

# Perception and Action in a Conflict Zone: a Study of Rural Economy and Rural Life amidst Narcos in Eastern San Luis Potosi, Mexico

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## Introduction

In the past years, the level of violence in Mexico caused by the ongoing war on drugs has escalated dramatically in scale and scope affecting all members of Mexican society. In many parts of the country, society faces new risks derived from this wave of violence. Some of these risks include kidnapping, extortion, and carjacking. This violence not only affects rich urban areas; poor rural areas have been affected as well.

This paper analyzes the relationship between psychometric measures of risk perception and socioeconomic variables of small farmers living in a drug conflict zone in Mexico. Ultimately, we want to understand how violence perception has affected rural life and production decisions. The area of study is located in eastern San Luis Potosi state, where two major drug cartels began a turf war a couple of years before this survey was conducted.

This study is divided in three parts. First, we classify individuals, through cluster analysis, according to their attitudes toward risk based on psychometric measures of risk following Slovic (1987). Four different groups are created based on factors like level of fear, trust to authorities, and familiarity with drug cartel violence. The second part is the econometric analysis. We regress individual's actions and intentions as a consequence of drug violence on demographic variables, group classification, and likelihood and fear of being victimized. The third part of the study estimates the effect of each component of the dual process on each of the actions and intentions of farmers using the econometric results.

We found that small land holders in Mexico, although not the prime target of drug cartels, feel also at risk. Depending on their attitudes toward risk, risk of victimization have caused farmers to make changes in their daily life, including considering moving to a safer town, prevent them from taking production risks (i.e. adopting new technology), and cause them to change production. Also, system 1 of the dual process seem to dominate in the decision to move to a safer town; while system 2 dominates in crop production decisions.

## Background and Model

We interviewed 370 small scale farmers in eastern San Luis Potosi state, a conflict zone between two drug cartels near the city of Tampico. Most farmers produce either corn, sorghum, or soybeans; while some grow more than one crop. The survey consisted on demographic and production questions, as well as a set of question related to their perception of violence and fear of victimization.

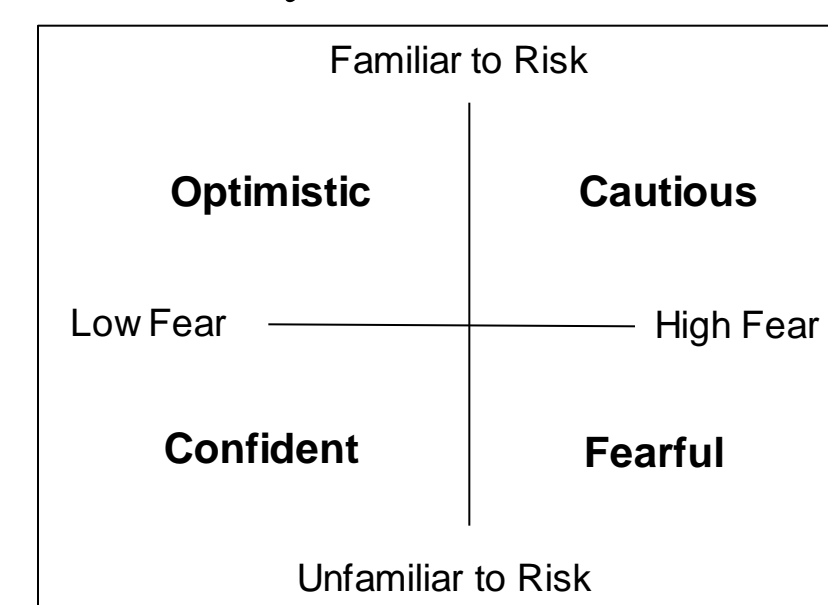


For the first part of the study, we classified individuals based on their agreement to 18 statements that captures psychometric measures of risk. Examples of the statements include:

There are things that I can do in order to avoid being victimized by the criminals, I am familiar in the way the criminals operate, When the criminals commit violent crimes the army can respond quickly.

Four natural cluster were obtained. We label them as Cautious (30% of sample), Optimistic (27%), Confident (21%), and Fearful (22%).

The following figure places each group in relation to fear level, and familiarity to risk.



Since each group has different attitudes toward risk, we expect them to react differently to perceived violence and to the likelihood of victimization. This method of classifying people using various factors, instead of using those factors as explanatory variables, saves degrees of freedom and provides a context that is easier to understand.

The second part of the study is the econometric analysis. The dependent variables are four responses to violence (A): have considered moving out of town (8% => sometimes); changed production (8%); changed daily activities (14%); would change production if crime continues (35%).

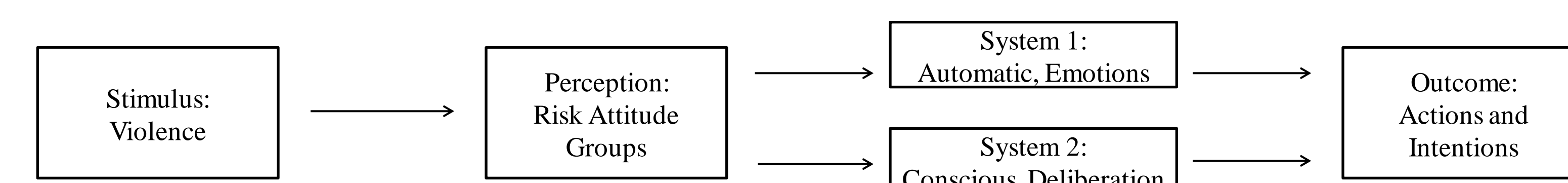
The independent variables include socioeconomic data (X), the four groups (G), and two stimuli (S): know a victim of drug cartel crime (19%), and know somebody who has moved out of town due to crime (18%). The econometric model is described by the following equation.

$$A_{n,a} = \alpha_{g,a} + S\delta_s + G_{g,n}\psi + X\beta + \varepsilon_{a,n}$$

We ran a multinomial logit, independent logit, and linear probability regressions for each action. All models have similar results, but the coefficients of the individual logit regressions, and linear probability model are shown for ease of interpretation.

The third part of the study estimates each of the components of the dual process for each response to violence. System 1 and 2 of the dual process refers to emotional and deliberative way to react to a stimulus. In order to capture the system 1, we asked how much they dread of being, or having a family member be, a victim of violent crime. These questions aim at inducing an emotional reaction.

To capture the effect of system 2, we asked to evaluate the likelihood of being, or having a family member be, a victim of violent crime in the following 12 months. These questions require a probability assessment of an event, which may stimulate system 2. The following figure describes the dual process under the context of our study.



## Results

Step 1. Logit Regression of Groups on Personal Characteristics. Focus is given to Fearful and Confident Groups

	Cautious	Confident	Fearful	Optimistic
Female	-0.610 (0.21)	0.060 (0.89)	<b>1.270 (0.008)</b>	<b>-0.830 (0.13)</b>
Age	0.027 (0.09)	-0.000 (0.66)	<b>-0.035 (0.08)</b>	0.010 (0.46)
Education	0.200 (0.12)	-0.030(0.79)	<b>-0.300 (0.04)</b>	-0.013 (0.82)
Total Revenue	-0.000 (0.61)	-0.000 (0.64)	-0.000 (0.29)	0.000 (0.19)
Savings	-0.000 (0.12)	0.000 (0.87)	0.000 (0.35)	0.000 (0.23)
Seen as Soc. Active	0.146 (0.62)	-0.893 (0.001)	<b>-1.030 (0.001)</b>	<b>1.853 (0.000)</b>
Know Victim of Crime	-1.204 (0.017)	-0.509 (0.26)	<b>0.965 (0.009)</b>	0.256 (0.46)
Know s.o. Moved Out	0.647 (0.16)	0.729 (0.08)	0.031 (0.94)	-1.122 (0.017)
Technology Adoption	-2.09 (0.000)	-0.206 (0.550)	0.329 (0.437)	<b>1.864 (0.000)</b>
Religious Celebrations per Month	-0.053 (0.44)	0.062 (0.30)	<b>-0.139 (0.11)</b>	<b>0.113 (0.05)</b>

*P-values in parenthesis.*

Step 2. 3SLS Regression of Actions on Stimuli and Personal and Farm Characteristics.

	Considered Moving	Changed Production	Changed Daily Activities	Would Change Production
Age	<b>-0.037 (0.03)</b>	<b>-0.014 (0.03)</b>	<b>-0.012(0.14)</b>	<b>-0.016 (0.15)</b>
Children	-0.008 (0.52)	-0.006 (0.23)	-0.012 (0.07)	-0.005 (0.29)
Education	0.018 (0.49)	-0.005 (0.56)	-0.006 (0.65)	<b>0.04 (0.04)</b>
Farm Size	<b>0.021 (0.003)</b>	<b>0.007 (0.01)</b>	<b>0.007 (0.04)</b>	0.005 (0.26)
Size Group of Friends	0.004 (0.08)	0.004 (0.025)	0.001 (0.45)	-0.000 (0.93)
More at Risk wrt Others	0.212 (0.000)	0.0313 (0.15)	-0.045 (0.11)	0.007 (0.85)
Seen as Socially Active	<b>0.156 (0.007)</b>	-0.051 (0.019)	0.045 (0.11)	0.169 (0.000)
Know a victim of crime	-0.063 (0.42)	0.047 (0.11)	0.071 (0.07)	-0.019 (0.70)
Know s.o. Moved Out	<b>0.313 (0.001)</b>	0.11 (0.002)	-0.161 (0.001)	-0.070 (0.276)

*P-values in parenthesis. Confident Group is the Baseline. Female is not significant.*

In order to estimate the emotional and rational components of the dual process, we created interaction terms of each group with the responses to the questions about dread and likelihood of being victimized of a high impact crime (kidnapping, homicide, extortion). The coefficient of the group interaction indicate the effect of each system on actions. The results are indicated in the next table.

	Considered Moving	Changed Production	Changed Daily Activities	Would Change Production
Cautious	-0.635 (0.034)	-0.0446 (0.693)	-0.163 (0.272)	0.0438 (0.825)
Fearful	0.225 (0.498)	0.0864 (0.492)	-0.134 (0.419)	0.211 (0.340)
Optimistic	-0.704 (0.019)	-0.0470 (0.678)	-0.258 (0.082)	-0.005 (0.977)
Prob. High Impact Crime (PHI)	-0.0407 (0.816)	-0.0753 (0.256)	-0.0284 (0.744)	-0.238 (0.041)
Cautious PHI	0.0931 (0.685)	0.0840 (0.334)	0.0497 (0.663)	0.264 (0.083)
Fearful PHI	-0.106 (0.607)	0.0964 (0.218)	0.0492 (0.632)	0.277 (0.044)
Optimistic PHI	0.304 (0.150)	0.110 (0.166)	0.0244 (0.815)	0.339 (0.015)
High Dread Level of Victimization	0.761 (0.057)	0.112 (0.458)	0.262 (0.188)	0.363 (0.172)
Cautious High Fear	-1.066 (0.036)	-0.214 (0.267)	-0.239 (0.345)	0.0326 (0.923)
Fearful High Fear	-0.0558 (0.908)	0.0900 (0.623)	-0.0626 (0.795)	-0.161 (0.617)
Optimistic High Fear	-1.048 (0.022)	0.0486 (0.778)	-0.233 (0.304)	-0.0549 (0.856)

*P-values in parenthesis. Confident Group is the Baseline.*

## Results

Step 3. Marginal Effects of the Components of the Dual Process

	Considered Moving	Changed Production	Changed Daily Activities	Would Change Production
<b>System 1</b>				
<b>High Fear Level</b>				
Cautious	<b>-0.305 (0.036)</b>	-0.102 (0.267)	0.023 (0.345)	0.3956 (0.923)
Confident	<b>0.761 (0.057)</b>	0.112 (0.458)	0.262 (0.188)	0.363 (0.172)
Fearful	0.705 (0.908)	0.202 (0.623)	0.199 (0.795)	0.202 (0.617)
Optimistic	<b>-0.287 (0.022)</b>	0.1606 (0.778)	0.029 (0.304)	0.3081 (0.856)
<b>System 2</b>				
<b>Prob. High Impact Crime</b>				
Cautious	0.0524 (0.685)	0.0087 (0.334)	0.0213 (0.663)	<b>0.026 (0.083)</b>
Confident	-0.0407 (0.816)	-0.0753 (0.256)	-0.0284 (0.744)	<b>-0.238 (0.041)</b>
Fearful	-0.1467 (0.607)	0.0211 (0.218)	0.0208 (0.632)	<b>0.039 (0.044)</b>
Optimistic	0.2633 (0.150)	0.0347 (0.166)	-0.004 (0.815)	<b>0.101 (0.015)</b>

*P-values in parenthesis.*

## Conclusions

In general, drug cartel violence in conflict regions affects not only wealthy and urban people, but low income farmers as well. Drug cartel members (narcos) in some cases hide and operate in rural areas.

Creating groups of people using cluster analysis provides an easy way to conceptualize behavior.

Results from the cluster analysis show that there is a significant correlation for women to be in the *Fearful* group, and less likely to be in the *Optimistic* group. Age, education and being socially active correlates negatively to being *Fearful*. As for technology adoption, it correlates positively to *Optimistic*. Attendance of religious celebrations per month positively correlates to *Optimistic* while negatively correlates with *Fearful*.

Results from the regression of actions show that farmers with larger farms correlate positively to taking any action in response to the perceived violence. Being socially active is important in having considered moving out of town. Probably because those people are more likely to know somebody in other towns and are easier to find support from them.

The marginal effect of each component of the dual process into changing production if crime continues shows that system 2 dominates, while system 1 dominates the decision to consider moving out of town if crime continues. Probably because selecting a production portfolio, being a rational decision, engages system 2. Having considered moving out of town may be the result of an emotional response to the perceived violence, hence engaging system 1.

In order to decrease anxiety and dread caused by living in a conflict area, better risk communication is very important, as well as improving trust to authorities. Promoting community involvement and participation may also play an important role.

## Literature cited

Slovic, P. (1987). Perception of risk. Science, 236(4799), 280-285.

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