

*Senior Project*  
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**“Is Hate Crime Economically Motivated?”**

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## **Is hate crime economically motivated?**

### **Abstract**

This study uses panel data of state hate crimes over the years of 2007 through 2009 to discover if changes in economic conditions in a state will have an effect on the amount of hate crime occurring in that state. The main variables used are indicators for economic changes that might drive hate crime by increasing the net benefit of committing a crime to a point that exceeds the moral threshold that would prevent them from committing the crime. This paper uses a two way fixed effect model that will account for unobserved heterogeneity such as state and year specific effects. Although the sign for GDP was found to be negative indicating that an increase in GDP lowers the number of hate crimes committed it was not significant. This is probably due to attenuation bias because of the nature of reporting hate crimes in the US. The definition of what is and isn't a hate crime is very vague, and for the most part up to the prosecutor. The flawed data expanded the error term and likely caused the coefficient to be insignificant.

### **Introduction**

Although violent crime and homicide rates have fallen during the current recession, the number of property crimes including car thefts, identity theft and other non violent crimes is on the rise and so is hate crime. The drop in violent crime and homicide rates is odd given the past research linking violent crime to economic factors. Fajnzylber (2002) found that many violent crimes begin as property crimes and become violent. One explanation for why violent crimes are

dropping, but hate crime is not, is that many of the crimes being committed during the recession include crimes like identity theft that don't involve any interaction between the criminal and the victim. The rise in hate crime on the other hand seems to follow the pattern set by the past research and is on the rise during the recession. This is interesting because hate crime is generally not associated with changes in economic conditions.

The FBI reported that hate crime grew by two percent overall in 2008 with a three percent increase in hate crime against racial groups, and an eight percent increase in hate crime committed against religious groups. Hate crime has been seen as an issue that is outside the scope of economics. It is normally explained as something that is driven by an individual's bigotry towards a certain group, and social dynamics, but not by changes in economic conditions. In the past the same argument has been made for homicide and violent crime's but researchers using Becker's model have found that these issues that are traditionally seen as outside the scope economics can actually be explained with economic theory. I believe that Becker's model can be used in the same way to explain hate crimes.

The purpose of this paper is to determine whether or not changes in the economy have an effect on the number of hate crimes committed. The model used in this paper is borrowed from the paper Fajnzylber<sup>a</sup>, Lederman, and Loayza (2002). The variables used will attempt to give an acute view of how economic conditions affect the occurrence of hate crime and for the most part follows the model set by the past research. However this paper differs in that it uses data from the current recession and looks at the differences in economic conditions between states in the U.S and not between countries.

The theoretical foundation is for this paper Becker's model that states that the decision to commit a crime is a rational choice based on cost benefit analysis. Changes in economic conditions can be evaluated using this model and predictions can be made about their affect on an individual's decision to commit or not to commit a crime. This gives economists the theoretical tools to look at violent crimes including hate crimes using conventional econometric methods, something that was not considered possible by many researchers in the past. This paper will cover exactly how the model is used in the fallowing section.

OLS regression cannot be used to analyze the data in this paper because of endogeneity caused by the error term being correlated with the independent variables. This is caused by unobserved state specific and time specific effects that we do not have the data to correct for. If OLS was used the coefficients would be biased and the output rendered meaningless. The model used in this paper is a two way fixed effect model that will correct for the endogeneity and give output with unbiased coefficients. State specific and year specific variables are accounted for in the fixed effect.

### **Theoretical framework**

The theoretical foundation of the paper Fajnzylber (2002) and this paper is Becker's model of cost benefit analysis.

$$NB=(1-Pr)*l-c-w-(Pr*Pu), d=1 \text{ when } NB \geq m, d=0 \text{ when } NB \leq m$$

Net benefit is equal to the likelihood of not be apprehended (1-Pr) multiplied by the loot gained from committing the crime (l) minus the cost of planning and committing the crime (c) minus the forgone wage that could have been earned in the legal labor market (w) minus the punishment (Pu) if apprehended (Pr). The individual will commit the crime "d=1" when the net

benefit of committing the crime is equal to greater than the moral threshold that would prevent that person from committing the crime. When  $d$  is equal to zero the opposite is true.

The variables used in this paper are nearly the same as Fajnzylber (2002) with a few omissions. The variables are log of per-capita GDP(EA) , unemployment (UNE), Percentage of the population below the poverty level(belowpov), percentage of the population with a bachelors degree (EDU), percentage of whites in the population (WPOP), percentage of Blacks in the population (BPOP) and lagged crime rate (LCR). Omitted at the moment are indicators for police presence, religion, income inequality, rate of urbanization and variables involving drug convictions and production. Most of these omissions are due to lack of data but others were purposely left out, for example no state is considered a major drug manufacturing region so that variable was left out.

Using Becker's model the effect on the dependent variable "number of hate crimes committed" can be predicted. For example A decrease in per capita GDP lowers the wage that could be earned on the legal labor market lowering opportunity cost and creating friction between competing parties in the labor market (-W). Borjas (2003) found that a tightening of the labor market caused by increased illegal immigration can cause friction and unrest between demographics. A tightening of the labor market because of slowing economic activity could have the same effect, possibly lowering the moral threshold that would prevent someone from committing a crime (-m). A slowing of economic activity also results in a lowering of the possible loot gained from committing a crime (-L). Taking both of those shifts into account slowing economic activity will both lower W, M and L making the change in Net benefit of committing the crime ambiguous.

Unemployment (UNE) effects on the dependent variable are the same as per capita GDP because it is another indicator of economic activity. It also a possible indicator of the tightening of the labor market and possibly the amount of tension between groups. Education (EDU) affects the dependent variable in a number of ways. Higher education is associated higher economic attainment (+W) and possibly increasing the moral threshold that would prevent someone from committing a crime (+m) because of heightened awareness of civic duty. Education could also decrease the cost (-c) of committing a crime and increase the possible loot (+l). Therefore the sign is ambiguous for education.

The percentage of people below the poverty level (belowpov) is another economic indicator and functions in the model much the same way unemployment does, but it picks up on those that are working but are possibly discouraged by their position in the economy. Many people did not lose their job during the recession but had their hours and pay cut or were bumped down or accepted jobs that were part time. This drop in living conditions would not be caught in the variable for unemployment alone.

The percentage of minorities in a population can create friction as stated before possibly lowering the moral threshold (-m). This variable would be more helpful if income inequality was available. The two variables combined can give an idea of the amount of social friction. The last variable is lagged crime rate also known as crime inertia in Fajnzylber (2002). People who commit crimes and are caught tend to be stigmatized in the labor market especially with hate crimes. This diminishes their employment opportunities and expected income (-W). They may also have a lower moral threshold after committing a crime or seeing them committed regularly (-m). The cost of planning and committing a crime is also lowered if similar crimes are being committed regularly. The perceived chance of being caught or charged for a crime might also be

lowered in areas where hate crime is common (-pr). So the predicted sign for increased past crime rates is positive.

It is expected that when the economy is bad people will turn to the illegal labor market to supplement their income and this explains why property crime is increasing during the recession. Hate crime isn't generally associated with property crime but it was found in past research Fajnzylber (2002) that most violent crime starts out as a property crime than turns violent. It's possible that hate crime is a result of a person looking to commit a crime for monetary reasons but targets certain demographics that he or she has a lower moral threshold for. The net benefit of committing the crime might not be high enough for the perpetrator to commit the crime normally, but there moral threshold might be low enough for a certain group for the perpetrator to commit a crime against those people exclusively. For that reason protected groups could be a target for hate crimes during a recession.

### **Literature review**

There is a substantial amount of literature regarding economic conditions affecting the occurrence of violent crime. There isn't however much literature on hate crime alone, but since hate crime is a form of violent crime the theories should still apply. The main article of interest for this paper is by Fajnzylber, Lederman. Loayza (2002) This paper sought to "Analyze the national crime rates both across countries and over time." Becker's model of cost benefit analysis was used as the theoretical background to explain the effects on national crimes rates and was adapted in this paper to explain the effects on national hate crime. However this paper will look at the U.S states rather than a number of different countries.

The empirical model used was quite a bit more complex than the one used in this paper. The authors used generalized method of moments (GMM) methodology to account for unobserved country specific effects, joint endogeneity of the explanatory variables and it corrected for some measurement errors affecting the crime data. The model for this paper is a two way fixed effect model that only corrects for the unobserved state specific effects. Given the proper amount of time this paper would use a similar methodology.

The results from Fajnzylber (2002) showed that economic conditions do have an effect on the number of violent crimes committed. Both the GDP growth rate variable and the Gini index are significant and positive. Lagged crime rate was also statistically significant and positive providing evidence for criminal inertia. All three of those variables will be used in this paper as soon as proper data is found. It was also determined that violent crime can be linked to property crime. In many cases property crime becomes violent. Using the same theoretical and similar empirical models the same results are expected when looking at hate crime rather than violent crime.

Edward Miguel (2005) looked at the effects of economic conditions on the killing of “witches” in rural Tanzanian districts. Past research on the subject could not resolve issues of unresolved omitted variable bias and endogeneity. The causality issues of whether crime caused poverty or the other way around were not resolved. Rural Tanzanian is largely dependent on rain fed agriculture therefore floods and droughts result in large economic shocks that seem to stimulate a large increase in the number of witches killed. The economic shock of a flood or drought could be a contributing factor in the decision to kill a “witch” who is almost always an elderly woman. Their findings support this, and come to the conclusion that in times of economic shock, brought on by lack or surplus of rainfall, the number of elderly woman killed for being



witches doubles. Although the model used in this paper is not useful for looking at state hate crime levels it does lend evidence to hate crimes being economically motivated.

Levitt (2004) looked at the dramatic fall in crime in the 1990's. The previous literature looked at many reasons for the fall in crime, but in this paper Levitt seeks to find out which of the many explanations are correct. He found that increased incarceration, larger police force, the decline of crack and legalized abortion are the major factors in the drop off in the crime rate in the 1990's. The problem with this study is that these factors do not explain the crime experienced leading up to the 1990's. The author even states that his model does not have any forecasting ability for future crime.

Green, Glaser, Rich, (1998) takes a look at the effects of economic conditions on the number of hate crimes committed. Specifically the study looks at time series data for the number of blacks lynched in the pre-depression south. Although this is not an economic paper and does not use economic methodology it does provide a way of looking at the friction between ethnic groups during an economic downturn. The authors did not produce the statistical evidence needed to link economic activity to bigoted behavior but it did give later economists a framework to work off of.

Borjas paper " (2003) does not have much to do with this paper directly but it does give evidence for friction between demographics caused by a tightening of the labor market. Although in that paper the tightening was due to increased illegal immigration not because of a reduction of the number of jobs available in the economy but the theory should still apply. This paper is only used to justify variables in this paper.

### **Model specification**

This paper looks to determine if economic changes affect the number of hate crimes committed. The data for this model is panel data over the years from 2007 through 2009. The dependent variable is the number of hate crimes committed in each state over the given years divided by the population and multiplied by one thousand. This data was taken from the FBI's uniform crime study. The independent variables used to test this hypothesis are the log of per-capita GDP(EA), unemployment(UNE), Percentage of people with a bachelor's degrees in the population (EDU), Percentage of the population below the poverty level (belowpov), Percentage of whites in the population (WPOP), Percentage of Blacks in the population (BPOP) and lagged crime rates (LCR). The data for per-capita GDP was taken from the Bureau of Economic Analysis's data base.

Unemployment data used in the panel data set came from the Bureau of Labor Statistics. The proxy for the level of education (EDU) in the state is given by percentage of adults over twenty five that have a bachelor's degree. This data was acquired from the American Community Survey taken every year by the Census Bureau. The data for the percentage of whites and blacks in the population was also taken from the same survey. The variable for lagged crime rate is simply the dependent variable lagged by one year.

OLS regression cannot be used on these variables because the error term may be correlated with the independent variables because of omitted variables. A model that corrects for unobservable state and year specific effects for which there is no data must be used. The two way fixed effect models will solve that problem but Reverse causality is still possible with this model. The Study Fajnzylber (2002) that this paper is based on had problems with reverse causality regarding police presence. High crime rates can influence the government to increase police presence. The same problem was found with this paper when a variable for the number of

reporting agencies for hate crime in each state was added. This variable was dropped because of this and because it was not used in the theoretical model. A more robust econometric model would need to be used such as 2SLS regression to solve for reverse causality.

Given the two way fixed effect model and the stated variables the econometric model is as follows.

$$\text{Model: Crime rate} = B_0 + B_1 \text{crime rate}_{i,(t-1)} + B_2 EA_{i,t} + B_3 UNE_{i,t} + B_4 EDU_{i,t} + B_5 \text{BELOWPOV}_{i,t} + B_6 WPOP_{i,t} + B_7 BPOP_{i,t} + B_8 LCR_{i,t} + n_t + E$$

This model should give an accurate look at the effects of changes in the economy on the number of hate crimes committed. Unobserved heterogeneity caused by states and year specific variables should be picked up by the fixed effect. Some states might be more prone to convict a person of a hate crime than others or there could be something in the culture of that state, or immigration issues that cause the people living there to be more prone to committing hate crimes. Also there could a year specific variable that is unaccounted for such as a political campaign against immigration running that year. Without the fixed effect model these issues would cause omitted variable bias and throw off the coefficients.

## Results

The results of the regression analysis are slightly better than the results of the first few models used. The two way fixed effect model guarantees a high  $R^2$  (92.15%) but the model did not produce results that completely fit with those predicted by the theory. No variables were statistically significant and some variables diverted from the predicted sign. This does not necessarily make the findings meaningless for reasons stated below.

Variable	Estimate	SE	T Value	PR>/t/
<b>Intercept</b>	1.101764	0.5191	2.12	0.0365
<b>Logcapgdp</b>	-0.06798	0.0334	-2.03	0.0449
<b>UNE</b>	-0.0042	0.00121	-3.48	0.0008
<b>EDU</b>	0.002343	0.00176	1.33	0.1873
<b>Wpop</b>	-0.00527	0.00334	-1.58	0.1184
<b>Bpop</b>	-.00353	0.00503	-0.70	0.4846
<b>Belowpov</b>	0.002165	0.00162	-2.16	0.0334
<b>pcLCR</b>	-0.21337	0.0988	-2.16	0.0334

The sign for Per capita GDP was the negative, showing that higher GDP results in lower hate crime. If the coefficient is correct than a one percent increase in the per capita GDP results in a -0.00006798% (-0.06798/1000) decrease in the number of hate crimes committed in the population of a particular state. This supports past research but other variables for economic activity do not fit quite as well. The variable unemployment is not statistically significant and has a negative sign. The reason for this could be that many people simply exited the labor force and are not accounted for in the unemployment rates. Unemployment increases when jobs become available and when jobs are not available for long periods of time some get discouraged and exit the labor market completely lowering unemployment.

With the opportunity cost of entering the illegal labor market lowered because they lost their job and possibly have been unemployed for so long that they are no longer receiving benefits. The net benefit of committing a crime might be high enough to target certain groups that they have a lower moral threshold for. Those who have exited the labor market could feel that jobs are being taken by other demographics and hate crime can occur due to anger and desperation of those who exit the market. Fajnzylber (2002) found that in many cases violent crime starts out as property crime motivated by changes in the economy and if the same is true with hate crime, than those that have exited the labor market are much more likely to turn to the illegal labor market and commit crimes including hate crimes. If unemployment is lowered by those exiting the market then it is possible that lower unemployment will cause an increase in hate crime.

The coefficient for education is also interesting because higher numbers of educated people seem to result in more hate crime. More people with a bachelor's degree could result in more competition for jobs that require a bachelor's degree and actually drive up hate crime. The variable is also not statistically significant but this was expected given that in all past research this was the case.

The variable (BELOWPOV) although not significant is the correct sign. Possibly a better indication of income disparity would result in increased statistical significance. Currently the model only accounts for those who are below the poverty level and not how far removed they are from those at the top. The farther removed from the top they are and the lower there expected future income, the more likely they are to have a lower opportunity cost to commit a crime. Calculating a Gini index for each state could possibly help this model. Currently that data does not exist for each state.

The Variables (WPOP) and (BPOP) are not statistically significant, Bpop less so than WPOP. Both of the variables are negative meaning an increase in population results in less hate crime. The only possible explanation is that people are leaving areas with low economic activity and moving to states with a better economy where hate crime would be lower if the hypothesis is correct. So population would be increasing in areas with less hate crime causing the results to be distorted.

### **Conclusion**

The results of this study were not statistically significant but the sign of the coefficient showed that an increase in per capita GDP lowered the number of hate crimes committed. Although not significant these results should still be considered. The reason that these variables were not statistically significant is twofold.

The first issue is that the data is flawed because hate crime is not well defined in the United States. It is often up to the prosecutor whether or not a crime is a hate crime and normally only crimes that involve a protected group are considered a hate crime. Crimes that were motivated by race but committed against a person of a non-protected group are not included in the data. The decision to prosecute for a hate crime can be influenced by local politics, media attention, or a biased prosecutor and there is no way to get into the mind of the person who committed the crime to tell if it was truly a hate crime. A narrow definition of what a hate crime is can produce better results. An example, Edward Miguel (2005) used "elderly woman burned as a witch" as their definition of a hate crime. The definition is very clear and there is no ambiguity as to whether or not it was a hate crime. The flawed data caused by the ambiguity in the definition of what is and isn't a hate crime creates attenuation bias by expanding the error term

causing the results to be insignificant. The sign of the coefficient might still be correct but it will be statistically insignificant.

The second reason for the statistically insignificant results is that there is not enough variation in the data. The panel data used in this study covered only three years from 2007 through 2008. The variation in the data might not have been enough to produce statistically significant results. If the data was expanded to cover more years before the recession or used data from past decades then the variation might allow for better results. The FBI's uniform crime reports only go back to 1995, but that might be enough for a future study. The only issue with going back that far is that the errors in the data could grow the further you go back causing Heteroscedasticity.

Future research may want to use a more refined definition of a hate crime, possibly looking at a single group, and a single type of crime could produce more meaningful results. Also a similar study to this one conducted over a wider range of years might be worthwhile. I would recommend using the GMM estimator if this research is undertaken again. The generalized method of moments' estimator can account for discrepancies in the data because it does not require a complete knowledge of the distribution of the data. Considering there is no way to make the FBI's data more accurate this may be the only way to get more meaningful results.

If the hypothesis is correct given the issues with the data, and hate crime is influenced by changes in economic conditions, then there are policy implications that can be derived from this study. During a recession certain minority groups could become targets for crimes that would not be committed against other groups. Increasing police presence in minority neighborhoods to

provide protection of those groups might be appropriate. Instituting educational of programs in schools to increase understanding and decrease bigotry between groups could result in a higher moral threshold in individuals and lower hate crime. Also social safety nets should be looked at as a way of preventing social unrest. In times of high unemployment many individuals are unable to find a job before their unemployment runs out, putting them in a position of needing to make up the lost wages in some way. A better social safety net could prevent them from having to look outside the legal labor market and therefore prevent criminal behavior including hate crime.

I believe that determining whether or not hate crime is economically motivated is a worthwhile topic of study and should be continued in future research. There is no way to get into someone's head to figure out why they would commit a crime against a particular race, sexuality or religion but we can make predictions about the conditions under which they would be willing to carry out those crimes. Understanding how economic conditions can make certain groups more vulnerable to crime during a recession can help us structure policy to protect them and keep social unrest to a minimum. At the very least it increases our understanding of crime patterns and could assist future research that will help in lowering hate crime rates in the U.S.



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Fit statistics	
SSE	0.0038
R-Square	0.9215
DFE	91
Root MSE	0.0065

Variable	Estimate	SE	T Value	Pr > T
Cs1	0.001262	0.0284	0.04	0.9646
Cs2	-0.02969	0.911	-0.33	0.7452
Cs3	-0.09562	0.1114	-0.86	0.3929
Cs4	0.02957	0.0299	0.99	0.3257
Cs5	-0.14536	0.1438	-1.01	0.3148
Cs6	-0.02536	0.0799	-0.32	0.7516
Cs7	0.046956	0.0502	0.94	0.352
Cs8	0.086666	0.0154	5.63	<.0001
Cs9	0.03639	0.1505	0.24	0.8095
Cs10	-0.06278	0.0489	-1.28	0.2028
Cs11	-0.03787	0.035	-1.08	0.2828
Cs12	0.023013	0.0834	0.28	0.7832
Cs13	-0.03242	0.0389	-0.83	0.4073
Cs14	0.043667	0.0526	0.83	0.409
Cs15	0.056506	0.0765	0.74	0.462
Cs16	0.042208	0.0622	0.68	0.4994
Cs17	0.066537	0.061	1.09	0.2783
Cs18	0.006667	0.045	0.15	0.8826
Cs19	0.109954	0.0851	1.29	0.1994
Cs20	-0.01917	0.0359	-0.53	0.5945
Cs21	0.051713	0.0611	0.85	0.3999
Cs22	0.082385	0.0328	2.51	0.0139
Cs23	0.061752	0.0666	0.93	0.3564
Cs24	-0.01787	0.0675	-0.26	0.7917
Cs25	0.050605	0.0443	1.14	0.2561
Cs26	0.028361	0.0822	0.34	0.731
Cs27	0.040046	0.0677	0.59	0.5556
Cs28	-0.05265	0.0967	-0.54	0.5875
Cs29	0.078163	0.0832	0.94	0.3503
Cs30	0.033427	0.0558	0.6	0.5507
Cs31	-0.22863	0.1646	-1.39	0.1682

Cs32	-0.03524	0.0473	-0.74	0.4583
Cs33	0.057602	0.0805	0.72	0.4763
Cs34	0.071105	0.0438	1.62	0.1083
Cs35	-0.03372	0.064	-0.53	0.5994
Cs36	0.041288	0.0785	0.53	0.6001
Cs37	0.029201	0.0451	0.65	0.519
Cs38	0.038162	0.0623	0.61	0.5415
Cs39	0.028129	0.0303	0.93	0.3561
Cs40	0.074723	0.0809	0.92	0.3583
Cs41	0.064672	0.0273	2.36	0.0202
Cs42	-0.14325	0.1047	-1.37	0.1746
Cs43	0.001977	0.0818	0.02	0.9808
Cs44	0.082707	0.0856	0.97	0.3364
Cs45	0.011628	0.0174	0.67	0.5056
Cs46	0.01007	0.0754	0.13	0.894
Cs47	0.076026	0.0806	0.94	0.348
Cs48	0.046277	0.0622	0.74	0.4587
Cs49	0.077961	0.081	0.96	0.3385
Ts1	-0.00462	0.00478	-0.97	0.3365
Ts2	-0.0037	0.00365	-1.01	0.3139
<b>Intercept</b>	1.10176	0.5191	2.12	0.0365
<b>Logcapgdp</b>	-0.068	0.0334	-2.03	0.0449
<b>UNE</b>	-0.0042	0.00121	-3.48	0.0008
<b>EDU</b>	0.00234	0.00176	1.33	0.1873
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