DUI cases or elevated blameworthiness of certain defendants, prosecutors expect that these defendants are more likely to receive a harsher sentence if they go to trial. Therefore, they tend to make more punitive offers in these cases, which in turn discourage defendants from accepting them. Second, because the policy goal of this program is to expedite the handling "simple" cases, prosecutors are therefore able to allocate more resources to complicated cases. It is highly possible that prosecutors may use this program as a case management system. Prosecutors could have a screening process and prefer to reach an agreement with defendants who are less blameworthy. This mechanism, if it existed, could also explain why prior criminal records and crime severity significantly affect the decision of whether a defendant was disposed of through plea bargaining.

Notably, my study shows that cases without victim compensation are more likely to be disposed of through a guilty plea (versus going to trial). This is either because defendants who are not able to compensate for victims tend to plead guilty in exchange for some sentence reductions or because defendants who pleaded guilty feel it is unnecessary to compensate defendants. If the latter causal relationship exists, this supports the argument that an agreement between the prosecutor and the defendant does marginalize the role of victims in the criminal process (Chen 2017). In the US criminal justice system, there are several activities that define the emergence of the modern crime victims' rights movement (CVRM). The establishment of state victim compensation programs is a vital part (Young and Stein 2004). Some scholars also discussed several approaches to protect the role of victims in plea-bargaining cases (Manikis 2012; O'Hear 2007). My study suggests that the protection of victim rights should be a concern for policymakers in the future both in and outside of China.

Regarding the question of whether the decision of pleading guilty led to more favorable case outcomes, although there have been theoretical debates over whether the leniency resulted from a guilty plea is legitimate (Xiong 2016; Zhu 2016; Zuo 2017), my study reveals that in practice, defendants who pleaded guilty did receive better dispositions throughout the whole criminal process. Shockingly, my results show that defendants who pleaded had an odds of pretrial release 6.4 times as high as those who went to trial. As for the sentencing outcomes, my study shows that the odds of being granted a probation for defendants who pleaded guilty is 2.43 times that of defendants who did not plead guilty. Although defendants who pleaded guilty, on average, received a longer declared sentence, their actual time served in jail is significantly shorter. The disparity between these two groups of defendants can occur through two mechanisms. One explanation is that the plea-bargaining system offered an extra opportunity for defendants to receive leniency as promised. Therefore, defendants who pleaded guilty were granted extra "plea discounts." Another explanation, however, is that considering the Chinese criminal justice policy of leniency to those who confess, severity to those who resist (*tanbai congkuan, kangju congyan*), the criminal justice system in China could have utilized this system to facilitate case dispositions by threatening to impose the "trial penalty" on defendants who refused to plead guilty. If this is true, the development of a plea-bargaining system in China can hardly be said to bring benefits to defendants.

In a broad sense, my study reveals that, in a country where almost everyone would be convicted at trial, a plea could still result in relatively better case outcomes. Consequently, the "shadow of the trial" theory proposed by American scholars (Bushway and Redlich 2012; Bushway et al. 2014), at least, is not the only reason for sentencing disparities between plea and trial cases. To the contrary, my study shows that prosecutors could make concessions in plea cases even if they deem the defendant would certainly be convicted at trial. Therefore, findings in this study support other frameworks to understand the sentencing disparity between

plea and trial such as prosecutors use plea bargain to expedite case dispositions as well as reward remorseful defendant (Bowers 2008; Easterbrook 1983; Guidorizzi 1998; Fisher 2000).

This study is subject to several limitations. First, although it is true that courts are required to upload all decisions except for certain types of cases which are exempted, existing literature shows that local courts may fail to publish a portion of the cases due to various reasons, and the missing data varies widely by court and case types (Roberts et al. 2010). If the missing data issue is associated with certain case variables, it could generate biased estimates.

Second, this study is restricted to one type of criminal case—DUI. Although DUI is a typical type of simple cases disposed of through the Chinese version of plea bargaining, it has some characteristics that may prevent the accused party in DUI cases from significantly changing their case outcomes. For example, DUI cases have a relatively narrow sentencing range, which is from 1 to 6 months. Additionally, the result of a defendant's blood test provides prosecutors in DUI cases with strong evidence; thus, few defendants have the chance to refuse to plead guilty. It is possible that the results extracted from another type of crime might be different. To comprehensively evaluate the plea-bargaining system in China, more research should be done on additional types of crimes.

Third, although I tried to control for a number of legal and extralegal variables to examine the effect of a guilty plea on case outcomes, there are still some potential confounding variables that are not included in my study. For example, I do not have information about the socioeconomic status of each defendant. Some scholars argue that most underprivileged defendants are not familiar with the criminal justice system. Therefore, whether they fully understand the potential consequences of a guilty plea is highly questionable (Chen 2016a, b; Zuo 2017). Future studies could assess whether these characteristics of defendants influence the decision of a guilty plea and its relationship with certain case outcomes. Also, some control variables in my model could have some reverse causality issues. For example, I use the type of criminal procedure to control for how complex the case is. However, in some circumstances, the fact that a defendant pleads guilty would affect the criminal procedure type as well. Therefore, it should be cautious to interpret estimates of certain variables in my model as a causal effect.

Fourth, this study proposed several potential explanations for the empirical findings. However, due to the limitations of quantitative studies, most of them cannot be tested through data analysis. The interpretation of results could be more convincing if future studies combine quantitative research with qualitative research. Interviews with judges, attorneys, and prosecutors may provide new insights in understanding possible explanations of the results of this study.

Finally, my analysis focuses on six cities located in China's developed areas, which suggests the need for broader analyses focusing on other places. In future studies, researchers could study the plea-bargaining system in midwestern Chinese cities. Because these cities are located in less developed areas and have fewer legal resources, the plea-bargaining system may have been carried out in a different way.

## Compliance with Ethical Standards

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