Is lack of self-control really a general theory of crime?
(A comparison of the "positive" and economic models of crime)

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I came to the conclusion that mathematical analysis is not one of many ways of doing economic theory: It is the only way. Economic theory is mathematical analysis. Everything else is just pictures and talk.

R.E Lucas.

On the mechanics of crime

Abstract

Criminologists and economists often differ in their approach to crime. The field of criminology was originally based on the idea of determinism, which means that criminals were a product of forces, psychological or biological, outside their control. This way of thinking lead to an influential "general theory of crime (Gottfredsson and Hirshi1990), which state that the main driver of crime, is that criminals, in general, lack self-control. The original theory suggests that individuals who were ineffectually parented develop low levels of self-control, which correlated with criminal conduct. If this approach to crime is correct, we should not expect that agents respond highly elastic to deterrence. The economic approach originally started with the work of Bentham, states that crime was a consequence of agents, having a free choice, showing adaptive behavior to different institutional circumstances. If this approach to crime is correct, a general theory of crime would be that agents are responding to price signaling, making individualistic utility maximizing calculations. Hence, crime, as a first order approximation, is highly elastic to deterrence.

The purpose of this paper is to take an overview of which kind of "general theory", one should start with, in order to understand crime at the aggregate level. Should one think of criminals as some "special" agents, lacking self-control or should one start with the "general theory" grounded in economics that agents are solving a cost-benefit problem? First we show, with analytical tools, that the idea of lack of self-control could be viewed as a specialized case of the economic approach, where agents are using infinite time discounting. Secondly we ask the question would such a world with pathological criminals even be possible. We will show that, even if people are "irrational", a general equilibrium exist, which mean that lack of self-control actually could be a general theory of crime. In such a case, the implication seems that a police force is really "fishermen catching fish in the water". This

implies that society still should be able to control crime, using optimizing tools, where the marginal cost should equal marginal benefit. Hence, even under such circumstances, the economic model is highly relevant.

Finally, we have analyzed some data at country level. Many psychologists suggest that problems of time discounting could be either a consequence of low IQ or bad parenting, which again could be a consequence of poor living conditions. Therefore, we should expect some correlation between IQ, GDP per capita, and the incarceration rate. We have compared data for 133 countries and did not found any significant correlation between these variables. There is, however, a strong positive relationship between the relative number of foreigners in prison and GDP per capita, suggesting that rich countries import a large number of criminals. Hence, this seems to imply, that criminals are at least partly driven by economic factors. Overall, we think that this point in the direction that the economic model of crime is more suited as a general theory, and that the idea of lack of self-control should be viewed as a special case.

1. Introduction

Criminology is not a very well defined field in social science. It has inputs from a range of fields; i.e. sociology, psychology, psychiatry, jurisprudence, and since 1968, when Becker published his article, "Crime and Punishment: An Economic Approach,"(Becker 1968), also economics. Hence, because of the weak definitions of criminology as an independent science, it has also turned into a battlefield between different types of methodologies. Taking a closer look at the differences between methodologies, one could argue there really are only two approaches: the idea of *biological or social determinism* and or the idea of man having a *free choice.* On one hand, the idea that criminals are created by forces, psychological or biological, outside their control, is common among many criminologists. Without a doubt, this methodology has led many criminologists, to the conclusion that the effect of deterrence on crime is doubtful. Because criminologists use a totally different philosophical assumption than economists — who believe agents have "free choice" — there seems to be no common ground between them. Thus, on the other hand, we will argue that there is one possibility for common ground; namely, that criminals in general are impatient. This influential idea was suggested by the sociologists Gottfredsson and Hirshi (1990) who called this a "general theory of crime"; therefore, in the following study, we will ask: "What would a society look like, where crime is a consequence of pathological agents? And what empirical consequences would it have?"

Economists tend to use the philosophical assumption that an individual tries his to best to optimize and utilize his environment. This is not to say that economists assume *homo sapiens* to be lightning-fast calculators, but state that man tries to adapt himself to the existing environment. If this approach is true, we should expect a positive elasticity between crime and

punishment, simply because an economic entity should respond to price stimuli. In the case of crime, such types of stimuli would, of course, be the probability of detection and the related punishment compared to the alternative. This is not the same as saying punishment should be as severe as possible. An expectation of greater punishment would lead to more deterrence, but on the other hand, would also have some negative welfare implications (Levitt 2006, Polinsky 2006).

Many criminologists suggest a different philosophy sometimes referred to as *positivism*. This rejects the idea that criminals have a *free choice,* but instead are victims of forces beyond their control that stem from biological and/or sociological variables. From this perspective, criminals are regarded as *sick*. Crime is, therefore, either a social construct (sociological determinism) or a result of *genetic heritage* (biological determinism). With this point of view, there cannot be any simple connection between crime and punishment, because the deterrent effect is very much in doubt as David H. Bayley famously put it; "*one of the best kept secrets of modern life is that police do not prevent crime." (Bayley 1994).* Along the same line of argument, see also (Gottfredson and Hirschi 1990, Sherman 1992). As an example of biological determinism, see e.g. (Raine 1993).

2. Missing self-control among criminals

The idea that criminals, in general, lack self-control was originally developed by criminologists Travis Hirschi and Michael Gottfredson (Gottfredson and Hirschi 1990). The self-control theory of crime suggests that individuals who were ineffectively parented before the age of ten develop less self-control than individuals who were raised with better parenting. Even though that theory in its original form was built upon sociological determinism, the lack

of self-control could be argued to be connected to biological variables like IQ. This line of argument was forcefully addressed by Murray and Herrnstein in *The Bell curve* (Hernnstein 1994), arguing that people who are intellectually inferior are much more likely to become criminals than are people with a higher IQ. The strong correlation between low IQ and delinquency has long been established (Lynam et al. 1993), so, if one argues that lack of self-control is a general theory and we accept the correlation between IQ and delinquency, then we must argue there is a correlation between low IQ and self-control as well.

For an economist, thinking that lack of self-control — which again is determined by biological and/or sociological variables — could be a major factor in criminal behavior is difficult, because economic methodology denies biological and sociological determinism (Levitt 2006). Economic theory implies that agents have a *free choice* in solving their cost-benefit problems, which means agents are not forced to choose by some invincible power outside their control. This is not to say that economists actually believe man has a *free choice* and that they believe in a "ghost in the machine" (Pinker 2002). The sum of biological and sociological variables must in the end be one, but the complexity of man's choices is enormous. The brain consists of 100 billion neurons and 100 trillion synapses with an unimaginable level of complexity, which means that choices cannot be predicted in a simple way. Because of this incredible complexity, one could argue that it would be more fruitful, at least at the aggregate level, to start with the assumption that man is trying to maximize his utility and solve a cost-benefit problem. This is, of course, a totally different philosophy, which means that delinquency must be analyzed in a much more general framework where agents solve some kind of cost-benefit problem. At first glance, it seems impossible to connect the theory of lack of self-control with the theory of free choice.

3. The connection between self-control and impatience – the model

One problem with the term *self-control* is that is seems to connect so many unobserved psychological variables that the term is constantly open for a variety of interpretations. This variable which seems to come closest to self-control must be the term *impatience* in economics (Hoch 1991). People make choices and sometimes these involve a time perspective, and therefore, a discount factor. When it comes to crime, it is very logical to emphasize that the gains come first and the costs come (maybe?!) later. If criminals, in general, heavily discount the future, the deterrent effect of punishment must be very small. This is especially true if society uses imprisonment as a weapon against crime, because imprisonment is punishment by time, meaning that high discounting will lower the impact of imprisonment. The idea that some criminals could be viewed as impatient is not a new one for economists. See, for example, (Davis 1988, Mocan 2005, Mccrary 2009, Beraldo 2011).

Let us, therefore, connect the idea of impatient agents to the standard economic model of crime, which could be interpreted in the following way:

Let ω be the monetary equivalent of punishment. Time horizon is $i = 1,2 \dots T$, and θ is the time preference. Hence the discounted price of punishment, W, doing something wrong could be stated as:

(1) $$W = \sum_0^T \left(\frac{1}{1+\theta}\right)^i \omega_i,$$

Suppose the cost of doing crime comes with some probability, p. Assume further there is some benefit from doing crime τ, then, the expected benefit from doing crime $E(\tau)$ must be;

(2)
$$E(\tau) = p(\tau - \sum_0^T (\frac{1}{1+\theta})^i \omega_i) + (1-p)\tau$$

Or as:

(3)
$$E(\tau) = \tau - p(\sum_0^T (\frac{1}{1+\theta})^i \omega_i)$$

In the simple case where T=0, for example when agents are trafficking and the fine comes immediately, the above collapses to:

(4)
$$E(\tau) = \tau - p\omega$$

In such a case, crime is just a simple cost-benefit analysis, answering the question what is the benefit from doing crime and what is the cost of doing so. Economists would call this *a general theory*.

However, in more serious criminal cases, when people go to jail, time discounting, would play a role. It must be true that agents would only commit crime if:

(5)
$$\tau > p \sum_0^T (\frac{1}{1+\theta})^i \omega_i,$$

Meaning that the benefit of committing a crime is higher than the cost. But if criminals are pathological, $\theta \to \infty$, then

(6)
$$\lim_{\theta \to \infty} p \sum_0^T (\frac{1}{1+\theta})^i \omega_i \to 0$$

And in such a case, the cost of committing a crime collapses to zero and deterrence by jail would be extremely inefficient.

From a methodological perspective, it is interesting to note that the idea of *self-control* is a general theory of crime from a sociological point of view. But from an economists' point of view, the general theory of crime must be that the benefit of committing a crime is greater than the cost! From the economic perspective, an infinite θ should only be regarded as a highly special case, with few consequences for the standard socio-economic model.

We will, however, in the following assume that $\theta \to \infty$, and therefore, criminals are pathological and do not respond to any deterrence. Would that even be possible? And, how would the flow of crime in society be like?

4. A society model if a criminal has no *free choice* ($\theta \to \infty$) - is it Possible?

In the following, we ask the question: "What if criminals really are controlled by a force outside their consciousness, and therefore, acts before they think?" Let´s indicate the absolute number of newborn criminals by N. In each period of time, a fraction k_6 of the criminals will be *healed*, meaning they would leave the crime sector. Hence $k_6 \in [0; 1]$. We can think of many reasons why this would happen, but that is not the question of this research. Some of the criminals will be caught by police, which we will denote as a fraction k_4. Also, some criminals will be released from prison, X, and some of them will commit a new crime in the next period. Let's show that by k_2. The evolution of the crime sector, C, in this economy is therefore:

(7)
$$\frac{dC}{dt} = -k_4 C - k_6 C + k_2 X + N$$

Or put differently[1]:

(8)
$$\frac{dC}{dt} = \gamma_1 C + k_2 X + N$$

Where $\gamma_1 = -k_4 - k_6$ therefore $\gamma_1 < 0$

The evolution of the total number in jail is a function of how many criminals are taken out of the game k_4, and how many leave jail, *healed* k_5, or again become criminals k_2.

(9)
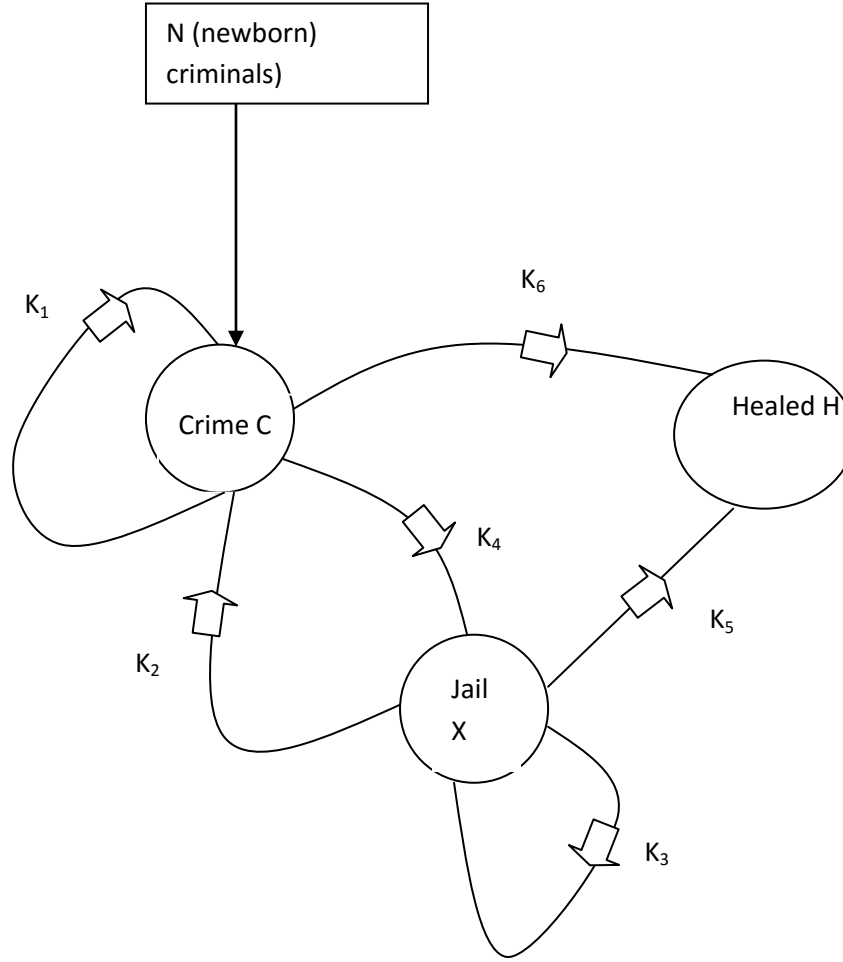$$\frac{dX}{dt} = k_4 C + \gamma_2 X$$

Where $\gamma_2 = -k_2 - k_5$ or $\gamma_2 = k_3 - 1$, therefore $\gamma_2 < 0$ $(k_3 \equiv 1 - k_2 - k_5)$

And the evolution of the *healing* sector is:

(10)
$$\frac{dH}{dt} = k_5 C + k_6 X$$

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[1] It is a major assumption that offenders cannot commit further crimes while incarcerated. Marvell and Moody estimate the impact from incarceration to be on average at least 17 index crimes.

Figure 1. Overview of the flow of crime in society

Because criminals in this society are pathological, deterrence has no effect. Also note that the sum of all the fractions *k* must be equal to 1.

Because the crime sector and the jail sector are not dependent on the evolution of the healing sector, we find the solution of $\frac{dC}{dt}, \frac{dX}{dt}, \frac{dH}{dt}$ by solving the system:

(11)

$$\begin{bmatrix} \gamma_1 & k_2 \\ k_4 & \gamma_2 \end{bmatrix} \begin{bmatrix} \dot{C} \\ \dot{X} \end{bmatrix} = \begin{bmatrix} N \\ 0 \end{bmatrix}$$

We find the eigenvalues of the homogeneous solution by solving the matrix:

(12)
$$\begin{bmatrix} \gamma_1 - r & k_2 \\ k_4 & \gamma_2 - r \end{bmatrix} = 0$$

Then obtaining:

(13)
$$r^2 - (\gamma_1 + \gamma_2)r + (\gamma_1\gamma_2 - k_2k_4) = 0$$

see also note 2.

Let's define the trace of (5) and the determinant of (5) as

(14)
$$tr(A) = \gamma_1 + \gamma_2 \text{ and } |A| = (\gamma_1\gamma_2 - k_2k_4)$$

Now finding the roots of equation (6) by solving:

(15)
$$r_1, r_2 = \frac{tr(A)}{2} \pm \frac{1}{2}\sqrt{tr(A)^2 - 4|A|}$$

This equation has real and distinct roots, meaning the solution to the homogenous is therefore:

(16)
$$C(t) = C_1 e^{r_1 t} + C_2 e^{r_2 t}$$

(17)
$$X(t) = \frac{r_1 - \gamma_1}{k_2} C_1 e^{r_1 t} + \frac{r_2 - \gamma_1}{k_2} C_2 e^{r_2 t}$$

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[2] A different way is to differentiate (1) obtaining $\ddot{C} = \gamma_1\dot{c} + k_2\dot{X} \Rightarrow \ddot{C} = \gamma_1\dot{c} + k_2(\gamma_2 C - \gamma_2 X)$. Isolate X from (1) gives $X = \frac{\dot{C} - \gamma_1 C}{k_2}$, then insert in above to obtain : $\ddot{C} = \gamma_1\dot{c} + k_2(\gamma_2 C - \gamma_2 \frac{\dot{C} - \gamma_1 C}{k_2})$, which allows us to form the differential equation of second order: $\ddot{C} - (\gamma_1 + \gamma_2)\dot{C} + (\gamma_1\gamma_2 - k_2k_4)C = 0$

Proof:

A linear system of differential equation has the solution (9) and (10) when $tr(A)^2 - 4|A| > 0$.

From (7) we get that:

(18)
$$(\gamma_1+\gamma_2)^2 - 4(\gamma_1\gamma_2 - k_2k_4) = \gamma_1^2 + \gamma_2^2 + 2\gamma_1\gamma_2 - 4\gamma_1\gamma_2 + 4k_2k_4$$

Then it must be true that:

(19)
$$(\gamma_1-\gamma_2)^2 + 4k_2k_4 > 0$$

Because both k_2 and k_4 are < 0.

Steady state

The complete solution of (4) is found by solving $\frac{dC}{dt} = \frac{dX}{dt} = 0$. We, therefore, get the complete solution as:

(20)
$$C(t) = C_1e^{r_1t} + C_2e^{r_2t} + \frac{-\gamma_1N}{\gamma_1\gamma_2 - k_2k_4}$$

And

(21)
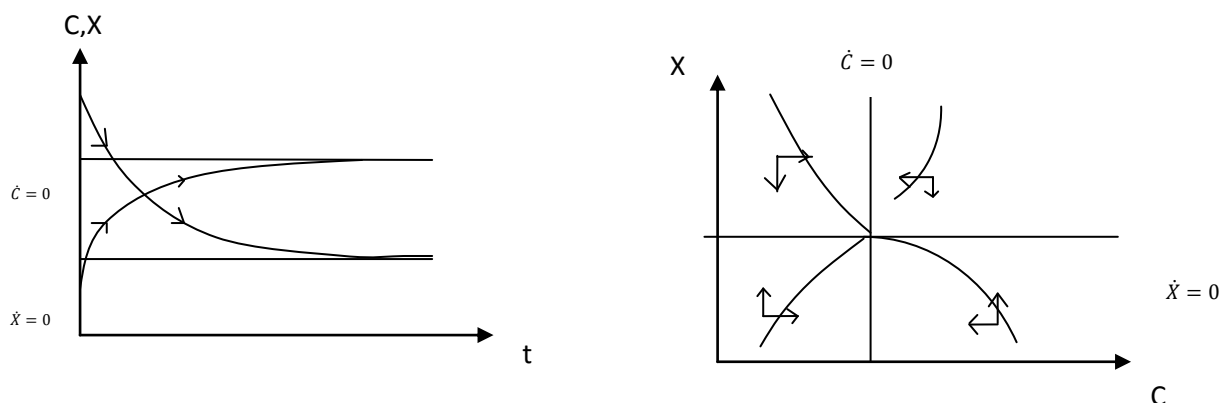$$X(t) = \frac{r_1-\gamma_1}{k_2}C_1e^{r_1t} + \frac{r_2-\gamma_1}{k_2}C_2e^{r_2t} + \frac{k_4N}{\gamma_1\gamma_2 - k_2k_4}$$

As $t \to \infty$ we obtain the steady state solution as:

(22)
$$\lim_{t\to\infty} C = \frac{-\gamma_1N}{\gamma_1\gamma_2 - k_2k_4}$$

$$(23) \qquad \lim_{t \to \infty} X = \frac{k_4 N}{\gamma_1 \gamma_2 - k_2 k_4}$$

Figure 2a and 2b: Both the crime sector (C) and the prison population (X) would converge to a long run steady state, as $t \to \infty$

When criminals are pathological, the interesting theoretical prediction is that we should expect a simple steady-state solution. The police force acts simply as "fishermen," catching "fish in the water." This is a never-ending story as long as in each period, there will be newborn criminals. Hence, it is absolutely possible that the lack of self-control could be a general theory of crime. Actually, even if preferences for crime cannot be changed with any sociological variable, we are in a situation where "nothing works" (Martinson 1974). If agents are determined purely by forces outside their control, society could still obtain a steady-state by allocating resources to more police and incarceration. Because of this simple steady-state, there should not be any deeper trouble for the economic model of crime, in the sense that the central planner problem is pretty much standard.

4.1 The control

Let's assume that society is not able to control N, the number of criminals being born, and let's assume that society is not able to create any deterrent effect. This, as we have shown, does not lead to the conclusion that "nothing works," because society is still left with the possibility of incarceration (controlling k_3 (time spent in prison) and k_4 (the size of police force) and still has a range of pedagogical or psychological tools, which are able to teach the criminals self-control, thereby partly controlling k_5 (training in jail) and k_6 (prevention work).

Let's assume that society wants to minimize the cost of crime. Each parameter $k_3, k_4, k_5,$ and $k_6,$ would lower crime and thereby create some benefit for society, W, (wealth). It is absolutely reasonable to assume that any use of $k_3, k_4, k_5,$ and k_6 will run into diminishing return to scale, so $w'(k) > 0 \ and \ w''(k) < 0, \ k = \{k_3, k_4, k_5, k_6,\}$. If we simply assume that the cost of each factor $k_3, k_4, k_5,$ and k_6 could be obtained by some constant $a = \{a_1, a_2, a_3, a_4,\},$ any optimizing strategy could simply be stated as **:**

(24)
$$\frac{dw}{dk} = a$$

This says that the marginal benefit from combating crime by using our control variable should equal the marginal cost of using them, which means that the conclusion from Gary Becker (1968) holds independent of any effect from deterrence.

5. Empirical evidence of the impatience model

Following, we present some empirical evidence for the impatiens model based on a country-level data. We have seen that the lack of self-control, if it is connected to the idea of infinite

discounting, could actually lead to a stable solution. So the lack of self-control could actually be a general theory of crime, and no one doubts that criminals are sometimes pathological. This is true in consumer theory, and it could also be true when it comes to crime. But when it comes to human action involving consumption or work, we use a general theory which states that pathological consumers are a special case of the general theory. But when it comes to crime, most criminologists assume that pathological criminals are the general case of crime, which is just the opposite to economic perspective. Most of crime is against private property. [3] Nearly all criminals seem to try to minimize the expected loss from their action. A bank-robber wears a mask. A thief goes out at night and so on. No one disagrees with the statement that agents with very high human capital would seldom be involved in crime. This is what we should expect if people are rational. Being a criminal is, if the economic model is true, primarily a poor man's game.

As a proxy for the idea of absent self-control (impatience), we are using the evolutionary psychological term, *intelligence*. One could argue that intelligence (IQ) is strongly negatively correlated with discounting (Shamos 2008). The idea is simple. Low IQ means that people find it difficult to make abstractions, and because future cost is an abstraction, we should expect that low IQ would be a strong predictor for criminal behavior. That crime is correlated with low IQ is not really controversial (Hernnstein 1994, Rushton 1995). But this does not prove that the causality goes from IQ to missing self-control and on to crime. One could argue that, instead, this confirms the economic model, because low IQ, in turn, could lead to less human capital, and therefore, fewer social opportunities. There is really not much to be learned in just sitting and observing single criminals, because you will be subject to a self-

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[3] See e.g. Office for National Statistics, UK, 2013. At least 70% of recorded crime was crime against private property. This number does not include for example violence, where economic incentives are a main driver.

selection bias. Maybe many criminals are not that bright. But that does not mean they are opportunistic.

In the empirical setting we apply the hypothesis, that there exists a spread between races/countries in IQ (Hernnstein 1994, Rushton 1995, Lynn 2010, Wicherts 2010) This is, of course, a purely positive statement, and we will not discuss the political implication any further. The IQ data can be obtained from Richard Lynn IQs calculated and validated for 133 nations (Lynn and Vanhanen 2006; Lynn and Meisenberg 2010), and Rushton: National differences in intelligence, crime, income, and skin color in a total of 133 countries. Data for imprisonment can be found at http://www.prisonstudies.org/sites/prisonstudies.org/, which also contains data for the relative foreign prison populations. Data for GDP per capita can be found at World Economic Outlook Database-October (International Monetary Fund 2013). We have validated all the data and coordinated for the obvious fact that many countries have a large number of foreigners in prison. The summary statistics are presented in table 1.

Table 1. Summary statistics, 133 countries

	Mean	S. D.	Min	Max
GDP per capita	19,750.43	19,000.40	552	100,889
Iq	87.59	11.10	60.00	108.00
Prisoners per 100,000	176.70	127.83	24	709
Local prisoners per 100,000	156.47	123.08	7	659
Foreign prisoners per 100,000	14.20	20.79	0	92.2

Source: http://www.prisonstudies.org/sites/prisonstudies.org/, World Economic Outlook Database-October 2013

In table 2 we present a correlation matrix which shows the degree of association between the variables.

Table 2. Correlations between variables, 133 countries

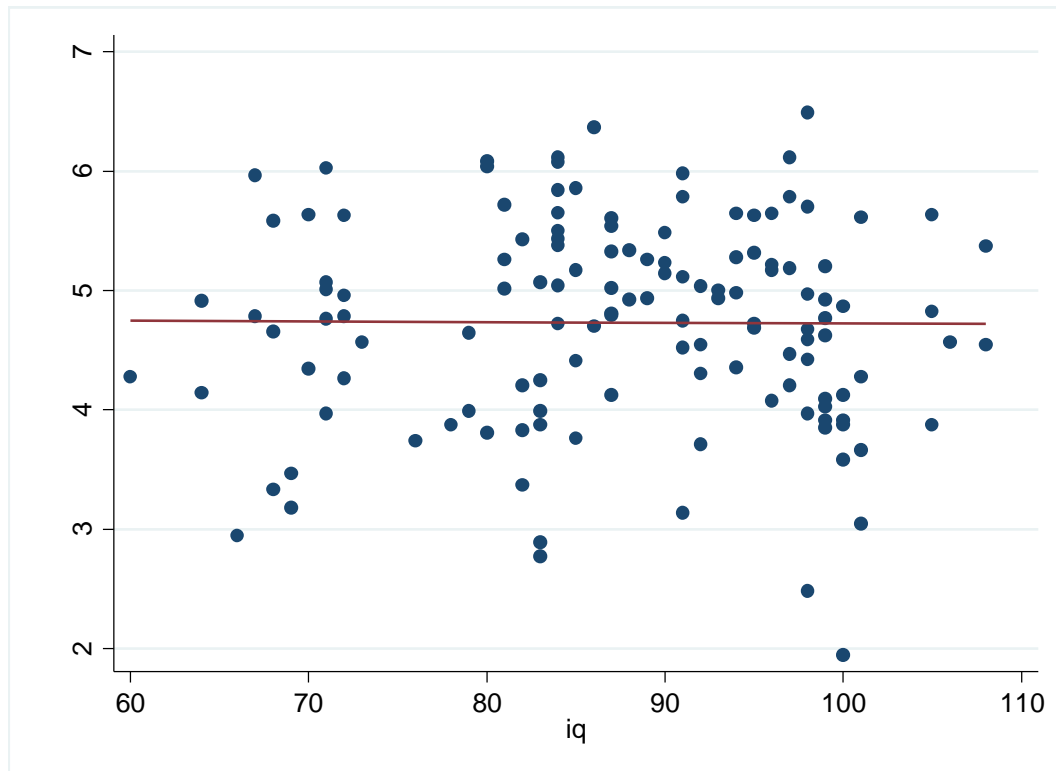|	Log of GDP per capita	Iq	Log of prisoners per 100,000	Local prisoners per 100,000	Log of foreign prisoners per 100,000
Log of GDP per capita	1.00				
Iq	0.70****	1.00			
Log of prisoners per 100,000	0.21**	0.08	1.00		
Log of local prisoners per 100,000	-0.02	-0.01	0.90***	1.00	
Log of foreign prisoners per 100,000	0.60***	0.29***	-0.13	-0.42***	1.00

Note: Figures reported are Pearson's correlation coefficients. Significance at 1 percent level ***, significance at 5 percent level **, significance at 10 percent level *.

The correlation matrix shows a very high and significant correlation between GDP and IQ. If human capital is a driver behind economic growth and GDP as most economists believe is true, this is to be expected. There is also a high correlation between GDP and the percentage of foreigners in prison. However, if the dataset should point in the direction of biological determinism, we should expect a correlation between IQ and the local prison population. The matrix shows there is no such correlation.

Figure 2 presents a scatterplot, which reveals that low IQ countries do not have more local people in prisons than high IQ countries do. But we should expect that low IQ countries should also have more problems with very impatient people. This is not confirmed by the figure 2.

Figure 2. IQ and local prison population, 133 countries

Another possibility is that IQ and self-control is determined by the environment. This argument is the original one among many sociologists (crime is a social construct). There are, of course, many sociological variables that could be argued to intercept and create *impatience*. I believe most sociologists would accept that if this is true, rich countries should create much better *self-control* than poor countries do. To see if there is correlation between imprisonment and wealth of the countries, we run a multiple regression also controlling for IQ.

Tabel 3. Regression of local prisoners, 133 countries

	Coefficient	S.E.
ln of GDP per cap.	-0.02	0.09
Iq	0.001	0.01
Constant	4.84*	0.66
R^2	0.00	
Number of countries	133	

Note: Significance at 1 percent level ***, significance at 5 percent level **, significance at 10 percent level *.

Once again, there is no evidence in this direction. In the dataset we have used, there is no correlation between imprisonment and GDP. Nothing seems to imply that poor people in general have a tendency to stimulate growth in the number of pathological criminals.

Interestingly, the dataset reveals a significant positive correlation between the number of foreign prisoners in jail and GDP per capita (see table 2). Table 4 shows the results for two simple regressions: one for full sample and another one for European countries. We restrict the sample to European countries in order to have a more homogenous sample with respect to culture and institutional settings.

Tabel 4. Regression of foreign prisoners

	All countries		European countries[a]	
	Coefficient	S.E.	Coefficient	S.E.
ln of GDP per cap.	0.85***	0.10	2.36***	0.42
Constant	-6.48***	0.93	-21.66***	4.35
R^2	0.36		0.51	
Number of countries	133		31	

Note: a) the sample consists of EU countries plus Norway, Switzerland and Lichtenstein. Significance at 1 percent level ***, significance at 5 percent level **, significance at 10 percent level *.

The results show that a one percent increase in GDP per capita is associated with an increase in the foreign prisoner's population of 0.85 percent, when we take all countries in to consideration. The result becomes even more significant, when we restrict sample to European countries, then a one percent increase in GDP per capita leads to a 2.36 percent increase in foreign prisoner's population. Rich countries seem to have many foreigners in prison! Of course, in such a simple cross-country analysis, there is a huge impact from selection bias. So, the estimates should be treated with care. But the significant positive correlation between countries' wealth and the share of foreigners in prisons offers strong

evidence for the fact that many criminals are driven by very basic economic considerations. If these people are insane, we should not expect to find more foreign prisoners in rich countries, than in poor. But this is simply not the case. Therefore lack of self-control cannot be a general theory of crime.

6. Conclusion

Most economists believe that criminals are primary driven by cost-benefit considerations. They do, however, accept the idea that some criminals sometimes find themselves in a position where they use infinite discounting, and therefore, take action without much consideration of the future. There seems to be some anecdotal evidence that this could be true. Many psychologists, sociologists, psychiatrists, and lawyers in the field of criminology do not believe in the economic model. They start with the assumption of determinism, that agents do not have free choice, and therefore, do not maximize anything. Instead, they are driven by some inner variables beyond their control. If this is true, the deterrent effect is more than doubtful. Instead, many believe the lack of self-control is a general theory of crime.

If the lack of self-control is stated in algebraic symbols and is denoted as time discounting, then we can see that a society with pathological criminals could obtain a steady-state. Deterrence is, therefore, not essential. If society minimizes its loss from crime, it should respond pretty much as Becker forecasted in 1968, by setting marginal benefits equal to marginal costs.

If lack of self-control is a general theory of crime, we should expect to find some evidence in an aggregate dataset. Some evolutionary psychologists have shown that IQ differs among

countries, and many believe that IQ is a primary driver behind time discounting. Therefore, low IQ countries should produce more people with little self-control, and therefore, have expanded prison populations. There seems to be no evidence for this hypothesis. Others have argued that sociological forces (parenting) are the main driver in the lack of self-control. We should expect to find better parenting in more economically developed countries, and therefore, lower levels of imprisonment. But there is no evidence that richer countries have lower prison populations. In the end, we have seen rich countries do have a problem with many foreigners committing crimes. This presents the simple question: If self-control is a general theory of crime, why do criminals go to rich countries and then become pathological? It seems more reasonable to believe they go to rich countries because the benefit of committing a crime is greater than at home. Therefore, it seems reasonable to conclude, that criminology should actually be viewed as a special branch of economics, rather than as a special branch of psychology or sociology.

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