1 Introduction

If we can understand why some men steal, this knowledge can potentially yield immediate dividends by helping us to control and prevent crime. But there is an even greater potential benefit over the long term, for once we understand why some men steal we will have a much clearer understanding of why other men do not steal, and thence of the fundamental bindings that hold together society.

The following essays look at several aspects of criminal behavior and try to understand how the patterns of criminal behavior can be incorporated into a larger model of humans as optimizing agents, using the toolkit of economics.

The first essay “A Simple Threshold Model of Theft” proposes and estimates a simple threshold model of theft, where all individuals have access to the same distribution of theft opportunities, and what differentiates them is their expectation of the cost of theft. The data support the basic assumptions of the model. The best predictors of theft are variables that are good proxies for patience and forward thinking.

The second essay “Criminal Careers In Two Dimensions” looks at data on criminal behavior from several well-established data sets and finds a high level of randomness at the individual level, that nonetheless follows fairly simple patterns when aggregated. It reinforces the general finding in criminology of the importance of the age-curve - the steady increase in criminal activity to a peak at age 17, with a slow fall from that point.

The third essay “The Thief’s Wages” develops a variant of the model in the first essay, and integrates the decision to steal into a larger model of human
capital development. As with the first essay, it finds that the best fit of the data with the model is provided by allowing thieves to be systematically more impatient than non-thieves.

A few general patterns come through in all three essays that are consistent with patterns found by previous researchers. First, covariates we would associate with impatience and impulsivity, specifically smoking behavior, emerge as strong predictors of crime. Secondly, crime is clearly focused around adolescence. Third, direct measures of punishments, costs and benefits (i.e., wages) do not appear to be very powerful in understanding the decision to steal.

There are two general points that I believe help us to understand crime in this way, and see how these and other patterns in the data can be fit together. First, the most important costs that a criminal faces for committing crime are costs inflicted informally by the people around him. That is, the most intense costs of crime to the criminal are the costs inflicted by society, not the state. Second, every individual faces a wide range of opportunities to commit crime, with widely variable benefits. For each individual, most of these opportunities are very low benefit - stealing a pack of gum, say - but a few are extremely lucrative - embezzling from the company’s accounts, for example. The variation within the pool of benefits available to each individual is far greater than the variation in the explicit costs of “being a criminal” between individuals (that is, the variation in the probability of being caught, the opportunity cost of time, the future impact on earnings of gaining a criminal record, etc.). Thus, while it seems probable that directly measurable costs and variation in marginal utility of money play some role in the decision to commit a particular crime, it is highly unlikely that they play a major role in the decision to commit crime in general.

In the remainder of this introduction I will attempt to establish both assertions.

2 Society acts last and most powerfully

Two examples can help to illustrate the power of informal social action. Abani (2004) tells the story of an incident in a local market in Nigeria, most likely in Afikpo, in the 1970s, where an unnamed man was accused of stealing from a vendor in a local market. The theft was not proven, and the details of what was stolen are unclear, but most likely it was food or a few items of fairly low value, perhaps a few days’ wages.

Nigeria, like many other African countries, has a system where local communi-
ties are generally governed by customary law, with decisions made and enforced by local representatives. This exists alongside a more centralized system of common law; cases can be moved from the customary law system to the common law system. Afikpo is a traditionally Igbo area, and the report on the crime and its aftermath comes from an individual with an Igbo father; while I do not have direct proof, most likely Igbo customary law would have had precedence in any criminal proceeding. While penalties for theft under Igbo customary law vary across different locations and time periods, punishments of another Igbo community in the 1980s and 90s were limited to fines and public humiliation (for a general discussion of customary Igbo law and its place in a community see Okerefoezeke (2003)).

Wedgwood (1962) briefly relates a story from the England of Charles I. In the 1630’s, as the country moved towards the religio-political crisis of the Civil War, three Puritans published pamphlets and made public statements criticizing a group of bishops close to the king.

Because many of the attacks came close to the king himself, this was considered the offense of sedition, and punishments included fines, prison and mutilation. In the mid-1500s it might have been construed as treason, which could be punished with death (for a discussion of the idea of sedition and its development from the 1500s to the 1650s, see Manning (1980)).

In the case of the Nigerian thief, the potential payoff relative to the expected cost of the formal punishment is fairly high, especially if the thief thought he would be likely to avoid detection. The theft seems to be a relatively good bet; looking purely at the material benefits and costs of the immediate situation and the legal context, and ignoring any ethical issues, we can see why this might be a reasonable action.

In the case of the English Puritans, there is no clear material payoff to denouncing the King’s policies, the crime was highly public and the odds of strict formal punishment high. Looking purely at the material costs and benefits and the legal context, it’s unclear why someone might take such a risk.

In the incident in 1970s Nigeria, the theft was discovered by some of the market vendors. The outcome was vividly and horrifyingly described by the Nigerian writer Chris Abani in the New York Times in 2004:

Suddenly, a lone voice screamed one word over and over: “Thief! Thief! Thief!” It was picked up slowly, as if the drizzle that afternoon had dampened the scent of blood. My aunt froze and faced the sound, nose sniffing the air like a lioness sensing prey. A man’s

\footnote{I came across a quotation from the account in Thurston (2011), which includes other examples of similar mob violence in a range of cultures and periods.}
voice, tired and breathless, tried to counter the rising chant with a feeble retort: “It’s a lie! It’s a lie!”

... The sound of a chase grew closer – desperate, pounding feet and shouts. A man with a wild expression came around a corner and nearly knocked over a stall. Young men were almost on his heels, followed some distance behind by a larger cluster. The man ran past us, and it seemed as if I could see the pores in his skin. ...[H]e was headed for the courtyard in the middle of the market, where the retired elders sat daily to dispense justice...The council of elders was the highest court in my community, besides, of course, the civil system. It arbitrated on everything from murder to marital disputes, and its authority was never questioned.

... The man stood in the middle of the clearing facing the elders while the crush of people pressed around them. In the center of this sacred space, the sole elder to stand up and call for tolerance was booed and pelted with rotten fruit. He sat down quickly and turned his face away. I was sure that the man was about to be lynched. How could the crowd ignore the elder’s intervention? And why didn’t the other elders speak out?

The mob was oddly silent; its loud breathing filled the space. The accused man began to beg, but people were too busy picking up stones and tree branches, anything that could be used as a weapon. A young man broke through the crowd carrying an old rubber tire and a metal can. He hung the tire from the accused’s neck. This singular action ended the man’s pleas for mercy. Resigned, he sobbed softly, mumbling inaudibly, but he didn’t move as the young man emptied the contents of the can onto him. The young man smiled and talked as he went about his task: “You see why crime doesn’t pay? I am doing this for you, you know. If you burn here, you won’t burn in hell. God is reasonable.”

Finishing, he held up a box of matches. The crowd roared. The elder who had tried intervening spoke again, but nobody listened. Someone called out, “Bring the children forward so that they can learn.” My aunt hustled me to the front.... I never saw the match fall, but I felt the heat as the man erupted into a sheet of flame, burning like a lighthouse in the drizzly haze. “Watch,” my aunt said as I tried to turn away from the writhing figure.

In the England of 1637, the state acted directly to judge and punish the three Puritans Prynne, Bastwick and Burton. As summarized by Wedgwood (1962): “[A]ll three were duly brought before the Star Chamber and sentenced. All three were pilloried, lost their ears”\(^2\), suffered huge fines, and were sent to

\(^2\)Most of Prynne’s ears had been cut off several years earlier, for earlier pamphlets, so the executioner removed the remainder (Cheyney, 1913).
prison for life.”

As harsh as this is, the description of the execution and its aftermath suggest that their actions may have been more rational than a simple formal description acknowledges:

The people...greeted them in the pillory with acclamation; Bastwick’s wife carefully received her husband’s ears in a clean handkerchief, laughing and joking with him the while, and when the executioner had done with him, climbed upon a stool, put her arms about his neck as he stood in the pillory and kissed him on both cheeks, the people loudly applauding. When the prisoners left London the streets were lined with sympathetic onlookers who showered gifts and good wishes upon them, and at Chester the Mayor and Corporations welcomed Prynne with a civic dinner and a gift of hangings for lodgings in prison.

It is important to note that both situations, while extreme, are far from unique. Instances of mob violence similar to the situation in Nigeria have been observed in virtually every society across every region and every century. The rewards provided to the three Puritans by their countrymen can also be observed in a number of instances. I chose the two stories for two reasons: first, the vividness of the descriptions, and second, the fact in both cases the available information strongly shows the punishments were inflicted purely for actions, not identities (mob violence of course frequently has an ethnic, religious or racial component).

2.1 Three players, infinite periods

In analyzing an individual’s decision to commit or not commit a crime, we can usefully simplify a range of complicated situations by focusing on three “agents” - the individual who has the choice to offend, the formal state structure that has jurisdiction in the investigation and prosecution of the crime, and the informal social structures that surround the individual. I will abbreviate these three as the individual, the state and society (victims and co-offenders may change the details, but will not affect the overall issues).

The stories above reinforce a general point that is sometimes not given the attention it deserves in the analysis of criminal behavior: society tends to get the last move, and tends to have the most power.

In both cases described above the formal systems of state power were secondary to the response of the informal systems that surrounded the individual, and in the case of the Nigerian thief, the formal systems, such as the community elders, simply sat by the sidelines.
The fact that informal social sanctions play a huge role in the individual’s expected utility from either committing or desisting from a crime would suggest that greater understanding of these sanctions is important. But it is quite difficult to find much empirical work that directly focuses on these informal sanctions. In economics there is a substantial theoretical literature on cooperation among agents (either individuals or firms), most of the empirical work is focused on issues of collusion among firms. There is a related literature in biology on cooperation. Both literatures have experimental work behind them, but little analysis of real-world situations. In anthropology many (perhaps most) ethnographies have at least a snippet or two that describes what happens to individuals who break the mores of the society being described. I have only been able to find one detailed systematic effort to put together a description of the informal penalties that people incur for breaking the rules of their social world: Merry (1984).

As Merry (1984) makes clear, social groups can enforce their rules using wide complement of tools, ranging from the sweetest carrots to the most violent of sticks. She focuses part of her discussion on the Sarakatsan shepherds in Greece. Among the Sarakatsan, there is a fairly public and uniform assessment of every family and every individual that is summarized in their “honor.” To have a high level of honor has consistent and ongoing material rewards such as access to pasture lands. Any loss of honor threatens these rewards and can also lose other privileges. Across the range of ethnographies she reviews, to lose favor among the other members of your social group is extremely risky. An individual who violates social rules regularly and/or egregiously goes from a loss of material rewards to greater and greater humiliations and stigma. Across the range of societies described, individuals who fail to follow the rules of the social group are at risk of actual violence, ostracism and even death.  

A full specification of the repeated interaction of these three agents - the individual, the state, and society - is beyond the scope of this paper, but using established results of game theory we can sketch out some of the issues. I am thinking in particular of the literature on infinitely repeated games.

It seems reasonable as a basic model that the individual has relatively little power to affect the payoff of either society or the state, while conversely both society and the state can drastically affect the utility of the individual with relative ease. If the individual’s behavior is “good” (honest, cooperative, law-abiding) that yields benefits to society and the state, but if it is “bad” (dishonest, violent, uncooperative) than a range of penalties can be enforced at low cost. One way this might be described theoretically is a stage game where the difference between the individual’s minmax payoff and his other payoffs was very substantial, while none of the payoffs of society or the state varied significantly.

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3I am skipping over many of the details and subtleties of this excellent article. Readers with an interest are urged to read the original.
Additionally, based on the discussion in Merry (1984), we can imagine society being able to subtly vary the per-period payoffs of the individual, based on his compliance levels. The payoff in a single time period for “excellent” behavior could be just a bit higher than the reward for “very good” behavior, for example. Over multiple periods, these subtle differences will aggregate into very substantial differences, giving society remarkable power.

Adding to society’s power in this repeated game is the potential to inflict a grim trigger strategy on the individual. And the grim trigger need not be anywhere near as grim as the lynching Abani describes. By ostracizing the individual for a serious infraction (a penalty that many societies enforce against serious offenders), society can effectively reduce the individual’s payoff to zero for the remainder of play. When compared to the aggregated benefits of positive rewards across an indefinite number of periods, a zero payoff is an extremely harsh reduction in utility.

In comparison with society, the state has some of the same powers, but is generally more limited. It has less ability to monitor the individual than his friends, co-workers and neighbors. It is likely to have fewer carrots to offer the individual for good behavior, and is likely to have more trouble enforcing any punishment or reward over long periods of time. Most of its rewards and punishments will be fairly uncertain and blunt, such as temporarily detaining an individual.

3 Variation in opportunities vs variation in costs

3.1 Variation in the benefits of crime

One of the stronger patterns that has come from research into the earnings from crime has been the wide range of variation.

In a study of active drug dealers in Washington, D.C., Reuter et al. (1990) find that “reported earnings were very skewed, reflecting the great range of selling frequency.” Dealers who sold on a daily basis earned a median of $2,000 per month net of any costs (the mean net income for daily sellers was $3,600, reflecting substantial variation even within this group). Dealers who sold only one day a week or less earned a median monthly net income of $50 (mean $160, again reflecting significant variation).

While Wilson and Abrahamse (1992) focus on the interquartile range in their data on the self-reported crimes and earnings of prison inmates, they find enormous range in number of acts of crime which immediately leads to dramatic range in earnings from crime. They write, “it makes little sense to analyze the costs and benefits of crime from the view of the average offender; for all practical purposes there is no such person.”
Re-examining the same data, Tremblay and Morselli (2000) include a wider range of reported activity and earnings levels. They find that about 15% of inmates average fairly high annual earnings of $4,566, while another 31% of inmates are both less active and less efficient and earn only $211 per year from crime on average.

In the first chapter of this dissertation, I look at earnings from theft for individuals in the NLSY and find a similar wide variation on both an annual basis and on a per-act basis. The median per-act earnings is roughly $30, and the range goes from zero dollars to over five thousand dollars.

In summary, across a range of data sets, the earnings from crime show enormous range, with the high earners earning a minimum of 40 times the low earners. There is no evidence in any of these data sets that the high earners are particularly capable relative to the general population; those earning $4,566 per year from crime are not supercriminals. All of the researchers seem to suggest that a wide range of noncriminals could achieve the same earnings (as Wilson and Abrahamse (1992) write, “[t]he wonder is that more people don’t steal”)

3.2 Variation in the costs or marginal utility of crime

When the range of realized opportunities vary by a factor of 40, and there is no evidence that variation in ability explains much of this, it would seem logical that variation in costs, or in marginal utility, explain why some people become criminals for $200 and others hold out for $4,000.

A very common explanation for the fact that some people steal and others don’t is income or wealth; the thieves are poorer and need the money more (an alternative, economist variant of this, is that thieves have lower opportunity costs, see Grogger (1998) or Freeman (1999)). As a conjecture, this is quite logical, and a number of interesting papers have found some evidence of it (Freeman (1999), Freeman (1991), Grogger (1998) Lochner (2004), and Gould et al. (2002)). However, there is a distinct lack of any smoking gun.

When we compare data on earnings from crime with data on variation in consumption, the idea starts to look even weaker. The recent paper showing the strongest consumption inequality in U.S. data is Aguiar and Bils (2011). Comparing consumption levels in the 5th to 20th percentile of income with consumption levels in the 80th to 95th percentile from 1980 to 2007, they find that the ratio of the consumption of the two groups has fluctuated between 2.5 to 3. That is, the variation in earnings among thieves is something like 10-15 times the variation in consumption between the wealthy and the poor in the United States. It would make sense that an individual at the 80th percentile would hold out for an opportunity 3 times greater than an individual at the 20th percentile, but if the criminals from poorer households were only earnings $200
in late 80’s, this would mean the wealthy should hold out for any opportunity over $600. Put differently, if $4,000 was far too low to entice someone at the 80th percentile, than essentially nobody should have been breaking the law for anything less than $1,000 per year.

4 Putting these together

I have argued that informal social groups that surround the individual have the power to offer rewards for compliance and punishments for offenses, and that a vital part of that power comes from subtle gradations in payoffs over along periods, a number of stylized facts of criminal behavior become clearer. Additionally, I point out that variation in potential opportunities from crime are far greater than variation in the directly measurable costs of criminal behavior to the criminal.

Putting these two ideas together, a number of stylized facts of crime become easier to understand.

The vast majority of crime is committed by individuals between ages 15 and 25. To the degree that an individual has the option to move to another location or social setting, it drastically reduces the power of society to affect his payoffs. The freedom to move away will be at its highest in adolescence, when the individual is no longer dependent on his family of origin, but does not have an established role in the larger group. Misbehavior will thus be “cheapest” at this point, and thus most common.

Researchers consistently point to self-control and impulsivity issues as causes of crime. Since for an individual choosing whether or not to commit a crime all punishments are in the future, the more awareness he has of future consequences, and the less he discounts future outcomes, the costs of punishment will be lower for more impatient individuals. The fact that the most powerful rewards and punishments will be implemented by society over long periods of time means that minor differences in patience will lead to radical differences in how the individual experiences the cost of punishment.

Evidence suggests that the majority of youthful offenders (i.e., the majority of offenders) commit crime only or largely with accomplices. While I have discussed society as a monolithic entity to simplify matters, it is of course composed of individuals. The judgment of peers will be part of the overall judgment of society. For an adolescent, his peers will be the group he can expect the most extended contact with - older individuals will die off earlier, younger individuals are not completely developed and so less “knowable”. Thus, if other members of his peer group are taking part, that

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4I review the evidence for this in the introduction and literature review of the first essay.

5This is reviewed in the introduction to the first essay.
substantially lower the costs of committing a crime.

**It is very difficult to find strong effects of measurable, formal costs and benefits of criminal behavior.** A standard model for analyzing the decision to commit a crime looks at only the formal expected cost of capture and punishment. Thus, to steal might be modeled as incurring an expected cost of $E(P) = p \times c$ where $p$ is the odds of capture and $c$ is the disutility of the punishment inflicted by the state. In a wide range of cases $p$ is likely to be substantially below $1/2$, and if $c$ is a brief stint in prison or less, then $E(P)$ can be quite low. As Wilson and Abrahamse (1992) comment, “[t]he wonder is that more people don’t steal.” But if we factor in the punishments that society can resort to (such as that experienced by the Nigerian thief), $E(P)$ becomes a much more complicated but much more powerful expression.

5 **Does this mean that material costs and benefits have no explanatory power?**

To say that direct material benefits and costs have limited explanatory power is not to say they have no explanatory power. There are a number of ways that direct material benefits and costs can enter into the decision to commit crime.

First, the benefits and costs of committing a crime most likely affect the decision to commit a crime at the margin. In my first chapter, I find evidence that more patient thieves hold out for higher earnings from crime; implicitly, the model suggests that lower expected returns would not have enticed the same thieves. However, this variation in “price” seems likely to be a small part of the overall equation.

An analogy can be made with the issue of “copycat” behavior. A significant literature has shown that in the wake of coverage of suicides, suicide rates increase (Phillips and Carstensen, 1986). That is, the public discussion of a single suicide increases the odds of another individual committing suicide. It seems possible that the public example lowers the social cost to somebody who is already thinking of suicide. However, the overall effect, while significant, is small; the change in suicide rates can only be established with large datasets. Similarly, the change in the “price” of the crime or the cost of formal punishment enter into the decision, but as small parts of the overall equation.

Secondly, a situation where material benefits of crime are likely to be substantial would be instances of systematic, ongoing corruption. In these cases, some of the social groups surrounding the individual are complicit in the crime. The rewards of corruption become part of the repeated payoffs these social groups can offer the individual (and at the same time, these groups can inflict intense punishments). But in contrast to crimes that are committed by small isolated
groups, corruption is more longlived, and the payoffs can be sustained for longer periods.

In a more general sense, there is some reason to think that measures of income and wealth could be negatively correlated with criminal activity.

First, the work of Heckman and his students (for example Cunha et al. (2006) and Lochner and Moretti (2004) has provided persuasive evidence that more education and earlier education can help to increase patience levels. More income and wealth yields greater resources for education and early childhood development, yields lower levels of criminal activity.

Second, while I have not been able to investigate the issue of social structures directly in the attached essays, there is substantial evidence that neighborhood structure and cohesiveness affect criminal behavior (Sampson et al., 1997). While collective efficacy is only partially determined by income and wealth, these variables play a role.

6 Conclusion

The preceding discussion has tried to sketch out some general ideas. The remainder of this dissertation looks at three specific issues and tries to support several novel interpretations of the data on crime.

The first essay gives a simple model of theft. It argues that there is little difference in ability across thieves, and between thieves and non-thieves. What explains differences in theft behavior is not differences in benefits, but differences in the costs of theft. The evidence suggests that perceived differences in cost are particularly important.

The second essay looks at the patterns of criminal behavior from the early teen years to the mid to late twenties, using a number of data sets. It points to the highly stochastic nature of that behavior, but also several consistencies that appear to apply across a range of data sets. The level of a criminal’s intensity appears to explain the number of acts of crime he commits, but there are lengthy periods where all but the most active criminals are not active.

The third essay applies a variant of the model used in the first essay, and links it to a larger model of human capital acquisition. The data add further support to the idea that impatience appears to play a major role in the decision to commit crime.
References


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