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New Fraud Star Theory and Behavioral Sciences

Vicente Monteverde

Abstract

The purpose of this document is to establish the fraud star theory and the formulation of its microeconomic model, based on the behavioral sciences. The methodology is a practical exploration, first in the convergence of the fraud economy and the behavioral sciences, and based on these tools, the new theory of the Fraud Star is formulated, formulating its microeconomic model. This chapter is a new model of the fraud star theory and its microeconomic modeling. There are no limitations on the model. The practical implications are applying the new fraud star theory and calculating your income, in different scenarios. The social implications are knowing the income for the crime of fraud, according to the level of regulations, control, and effective punishment. The present work is original; there is no new theory of the fraud star, nor its microeconomic model, in the academic field, only in this work.

Keywords: behavioral economics, fraud, corruption, economic analysis

1. Introduction

Fraudulent conduct is impulsive or rational?

The swindler is impulsive or rational; following a behavioral economics guide, we can make a difference, or there will be a model of fraudulent behavior.

The Behavioral Theory develops elements that will be divided into beliefs, preferences, and information processing. You'll also find terms you may be familiar with, such as loss aversion, short-termism, status quo bias, or social norms.

However, you will also learn other new terms.

Richard Thaler explained that the man economic behaviour, demonstrated his reasonableness, this point is conditioned by his convictions, emotions and social environment, in addition to other facts, and is never logical reasoning.

In behavioral economics, the terms "standard" or "traditional" economic model or "*homo economicus*" are freely used when referring to views on human behavior. They do not give relevance to "behavioral" issues.

The standard economic norm assumes that people decided to improve their well-being more adequately, (without caring about others) using emotional intelligence and processing all available information and remembering decision processes appropriately.

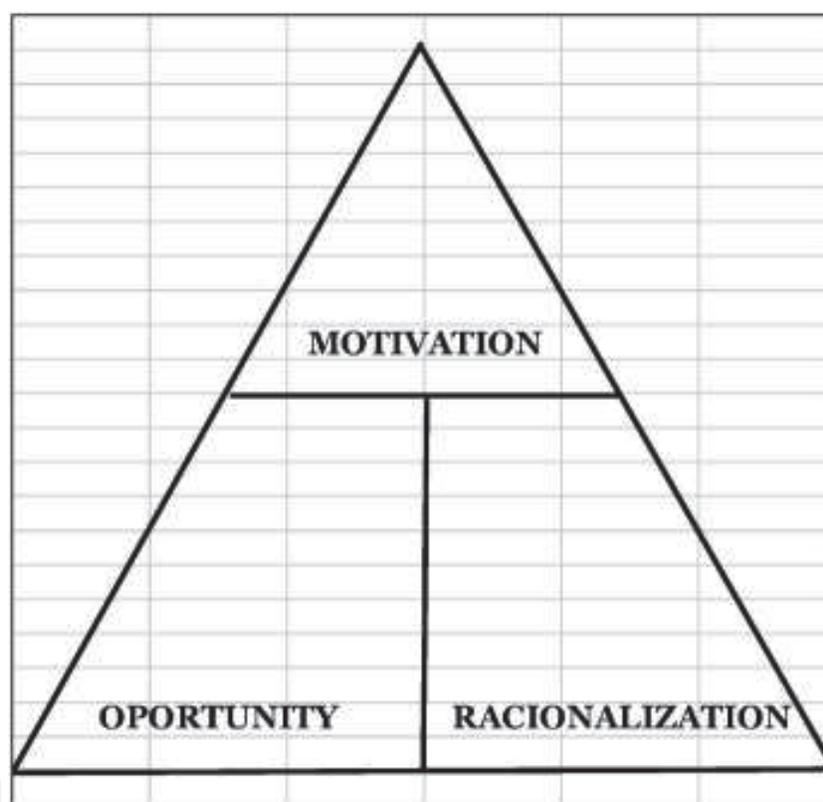
Choices are continuous over time and the most appropriate rules, regardless of context, convictions, and emotions, can represent different options.

However, the development of the economy in the new years has carried out an internal investigation that claimed that behavioral economics assumptions functioned normally in a linear decision process.

Appreciation of psychological and sociological facts in the game of rules is not a new economic cliché. I suggest that loss could be of greater value than profit, even if the two decision paths have the same path.

Nevertheless, within the 1970s and 1980s, when economic behavior began to generate significant theoretical and proven processes, consistent and behavioral economics could be accepted worldwide.

The Fraud Triangle theory developed by criminologists Donald Cressey¹ and Edwin Sutherland² [1] explains the reasons why a person may commit fraud and determines three factors that are present at the time: pressure, opportunity, and justification or rationalization, creating the fraud triangle with its three elements (**Figure 1**).



Source: Donald Cressey and Edwin Sutherland

Figure 1.
The fraud triangle theory. Source: Donald Cressey and Edwin Sutherland.

¹ Donald Ray Cressey (April 27, 1919 through July 21, 1987) was an American sociologist and criminologist who made groundbreaking contributions to the study of organized crime, prisons, criminology, the sociology of criminal law, white collar crime.

² Edwin H. Sutherland (1883–1950) was an American sociologist. He is considered one of the most influential criminologists of the 20th century. He belonged to the school of symbolic interactionism and is known for the definition of differential association, a general theory of crime and delinquency that explains how the marginalized have come to learn the motivations and know-how to commit criminal activities. Sutherland received his doctorate in Sociology from the University of Chicago in 1913. He chaired the American Sociological Association in 1939.

The Diamond Theory of Fraud later came to be considered a more comprehensive theory in relation to the theory proposed by Cressey [2]. For Wolfe and Hermanson [3],³ the probability of occurrence of fraud may be due to the presence of four factors.

As everything evolves, so does fraud, and today it is a star with seven elements which is why the Star Fraud Theory is formulated, based on the theory of behavior and the formulation of the corresponding microeconomic theory of Fraud [4–12].

2. Definition of fraud and development of fraud theories and fraudulent conduct

2.1 Fraud

“A false statement knowing the truth or concealment of a material fact to induce another to act to his detriment” [13]⁴.

2.1.1 Types of fraud

Fraud can compromise a company, either internally by company employees, managers, officers, or owners or externally by customers, suppliers, and other parties. Certainly is possible to commit fraud people and companies.

2.1.1.1 Internal fraud

Internal fraud, called labor fraud, is defined as follows: “The use of personal work for a particular enrichment through the misuse or misapplication of the company’s means or assets.” In summary, this form of fraud succeeds when a server, director, or manager betrays the company. Scam artists are taking technological tools and a new approach to cover fraud diagrams. The forms used in these frauds are popularly divided into classes, to test and prove over time.

2.1.1.2 Outside fraud

External fraud against a company is extensive in its forms, immodest sellers, corrupt customers and fake checks, stolen goods, and manoeuvres to extract money from the company through tricks or scams. Other examples include kidnapping, theft of confidential information, tax fraud, insurance scam, health scam, and loan scam.

³ David T. Wolfe-Dana R. Hermanson-“The Fraud Diamond: Considering the Four Elements of Fraud”-CPA Journal-12-2004.

⁴ ACFE-Association of Certified Fraud Examiners: <https://www.acfe.com/who-we-are.aspx>

2.1.1.3 *Fraud against persons*

Numerous fraudsters have also devised plans to defraud people. Identity theft,⁵ Ponzi schemes,⁶ phishing schemes,⁷ and advance payment scams are just a few of the criminal forms being taken to steal money from innocent victims.

2.1.1.4 *Fraud triangle*

The Fraud Triangle theory developed by criminologists Donald Cressey⁸ and Edwin Sutherland⁹ explains the reasons why a person may commit fraud and determines three factors that are present at the time: pressure, opportunity, and justification or rationalization.

Motivation – Opportunity – Rationalization

$$P(\text{fraud}) = f(O, I, R) \quad (1)$$

in which the term P (fraud) represents the probability of occurrence of fraud, being a function (f) of the terms O, which represents the opportunity, I, which refers to individual intentions, and R, which represents the rationalization or attitude personal. In this context, it is highlighted that the Association of Certified Fraud Examiners¹⁰ (ACFE) defends that the Fraud Triangle Theory can be used effectively, in many cases, to understand why individuals commit fraudulent acts.

2.1.1.5 *The fraud diamond*¹¹

The Diamond Theory of Fraud later came to be considered a more comprehensive theory in relation to the theory proposed by Cressey [2]. For Wolfe and Hermanson [3], the probability of occurrence of fraud can be due to the presence of

⁵ Identity theft or identity theft is the appropriation of a person's identity: impersonating that person, assuming their identity before other people in public or in private, generally to access certain resources or to obtain credit and other benefits on behalf of that person.

⁶ The Ponzi Scheme is a fraudulent investment transaction that involves paying current investors the interest earned on new investor money (and not on generating genuine profits). It is a pyramid system, in which the only way to distribute benefits requires participants to recommend and attract (refer) more clients in order for new participants to produce benefits to primary participants.

⁷ Phishing is the most popular technique, where the attacker impersonates a real entity, generally a bank, in order to obtain the user's data in resources contracted with that company such as a bank account, password, etc.

⁸ Donald Ray Cressey (April 27, 1919 through July 21, 1987) was an American sociologist and criminologist who made ground breaking contributions to the study of organized crime, prisons, criminology, the sociology of criminal law, white collar crime

⁹ Edwin H. Sutherland (1883–1950) was an American sociologist. He is considered one of the most influential criminologists of the 20th century. He belonged to the school of symbolic interactionism, and is known for the definition of differential association, a general theory of crime and delinquency that explains how the marginalized have come to learn the motivations and know-how to commit criminal activities. Sutherland received his doctorate in Sociology from the University of Chicago in 1913. He chaired the American Sociological Association in 1939.

¹⁰ <https://www.acfe.com/>

¹¹ 12–2004-“The Fraud Diamond: Considering the Four-Elements of Fraud”-David T. Wolfe-Dana R. Hermanson: <https://digitalcommons.kennesaw.edu/cgi/viewcontent.cgi?article=2546&context=facpubs>

four factors; the diamond theory of fraud can be represented by the following equation:

$$P(\text{fraud}) = f(O, I, R, C) \quad (2)$$

in which the term P (fraud) represents the probability of fraud occurring, being a function (f) of the terms O, which represents the opportunity, I, which refers to individual intentions and R, which represents the rationalization or attitude personal and C, which represents ability (**Figure 2**).

Greed.

Pride.

Arrogance.

The thought of the right to deserve everything.

First, it covets, because the executive can use his position and authority to get what he wants (money, status, title, and services); second, pride and arrogance; the executive who feels superior to others, and does not allow anyone to question or disqualify him. Finally, the executive who thinks that he has the right to everything and he deserves the best, and that is why he does everything possible to obtain it.

The International Framework for Professional Practice (IPPF) of the Institute of Internal Auditors (IIA)¹² defines fraud as follows [14–30]:

“Any illegal act characterized by deception, concealment or breach of trust. These acts do not require the application of a threat of violence or physical force. Fraud is perpetrated by individuals and organizations to obtain money, goods, or

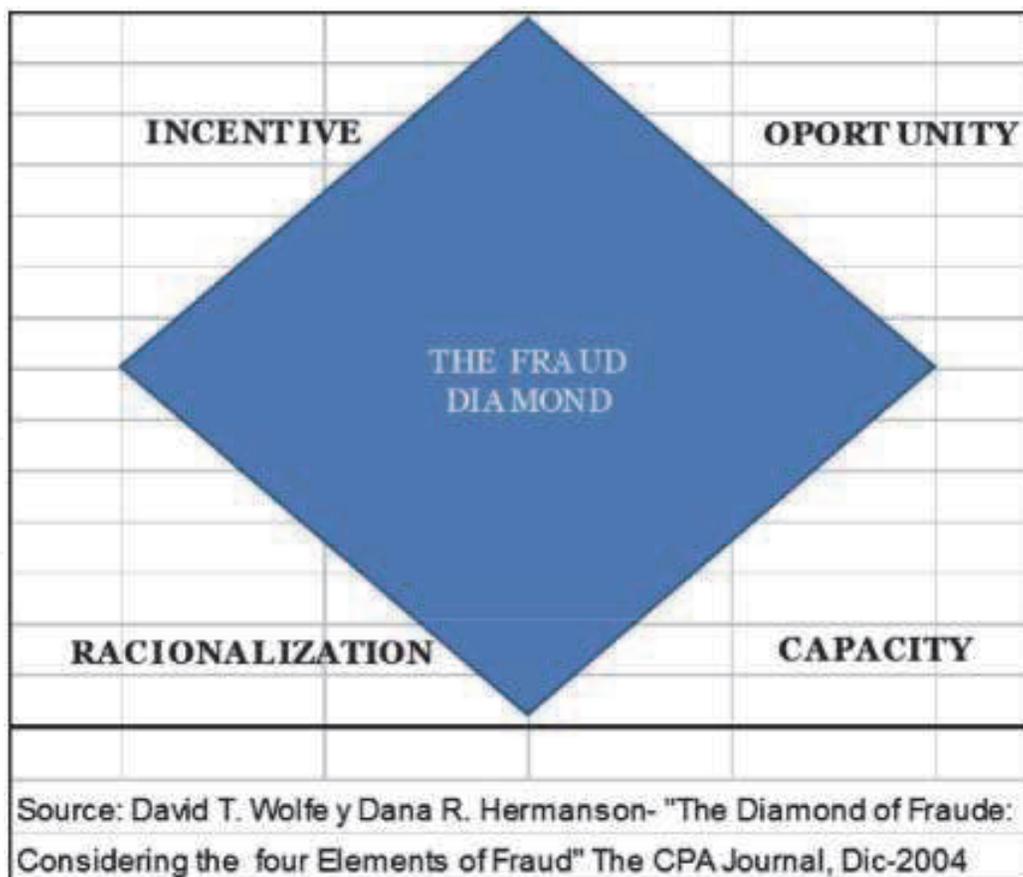


Figure 2.
The fraud diamond theory.

¹² <https://iaia.org.ar/nosotros/the-institute-of-internal-auditors/>

services, to avoid payments or losses of services, or to secure personal or business advantages”.

Fraud is perpetrated by a person, group of people, or organization for their own benefit and/or that of the criminal organization.

The most common types of fraud are:

1. Embezzlement of assets
2. Skimming occurs when an organization's cash is stolen and its non-registration in its books and records.
3. Reimbursement of fictitious or inflated business expenses.
4. The fraud of the payment function false compensation claims.
5. Fraud in the financial statements involves the inclusion of false information.
6. Disbursement fraud for payment to service providers not rendered, fictitious, or overbilled amounts.
7. The presentation of falsified and adulterated information with the objective of obtaining some profit.
8. Bribery in all its forms, of acceptance of goods, personal favors to relatives or third parties.
9. Bribery through the acceptance of gifts, personal privileges, family, or third parties.
10. A conflict of interest, involving operations of the organization, as a supplier, customer, obtaining monetary, commercial, or reputational advantages, own, family and third parties.

Fraud is a type of corruption, with an income, it has behavioral characteristics, which is why we go through behavioral economics and convergence with a fraud economy model, to develop the model [31–35].

3. Elements of the behavioral economy

The fundamental elements of behavioral economics and their concepts are described below:

3.1 Decisions

The inclination of the current, that is, the tendency to a certain behavior, where our choices are biased by these elements.

3.1.1 Elements of decisions

- A. Rejection of loss
- B. Short-term

C. Temporary instability

D. The slant of status quo

E. The social rules

F. Correspondence

3.1.1.1 Rejection of loss

It refers to the idea that a loss generates more discontent than happiness, which would generate a gain of the same magnitude.

3.1.1.2 Short-term

The tendency to choose a smaller profit that is close in time versus a larger profit that is distant in time. It is related to a preference for immediate gratification.

3.1.1.3 Temporary instability

The tendency to be impatient when choosing, between receiving benefits today or in the future, and choosing between benefits in two different periods in the future. Also known as “present bias”.

3.1.1.4 The slant of status quo

Our tendency is to maintain the normal state of affairs. This normal condition, or status quo, is taken as a degree of allusion.

This means that the value of an asset depends on the degree of beliefs that the person has.

3.1.1.5 Social rules

Social rules are unwritten; they govern behavior within a society. A distinction is made between “descriptive rules”; these rules explain standardized behavior, sometimes not followed by individuals, and “prescriptive rules”, which are acceptable or desired behavior.

3.1.1.6 Correspondence

It is a social rule that implicates interchanges between people, answering to the acting of another acting equivalent. It can be assertive or adverse.

3.2 Convictions

Elements of convictions

A. Readiness

B. Trust in plus

C. Surplus hopefulness

D. Method to increase the knowledge of representativeness

E. Set of rules, principles, and knowledge about the two processes

3.2.1 Readiness

People make their judgments about the probability of a future event occurring, based on the ease with which an instance that represents it occurs.

3.2.2 Trust in plus

It is the tendency to overestimate or exaggerate our own ability to satisfactorily complete a given task.

3.2.3 Surplus hopefulness

The bias of excess optimism makes us underestimate the probability of negative events and overestimate the probability of positive events.

3.2.4 Method to increase the knowledge of representativeness

This method explains the fact that the similarity between objects and facts often shapes economic decisions and the evaluation of uncertain events. The fundamental question is the speed of decision-making in this method; the faster the decision, this method will outline the similarity in the decision, being a mental appearance and a response of the brain.

3.2.5 Set of rules, principles, and knowledge about the two processes

There are two types of processes in behavioral economics:

“Automatical”—is defined as system 1, thinking is automatical.

“Reflexive”—is defined as system 1, thinking is reflexive.

System 1: its operation occurs automatically, without attempt and without control.

System 2: its operation occurs, more slowly and controlled, and is utilized in mental works.

4. Theoretical framework of the economy of fraud with respect to the behavioral economy

In the case of the fraud economy, the concepts that have convergent characteristics with the behavioral economy will be analyzed.

- Preferences. In fraudulent conduct, there is bias in the present, since the income obtained is the objective of the person who commits the act.
- Convictions. Issues of belief have to do with the value structure of society, norms, the level of control and the effective punishment of the crime of Fraud. “Individuals with some degree of power are more likely to act fraudulently”
- Information processing. The mental shortcut in the decision of a Fraud is given by the level of income and the level of impunity of the fraudster, his moral

bias, the value structure of society, norms, and the level of control and the effective punishment of fraudulent conduct.

- In fraudulent behavior, there are no losses, except the probability of punishment; the loss is taken as income, for not committing the crime. In a fraudulent behavior, the ability to commit it is analyzed, and the objective is immediate income.
- Short-term. In fraudulent behavior, short-termism is essential, high income level and short-term.
- Temporary instability. The crime of fraud has the objective of receiving benefits today, not in the future, except waiting for administrative collection times for public works, or public tenders, or private acts.
- Social Rules. Here social norms influence fraudulent behavior related to the stock of the person's moral rules, their moral bias, the value structure of society, norms, the level of control, and the effective punishment of the crime of fraud.
- Correspondence. On the subject of reciprocity, the scammer gets benefits; it can be an income or benefits of privileges and obligations to do or not to do.
- The slant of status quo. Fraud does not follow the bias of the status quo except the regulations or level of control; when they have a low level, the free path to commit the crime is perceived.
- Trust in plus. In the scammer's behavior, the aptitude to commit the scam is overestimated, and the objective is immediate income.
- Hopefulness surplus. A regulatory system is combined with an effective control and punishment system, of the same scope, resulting in a surplus hopefulness.
- Method to increase the knowledge of representativeness. Here the income is doubtful and uncertain, but the greater the profit from fraud, the greater the willingness to commit it, and the level of control, punishment, and reward is important at this point.
- Framing effect (frame or framing). The presentation of the information does not matter, since the objective is fraudulent income.
- Hassle factors. There are three factors that make the corruption decision uncomfortable: level of regulations, level of control, and level of effective punishment.
- The dual process theory. In the crime of fraud, there is a third system that combines the one; it works automatically and quickly and slow and controlled, given the level of rules, level of control, and level of effective punishment, given as system 3.
System 3: works reflexively but quickly in its response and depends on the income obtained and the levels of rules, control, and punishment of fraud.

- Saliency. In a fraudulent behavior, the most important thing is the level of income that I am going to obtain in the fraud and the ease of obtaining it.
- Automatical thinking and reflexive thinking system. Fraudulent conduct would be a system 3, with controls on punishment, prevention, and regulation.
- Cognitive load. In the behavior of a swindler, there is a psychological overload as a difficult barrier to committing the crime.

5. Theory of the fraud star

“The dirty economy, drug trafficking, fraud, and corruption are contemporary plagues sheltered by that anti-value, the one that maintains that we are happier if we get rich, whatever it may be.”¹³

The time produces a process of change in the world, people and processes is changing, crimes too, corruption mutates, fraud mutates, then taking into account the previous theories, be the triangle of fraud by Donald Cressey and Edwin Sutherland, and the Fraud Diamond (**Figure 3**).

The Fraud Star Theory is based on seven elements:

1. Incentive
2. Opportunity
3. Rationalization
4. Capacity
5. External scope
6. Internal scope
7. Social/organizational culture

5.1 Incentive

The individual is willing, overconfident, and over-optimistic to commit fraud.

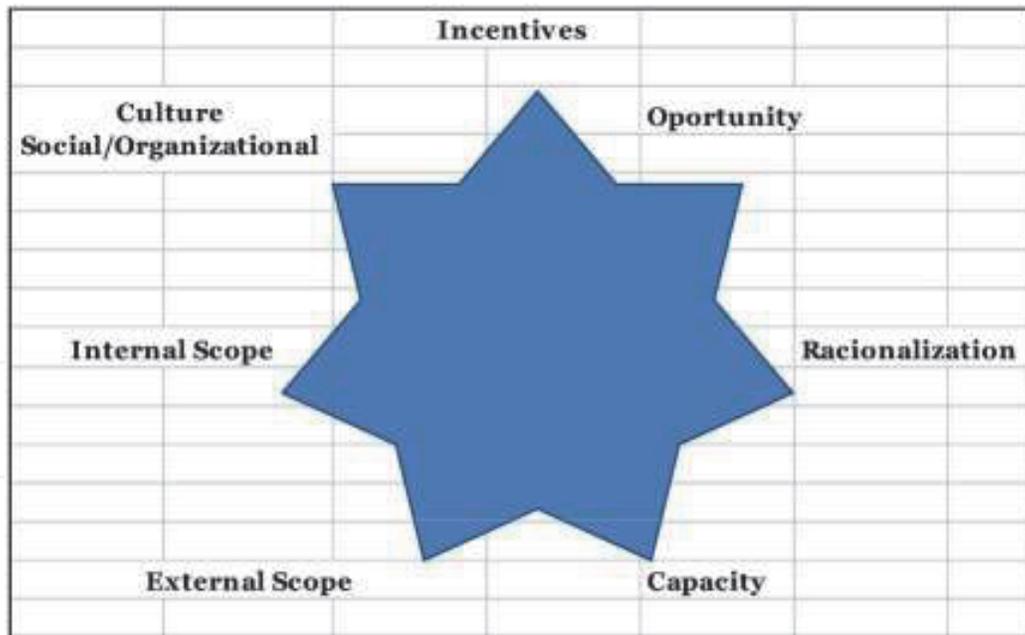
5.2 Opportunity

The individual has an opportunity, with a status quo bias, to commit fraud.

5.3 Rationalization

The individual has a heuristic of representativeness, with an aversion to losses, rationalizing the situation to commit fraud.

¹³ Jose Mujica- President of the Oriental Republic of Uruguay-2010-2015.



Source: Self-made

Figure 3.
New fraud star theory. Source: self-made.

5.4 Capacity

The individual has the potential and the possibility of committing the crime, with overconfidence to commit the fraud.

5.5 External scope

The individual finds at the level of social norms, the level of social control and the level of effective punishment, where punishment is not perceived, to commit fraud.

5.6 Social/organizational culture

The individual perceives an internal/external cultural/organizational system where the level of norms, the level of control, and the level of effective punishment, in the different organizations of society, public, and/or private, are not efficient in committing the crime of corruption, and as a consequence, social mechanisms of systemic corruption are perceived, leaving a free path to commit fraud.

6. Microeconomic model of fraud and corruption

The microeconomic model of the fraud economy has four elements:

- I. Fraud disposable income.
- II. Determinants of fraud demand.
- III. Determinants of the offer of fraud.
- IV. Fraud income model.

6.1 Fraud disposable income

In fraudulent conduct, there is no combination of two goods; there is only one good, but if there is a straight, straight line of regulations, control and punishment (Figure 4).

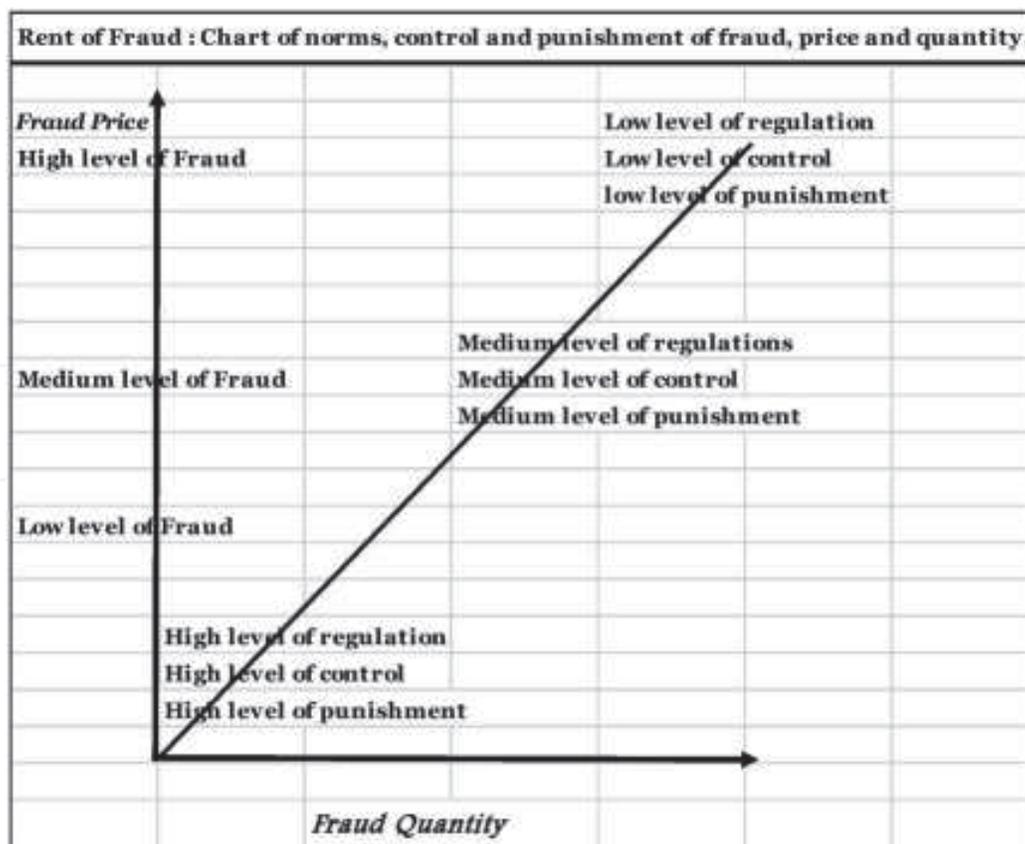
Fraud is a superior good with increasing demand: but in a straight line it is constant, according to the level of income.

The level of income, the line away from the origin and a superior good, fraud.

The demand for fraud is constant and grows with higher income (Figure 5).

6.2 Determinants of fraud demand

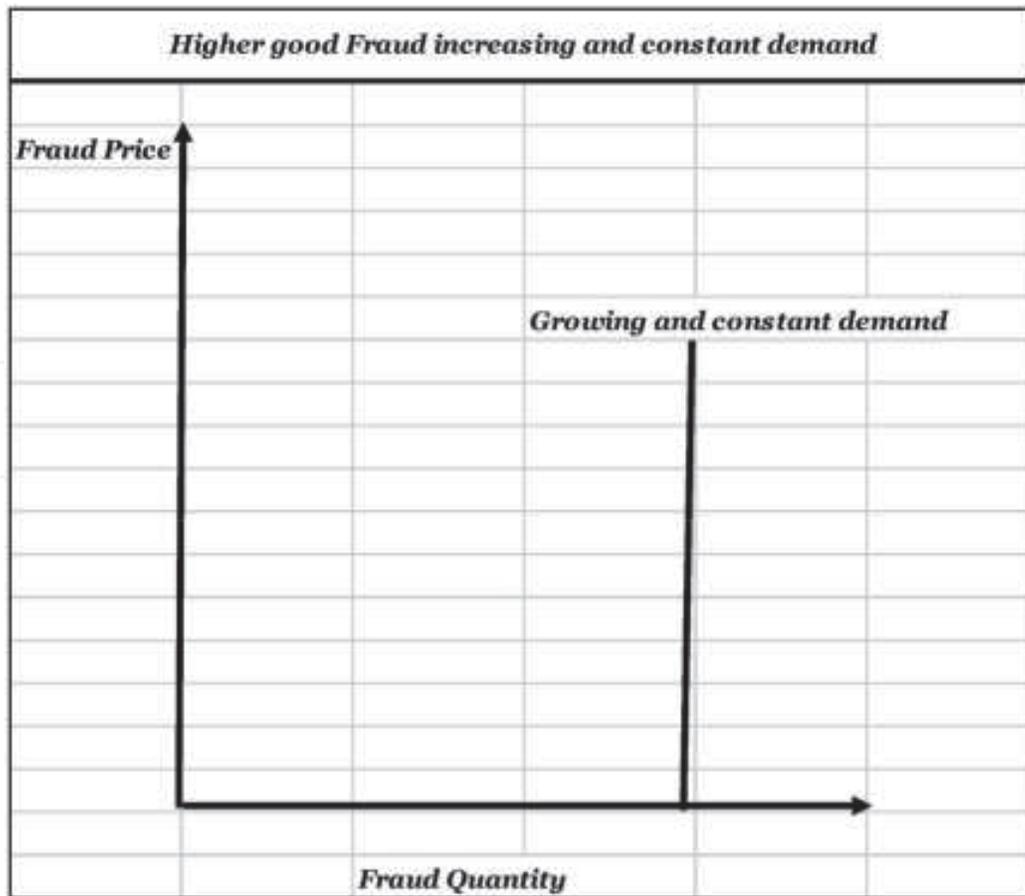
- Income level for fraud: income increases, the demand for fraud increases.
- Expectations: if expectations increase, fraud increases.
- Probability of committing fraud: if there is a greater probability, fraud increases.
- Anti-scam rules level: if there is a high level of regulation, the number of acts decreases, especially in preventive rules.
- Level of anti-scam control: if there is a high level of administration of crime prevention rules, the number of scams decreases, especially in the application of preventive rules.



Source: Self-made

Figure 4.

Rent of fraud: chart of norms, control and punishment of fraud, price, and quantity. Source: self-made.



Source: Self-made

Figure 5.
Higher fraud, growing well, and constant demand. Source: self-made.

- Level of penalty against the scam and its efficiency. If the level of criminalization, judicial processes, sentences, arrests, and efficient execution of punishments increases, the level of scam decrease.
- Stimuli to commit acts of scams: if the level of stimuli increases, the scam increases, for example: systemic corruption, economic recession, and high unemployment.

6.3 Determinants of the fraud offer

The offer of fraud is given, for an income, advantage of doing or not doing, and the concealment of information that the offeror obtains.

- Needs for concessions, favorable conditions, or demands that should not be made: resistance to legal and regulatory mechanisms, favorable condition, and requirement to do or not to do
- Income rank: increases the scammer's profits, therefore increases the scam offering.
- Expectations: if the chances of committing fraudulent scams increase, crime increases.

- Possibility of committing crime:
- Level of anti-scam rules: if there is a high level of rules, the number of scams decreases, especially in preventive regulation.
- Level of anti-scam control: if there is a high level of control, the number of scams decreases, especially in taking preventive control measures.
- Level of penalty against the scam and its efficiency. If the level of criminalization, judicial processes, sentences, arrests, and efficient execution of punishments increases, the level of scam decreases
- Stimuli to commit acts of scams: if the level of stimuli increases, the scam increases, for example: systemic corruption, economic recession, and high unemployment.

6.4 Fraud income model

How fraud income is explained

$$\text{Fraud Income} = \text{Income} * \left(\% \text{Level of standards} + \% \text{Level of control} + \% \text{Level of punishment} = \sum / 3 \right)$$

- Standard level: What is the effective level of anti-fraud standardization?
- Control level: What is the effective level of fraud control?
- Level of effective punishment: What is the level of effective punishment of fraud?

According to the level of these three elements determines the fraud income; in its probability, if its level is low, we will have a higher fraud income.

For example, low level of standards, control, and punishment, 20%, high probability of fraud income:

$$\text{Fraud Income} = 100 \times (0.20 + 0.20 + 0.20 = 0.60/3).$$

$$\text{Fraud Income} = 100 * (1 - 0.20) = .$$

$$\text{Fraud Income} = 100 * 0.80 = 80.$$

$$\text{Fraud Income} = \$ 80.$$

Rent seeking, for example, fraud acts in both the public and private sectors, but if the government has a low level of regulations, control, and effective punishment of fraud, the scammer will look for that path to crime.

7. Conclusions

The behavioral economy model is a formal model, with basic concepts. The fraud economy generates some coincidences in its framework, but its system is not dual; it has a third system.

E- Set of rules, principles, and knowledge about the two processes.

There are two types of processes in behavioral economics:

“Automatical”—is defined as system 1, thinking is automatical.

“Reflexive”—is defined as system 1, thinking is reflexive.

System 1: its operation occurs automatically, without attempt and without control.

System 2: its operation occurs, more slowly and controlled, is utilized in mental works.

The microeconomic model of the fraud economy has four elements:

I. Fraud disposable income.

II. Determinants of fraud demand.

III. Determinants of the offer of fraud.

IV. Fraud income model.

They do not function as a supply and demand of a common good but a superior good; the conclusions of the income model have three elements:

- Level of anti-fraud rules.
- Fraud control level.
- Level of effective penalty of fraud.

Based on these three elements, the income from fraud is determined, not in a traditional microeconomic model.

The fraud market should not be analyzed as a traditional supply and demand model, since this market has particular characteristics and individual behavior, and therefore, the elements of behavioral economics, for the application of fraud, are an open discussion.

Additional Classifications

JEL classification: A13 D11 P16

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