

A Literature Review Into The Economics Of Crime And Its Policy Indications

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Abstract

I conducted a literature review into the subjects of economics of crime and its origins with a further review into the questions of policy within the subjects of crime and economics. I first go through the basic ideas of the field from classic models to modern research done with new econometric tools and natural experiments. I find that at least in Finland the policy matters are quite well aligned with the findings of the conclusions in the literature reviewed. The quest for understanding crime and its driving forces is quite complex and has a multitude of variables but in conclusion with the findings, Finland is on the better part of countries when it comes to crime rates.

Keywords Economics of crime, urban economics, labor economics, policy, crime,
literature review

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1 Introduction

The relationship between crime and the economy has been studied for a while now. It began in the United States with the work of Gary Becker (1968). The motivation for studying crime and economics then was to ratify crime the same way economics tries to ratify other aspects of our economy and to aid policy-making with a model of illegal activity. The theories began by building a risk–opportunity framework which was used to apply an economical viewpoint to the question of how we should try to control and punish crime for the balance of crime deterrence and the observed crime to be as efficient as possible.

In the simplest terms, a risk-neutral rational actor would calculate the possible income of a "legal" job versus the possibility of an income in the illegal actions taking into account the possibility of getting caught and facing the consequences be they fines or possible imprisonment. The possibilities in the labor market due to educational status or minimum wage policies for entry-level positions can make illegal activities less attractive. Crime and past criminal activities also have an observed negative effect on future possibilities possibly due to a "social cost from punishment through stigma and expulsion from socially rewarding networks". (Freeman, 1999)

The difficulties with the theoretical framework of crime lie in the fact that crime is a complicated sociological phenomenon. The moral aspects of criminal behaviour are hard to quantify and rely hardly on the legislative environment. There are also difficulties in obtaining detailed time-series data of crime, incarceration, and employment of individuals because of the nature of the subject.

The purpose of this thesis is to go through the literature on the subject of *economics of crime* and highlight the current status of research in the field then review the current status of policy in Finland in relation to the studies.

2 Overview of Economics of Crime

The basic model (Eide, Rubin, & Shepherd, 2006) with its extensions observe crime as a possibility which a rational actor will decide on. If the expected outcome is positive, criminal activity is an optimal choice. If the expected outcome is negative the crime will not be committed. In most cases, the positive side of the utility function is quite self-explanatory. The negative side of the function can be quite complicated. The basic model is based on the model by Gary Becker in *Crime and Punishment: An Economic Approach* published in 1968.

2.1 Individual decisions

Freeman (1999) describes crime in a market model where there is an aggregate supply of crime and demand for crime. The supply side of this model comes from individual actors who weigh their willingness to take part in criminal activities for different levels of pay or utility. In the most simplest models the demand side can be attributed to the different demands for illegal goods e.g. drugs. The standard economic model of decision-making used by Freeman expresses the supply side decision quite clearly.

$$(1 - p)U(W_c) - pU(S) > U(W) \quad (1)$$

In this equation, W_c is the pay for a successful crime and W is the pay from legitimate work. S is the punishment and p is the probability of getting caught. This model works so, that if the inequality is fulfilled, an individual will be susceptible to committing the crime. On the left side of the equation first the inverse probability of apprehension $(1 - p)$ which scales the utility from the crime $U(W_c)$. The probability of apprehension then scales the utility of apprehension $U(S)$. This latter utility is in general negative. On the right side, there is only the utility of a legitimate work $U(W)$. And thus if the probability-adjusted utility of crime is larger than the utility from legitimate work the individual might choose crime. The model is an egregious simplification of the problem which only takes into account the possible pays of crime and legitimate work and the probability and consequences/cost of getting caught.

The model would suggest that the optimal response to reduce crime would be to raise the cost of getting caught i.e. make the penalties more severe.

In the later papers on the subject, the individual utility function combines the legal and illegal revenues. The equation used by Eide et al. (2006) is as follows.

$$E[U] = PU(W - f) + (1 - P)U(W + g) \quad (2)$$

Here differently from the first equation (1), W is in both cases the legitimate wage and f is the cost of getting caught and g is the possible gain from the crime committed. P is again the possibility of getting caught. The difference between the equations is not huge, but it's an important differentiation. While the earlier equation compares legitimate work and illegal revenue, the latter equation compares the possible gains or costs of the criminal activity to a baseline legitimate income.

2.2 Market model

In the market context, crime can be modelled by a supply-demand model. The basis of individual decision-making is aggregated and it now has implications for itself. The demand side is modelled by the rewards of crime and the quantity of crime with a downward sloping curve. With more rewards possible from crime, the more crime would be demanded so to say. The aggregate of the supply side can be turned into two metrics: crimes per person - CPP, or criminal participation rate - CPR. The variables that affect the slope of the supply are risk tolerance and the probability of apprehension.

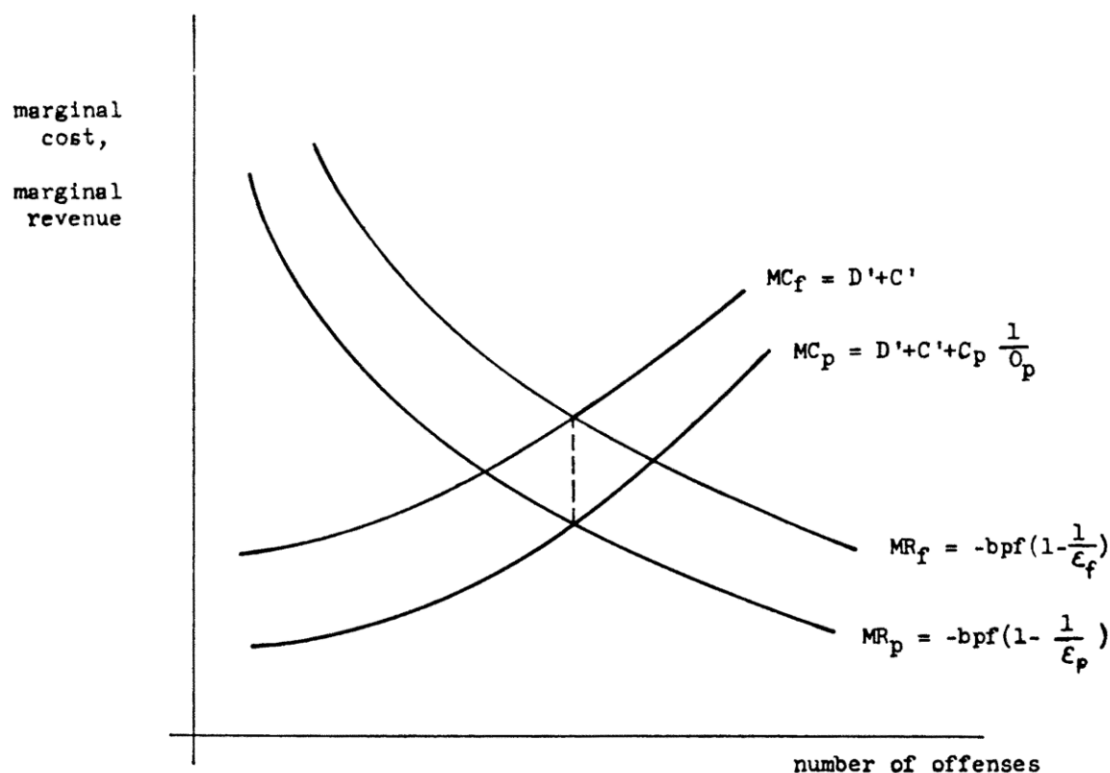


FIG. 1

Figure 1: The market model of crime (Becker, 1968)¹

2.3 Incapacitation effect

The main claim that supports incarceration is that removing an offender from the general population would incapacitate them from committing subsequent crimes and thus would reduce crime. The logic behind this effect is sound but the model has some issues. Firstly in the more broad sense, it relies on there being a fixed amount of offenders in the population. If this was the case it would lead to a linear effect of reduced crime for each incarcerated offender by the amount of their individual

¹The figure is mostly for visualization purposes. It's a complex model and for deeper understanding of the theoretical part I advice to read the cited article. Figure legend: D is the net cost to society, C is the amount spent in combating offences, O is the number of offences, p is the probability of conviction per offence, f is the punishment/cost per offence and b is a coefficient that transforms p and f into the real cost.

crime rate. The model also relies on the idea of a so-called criminal career which in the case of imprisonment would be interrupted and so would decrease overall crime. (Piquero & Blumstein, 2007)

The concepts of incapacitation effect and the supply of crime don't quite work hand in hand. While the former concept relies on the idea of a criminal career and that by incarcerating a criminal they are incapacitated from committing more crime. The latter concept builds on the basis of if there is a demand for crime, there is an individual to do it. The demand-supply framework will produce an equilibrium point that works like a market clearing level for crime and the rewards and thus by itself incapacitation should not affect the general crime rate. It should be quite obvious that on an individual level there is an incapacitation effect by design.

The overarching consensus between studies seems to indicate that there is a measurable incapacitation effect and even a measurable deterrent effect which means that by increasing the punishment by for example lengthening sentences we can reduce crime with only the knowledge of harsher sentencing. The latter was researched in a natural experiment in the US by studying the effect of hardened sentencing in crimes that involved a firearm. The study found that after the adjustment in the law a 5% decrease in firearm-assisted crime could be measured. However, this reduction may have a positive spillover into other crime (Abrams, 2012). The shortcomings of the supply model could be explained by a delayed response or with a low elasticity on the supply side.

3 Supply of Crime

Crime as a whole is a widespread phenomenon with countless different manifestations. When talking about crime we can go from defamation to aggravated assault or from petty larceny to tax fraud or money laundering. At its broadest, studying or even discussing the incentives and deterrents of crime is not meaningful. However, crime can be and has been categorized quite effectively. In this section, we will consider only a subsection of crime that has incentives in making an economical profit (the term *property crime* has been used in most studies but doesn't perfectly embody the idea of profit-seeking crime. Freeman (1999) uses the term *income-producing crime* which works well as a catch-all term). This way we can study a bit further into the economics at play.

3.1 Unemployment

Unemployment is linked to crime in a couple of ways. The most common connection is made by thinking of unemployment as the lack of legal income opportunities. In an unemployment situation, it can be rationalized that crime can be an attractive option when the choice is between crime and life in poverty (Eide et al., 2006). The estimates of the actual effect of unemployment have varied between studies even from positive to negative. However, Chiricos (1987) conducted an aggregate research on the subject of rates of crime and unemployment where he found that the relation between unemployment and crime (U-C) is highly conditional but concludes that the evidence suggests a positive and significant U-C relationship.²

This finding was also backed by a more recent study by Aaltonen et al. (2013). The study was conducted on Finnish panel data and it found that while unemployment doesn't explain violent crimes or drunk driving, it has a clear association with property

²These studies have been conducted in the United States and it must be taken into account when making generalizations about the issues. Chiricos (1987) notes that further research should be conducted into the effect of public-assistance benefits which mostly varies across nations.

crime which in the context of the basic models makes sense.

3.2 Crime while employed

Even though unemployment and crime can be linked together, the reality is that the connection is not absolute. Crime and employment co-exist quite prominently in the real world contrary to model 1 which was introduced in the second section. In that model, the choice was either legitimate or criminal. Criminal activity and legitimate employment can go hand in hand in a couple of ways.

Firstly individuals working temporary or seasonal jobs can have an increased probability of committing a crime. A study with Finnish data found that the highest probability of crime was found in individuals who had been unemployed for 1-5 months (Ramakers, Aaltonen, & Martikainen, 2020). The other ways of combining employment and crime are to use crime as an additional revenue source in combination with income from a legitimate job. For example, Fagan (1992) found that drug dealers can have benefits from keeping a legitimate job to find more customers. Lastly, a job can be used as a platform to commit the crime, the clearest example being tax fraud.

3.3 Income inequality

When discussing income-producing crime and by looking back at the models in the previous chapter we can deduce that the level of income at entry-level jobs should have an effect on the willingness to commit a crime on an individual level. This absolute income and its adequacy can be thought of in relative terms as income inequality. In other words, if the income from the lowest paying jobs is not enough to support a "normal" lifestyle, criminal income can be seen as a viable option to hold on to status or lifestyle. Choe (2008) found in his research with state-level data from 1995 to 2004 that relative income inequality has a strong and robust impact on the rate of burglary and property crimes. The notion of legal income and its adequacy in discouraging crime can also be backed by the finding that large negative

income shocks have a clear effect on crime rates (Bignon, Caroli, & Galbiati, 2017).

However, income inequality has a variety of additional effects on the community, and the absolute effect on income inequality might not be as clear-cut as found in some papers. In a working paper, a meta-analysis by Corvalan & Pazzona studied the findings of other studies in the field which more often than not found that inequality had a positive effect on crime. The meta-analysis concluded that in the standard model an increase in inequality increases crime. However, by including protection in the model the effect is reduced close to zero. The paper suggests that with the increase in inequality, the rich increase their private protection which then reduces crime making the net effect close to zero. The paper also suggests a publication bias in the field where the more precise estimates tend to find a coefficient that is closer to zero and the less precise estimates publish a positive coefficient. (Corvalan & Pazzona, n.d.)

3.4 Labor Opportunities

The prominence of labor opportunities is often brought up when studying repeat offenders and their possibilities of integrating back into society after incarceration. However on a more general level by circling back to the first model, labor opportunities be it based on education or location have a meaningful effect on the pay of legitimate work, which would affect the individual choice. On the positive side of labor opportunities, it has been found that additional schooling has a great effect on reducing crime (Lochner & Moretti, 2004). The negative side of labor opportunities lies with previously incarcerated individuals who are looking to get back into the labor force. The studies heavily suggest that having a criminal record has a negative effect on employer callbacks in recruiting scenarios (Agan & Starr, 2017). This has consequences again by the effect of unemployment which can easily undermine the rehabilitation process of former inmates.

3.5 Benefits

Another positive (in the sense of less crime) factor are unemployment benefits in their countless variations. Their aim is to stabilize the individuals' income across difficult times. However, unemployment benefits have been under the political magnifying glass for various other reasons. This has led to various restrictions like the activation model in Finland or duration cuts as seen in the UK in 1996. The changes in these benefits can have moral or budgeting reasons but the changes often have wide-ranging effects. For example, the unemployment benefits duration cut has been studied to have a positive (in the sense of more crime) effect on crime in the UK (Engelhardt, Rocheteau, & Rupert, 2008).

3.6 Demand of Crime

The idea of a market model includes a supply and demand framework. The supply side, as explained in this section is thought of as being the more interesting part. The supply side is the part that is easier to have an effect on. To examine the demand side of crime we need to go back to the market model figure 1.

The demand side is modelled as a downward sloping curve where the number of crimes goes down when the criminal earnings go down. Now in this context, it's beneficial to further categorize the types of crime into victimless crimes and victims' crimes. Victimless crimes include such crimes as drugs and prostitution. (Freeman, 1999) However, it's not this black and white as it's well known that drug trafficking and manufacturing can (and often do) include and host a variety of other criminal activities which cannot be classified as victimless. Further, prostitution in itself can be thought of as victimless, but the driving forces can include abductions, human trafficking, forced labour, and/or sexual exploitation (Europol, 2022).

In the model victimless crimes behave as normal consumer goods where the demand is a function of the price. If let's say drugs are really cheap and readily

available, the demand goes up. However, if they get really expensive, their demand goes down. Now with victims' crime, the relation is not that straightforward or even accurate. Despite that, it has been used as the theoretical basis in early publications. The idea is that as crime and victimization get more common the "demand for safety" increases and thus affects the cost of crime by increasing the probability of incarceration (Cook, 1986). This then lowers the probable pay of crime and so we have a downward sloping demand curve.

3.7 Finnish policy

Finland is quite well known for being a Nordic welfare state. In this context, it means that the prospect of unemployment doesn't have such a devastating effect on the individual's economy as in many other countries. This also aids Finland with inequality problems and Finland is among the lowest countries when sorted by Gini coefficient. While Finland hasn't been within the best when it comes to unemployment rates, the benefits, and social security aspects are in line with the findings of these studies.

4 Current State of Research

The roots of the *economics of crime* are in the United States and most of the defining research has been made in the late 1900s. This has a lot of implications for the conclusions made. With the subject being quite complex, some of the political and social landscapes of the time and location have left some residue on the models and theories of crime.

The development in econometric methods has led to studies that can more clearly isolate different factors that might have an effect on crime. This means that research on the employment-crime relation can be done more robustly as well as research on the relationship between education and crime. Another clear development is that a bigger portion of the research is being done internationally and the previously

accepted theories have since been looked over and gone through additional scrutiny.

4.1 Crime and Urban Economics

We tend to use crime rate as a descriptive indicator of the safety of a city or as a comparative meter between different areas. This however doesn't give us any information about the reasons or factors that are behind the differing crime rates and safety levels. The objective is to gain knowledge that will help in developing safer urban areas. Crime has historically concentrated on specific areas. And even though criminal activities have lately seen a transformation into international operations, local concentrations still persist. Higher levels of crime can mostly be found in areas with high poverty. This means that urban centers which have been zoned to only have affordable housing tend to turn into high criminal activity zones. The problems with crime tend to stay over generations as children who have witnessed illegal markets and crime in their childhood have a stronger probability to end up involved with crime later in their lives (Sviatschi et al., 2019).

The difference in income levels across neighborhoods, also known as segregation is a well-known and studied issue in urban economics. Segregation is known to have an effect on the results of education, health, and opportunities. Statistically, it seems like an obvious effect, a concentration of low-income individuals have on average a lower income. However, studies have shown that breaking up segregation and relocating low-income individuals across middle-class neighbourhoods lowers the aggregate negative attributes affiliated with segregation. In other words, low-income households that were relocated into higher-income neighborhoods started making more money and their children started performing better in school. This effect has also been measured in relation to crime. This means that breaking up and relocating households from high crime rate areas elsewhere lowers the overall crime rate. (Aliprantis & Hartley, 2015)

In addition to the big-picture research, some studies into more realistic and attainable urban policies have been conducted. For example, Doleac & Sanders (2015) conducted a study on how ambient light influences criminal activity and found that daylight saving time reduces robberies by 7%. The intuition is that with more ambient light criminals are easier to identify and are more visible which discourages offenders. The study also highlights that later sunsets and activities might increase foot traffic at the times when robberies are most common. While the study itself didn't make the connection between ambient light and artificial lighting, if the reasoning and motivation behind the study are robust it could be argued that keeping urban areas well lit could deter crime.

4.2 Crime and Education

Education and crime also have a complex relationship. The goal of education in a quite narrow sense is to improve labor opportunities and future income. Both of these in the process reduce the probability of crime. However, statistics show that the process of studying or in other words, being a student has an increasing effect on the probability (Ramakers et al., 2020). Here the underlying reason could be argued to be the lower income level of students, but this hasn't been studied well enough to be stated as a fact.

The effect of compulsory education is two folded. Firstly attending some form of education has an incapacitation effect, where the individuals just don't have enough time to commit crime. The second effect comes in the form of sustained long-run reduction in crime for individuals who don't drop out or/and are longer in the education system. This information again taken into account to calculate the social cost of education can have some interesting effects on the way we see compulsory education and its benefits. The study was conducted on a natural experiment basis by studying two school dropout age reforms in the United States. (Bell, Costa, & Machin, 2022)

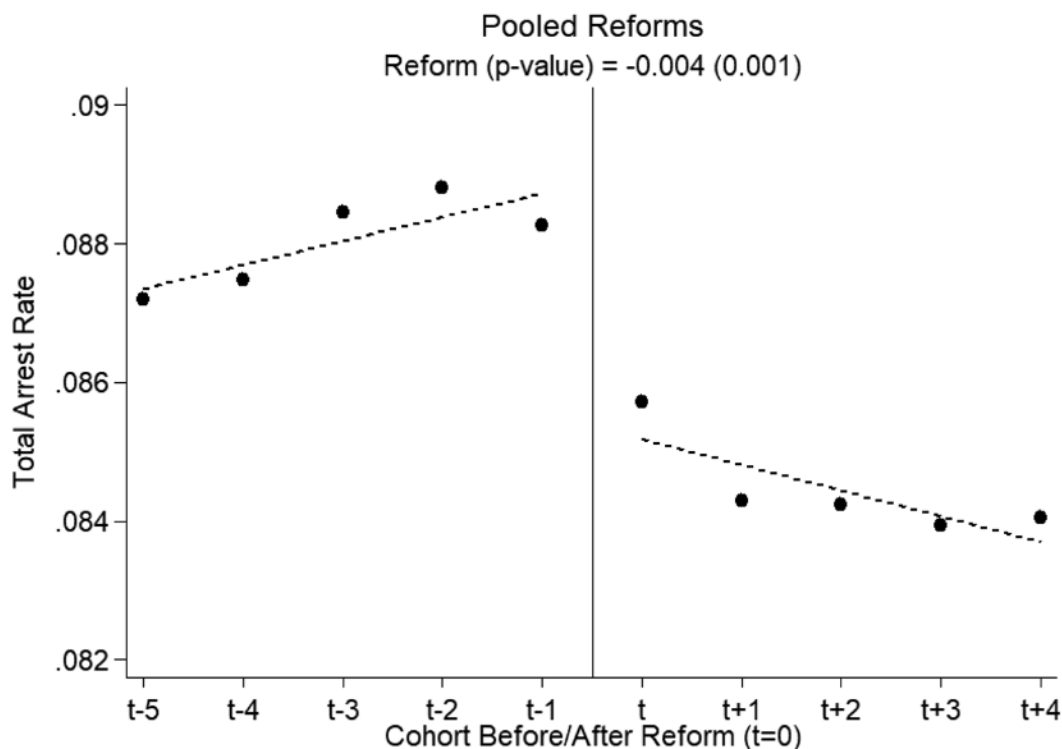


Figure 2: The market model of crime (Bell et al., 2022)

5 Policy Implications

Economic studies and the field of economics of crime in particular has had a clear evolution in recent years. The main focus has shifted from the more broad picture into conducting so-called natural experiments into more narrow phenomena where then the effect of said phenomena can be measured. The findings can be presented and the magnitude and the causality of the problems at hand can be measured. This is a result of improved econometric methods and the increasing availability of more comprehensive data sets.

The outcome is that we can more effectively find quantitative answers to different policy questions. Policies applied with rational expectations can be evaluated and new policies can be motivated with studies and thoroughly backed claims. As crime can be an emotional subject to those who have been victimized and the communities

close to them it is still possible to drive policy through well-educated changes. Even if the most basic questions of the field have yet to be fully understood, the smaller yet more concrete questions can be answered with a meaningful answer. (Cook, Machin, Marie, Mastrobuoni, & Alberto, 2012)

5.1 Policy Changes from History

After a couple of decades of high crime-rate, crime dropped drastically in the 1990s in the United States. This was later identified to be a great opportunity to run a natural experiment. The drop in crime quickly turned into a political question and different parties gave praise to different possible reasons for it. Levitt (2004) highlighted four factors that were found to actually contribute to the fall of crime. The purpose of this section is to highlight actual real-world research which studied the effect of different policies and their effect on crime.

The first factor found to explain the effect was the increase in the number of police officers. At the time the number of officers increased by about 14% and Levitt found that the increase in officers accounted for around 6% of the decrease in crime. Another factor suggested by the media was the change in policing strategy where around the time there were some high-profile police chiefs in New York driving a new community policing initiative but it was found to not have a real effect on the crime rate.

The second factor that was found to have an effect was mass incarceration. At the change of the millennia, nearly 500 adults per 100 000 adults were imprisoned in the United States. Levitt estimated around an 8% decrease in property crime because of mass incarceration. The interesting part of the incapacitation effect is the cost-effectiveness. Levitt estimates that the direct cost of imprisonment is lower than the cost of crime. However, the findings also indicate that if the money was instead budgeted towards policing it would have around 20% more effect on crime.

Another thing to consider is the loss of workforce in this mass incarceration which in the United States affected young men disproportionately. This suggests that the actual cost of imprisonment might be quite a lot higher than estimated.

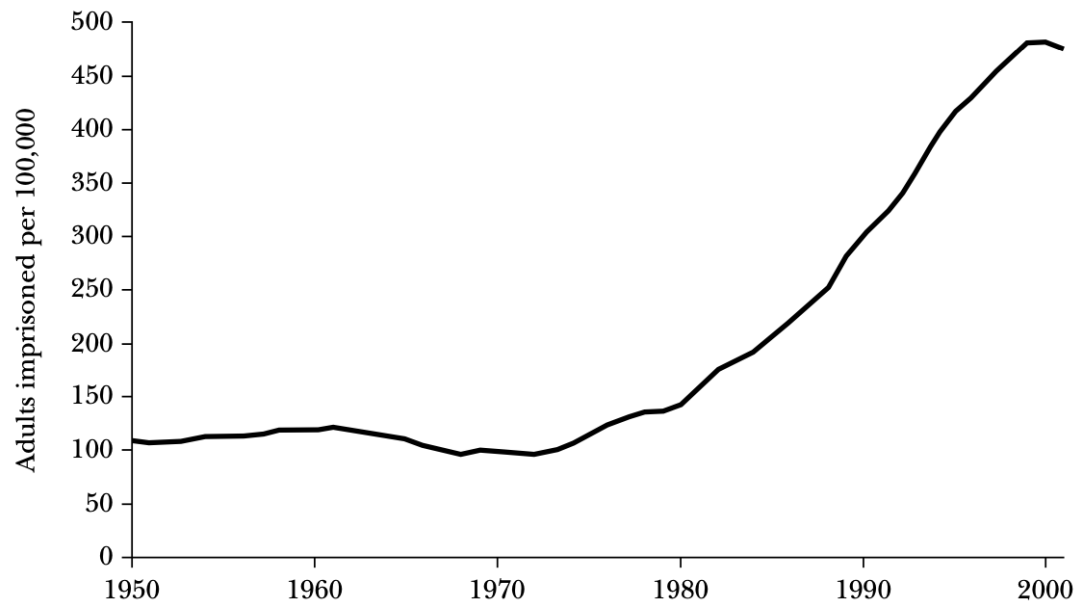


Figure 3: The incarceration rate in the United States Of America from 1950 to 2001 (Levitt, 2004)

The third and fourth highlighted factors were the legalization of abortion and a drug epidemic that was washing off in the 1990s. The *Roe v. Wade* Supreme Court decision was made in 1973 and Levitt suggests that the effects of reduction in unwanted births were realized in the 1990s. The reasoning is that unwanted children are at greater risk of committing crime for their greater risk of adverse home environment. These claims have statistical backing behind them and the factor seems plausible. Levitt accounts about 10% of the decline in crime with abortion. The drug epidemic which was fueled by so-called crack cocaine was raging in the United States from around 1985 into the 1990s. As the epidemic started to roll off in the 90s it was measured that depending on demographic a decrease from 30% to almost 50% drop in homicide rates in men. The overall increase in crime due to the epidemic

has been accounted to around 10%.

6 Conclusion

The progress made in the research of economics of crime gives us a theoretical model of crime as well as empirical estimates of the effect of different factors. In addition to providing us with a better view of the subject. These studies and the research made have meaningful value in policy making in history and in the future.

Even though crime is not the most popular area of research in the economics community it is a wide-reaching and important topic. Crime in some form affects nearly everyone's life be it directly or indirectly. The research done in the field can help us in finding the best response to crime in the form of prevention and law enforcement. By quantifying the effect of incarceration we can, for example, show that longer sentences are in most cases not economically justifiable (cost-effectiveness) in comparison to a rehabilitation program, even though they might seem attractive in a political sense.

In addition to better-informed policy decisions in areas directly in contact with crime, the research has also opened up information and relations to other fields of economics. Crime can be a result or a reason for phenomena across the economy. As crime is not free for society (crime has a social cost), policies and changes in areas that may affect crime should additionally be considered through the lens of the economics of crime by taking into account the possible costs of different policies.

In conclusion, Finland seems to be on top of the policy suggestions made by the research. Different aspects have been taken into account in policy-making. While the motivation behind these policies is not to reduce crime, it should be taken into account when re-assessing their cost effectiveness and performance. Most notable policies that are in line with the research are the affordable housing policies like ARA

and the widespread social security network which aids in keeping the poorest part of the population above needing to commit crime to survive.

For future research, the most interesting research opportunities in the economics of crime come with the relation to urban economics and city planning by highlighting safety and security in urban policies. Another interesting research opportunity is within education. The effects of educational policies for example the compulsoryness of education on higher levels and its effect on crime. The last interesting opportunity is in the national benefits and subsidies and their incentives for example in relation with unemployment.

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