
BIAS TOWARDS INVOLVEMENT IN THE THE INFORMAL ECONOMY*

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ABSTRACT

Many countries have fought with economic informality for decades. The failure of eradicating it is typically attributed to high levels of corruption, low income, and people's general bad view on how well their taxes are spent. However, when economies stay informal for long periods of time, another problem arises: that individuals themselves don't have an accurate perception of the extent of their own involvement. This misperception was detected through a survey in 223 paraguayan students using non parametric methods. Socioeconomic status and area of study were also found to have a significant effect on this biased judgement.

Keywords Informality · Involvement · Bias · Paraguay

1 Introduction

Globally, economic informality hires more than 60% of the available workforce³. The size of economic informality on the other hand, differs enormously among countries. In the developing world, this is usually much larger than in high income nations. According to the World Bank Database, the informal sector in Bolivia for example includes about 77% of the Gross Domestic Product, while in countries like Uruguay, the number is close to only 23%.

Some economies have failed to reduce the size of their informal sector, even in periods of sustained economic growth. Notable examples are Egypt (growth of 12% of their GDP between 2013 and 2017, with an increase from 42 to 50% on informality) and Bangladesh (with an increase of 30% of their GDP followed by an increment from 82 to 91% on informality, on the same period). Not surprisingly, many authors have discarded the simplistic view that economic informality is a residue from a past mode of production that is rapidly disappearing (Geertz, 1963; Lewis, 2013).

Although informality is a complex problem, there are some deterministic variables associated with it, like low levels of development as well as low income (Chong and Gradstein, 2004; Schneider and Enste, 2000; Torgler and Schneider, 2007). Other variables highly related are the excess of government regulations (Loayza and Rigolini,

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³International Labour Organization, Press Release (2018, April 30). *More than 60 per cent of the world's employed population are in the informal economy*. Retrieved from <https://www.ilo.org>

2006), government corruption (Loayza and Rigolini, 2006), people's perception on how well taxation is used to provide services (Torgler and Schneider, 2007), and inequality (Chong and Gradstein, 2004; Maloney, 2004).

Many Latin American, African and Asian countries have struggled with this issues, as well as with high levels of informality for long periods of time. There were formed consequently, whole generations that were born and lived with this aspects in their daily lives, creating some sort of "culture" of informality. In addition, with the government facing so many problems, many small businesses of all kinds were never really at risk of having trouble due to tax evasion, and sold consequently informal goods in plain daylight (Gallien, 2018; Holland, 2015, 2016; Tendler, 2002). Furthermore, some laws, like intellectual property for instance, were never endorsed firmly, and people easily accessed unlicensed versions of goods and services (McHardy Rei, 2012).

In a sense then, individuals got very used to informal goods consumption, and life in informality became very natural to them. Then the following question arises: Is it possible that informality is so rooted in the daily life to the extent that the same individuals participating in it don't recognize their involvement? This is the question being addressed in this article, from the Paraguayan context, one whose informal sector is among the biggest in Latin America (World Bank, 2019).

The definition of economic informality being used is the same than Williams (2004). It encompasses all types of economic activity that offers goods and services that are hidden from the state, for tax, social security, and/or labor law purposes, but that are legal in all other respects. Therefore selling guns, narcotics, etc. are not taken into account.

In the following section a review of literature from a psychological perspective is given, followed by an overview of the Paraguayan economy. Next, in section 3, a detailed description is handed with regards to data and methods, and in section 4 the data is subsequently analyzed using descriptive and inferential approaches. Finally, a short discussion is given with possible implications for future public policies being implemented.

2 Literature Review

Having an accurate perception of ourselves is a complex task. Bem (1972) states that individuals come to "know" their own attitudes, emotions, and other internal states partially by inferring them from observations of their own overt behavior and/or the circumstances in which this behavior occurs. Therefore, he adds, to the extent that internal cues are weak, ambiguous, or uninterpretable, the individual is functionally in the same position as an outside observer, an observer who must necessarily rely upon those same external cues to infer the individual's inner states. This conception, known as self-perception theory, may have a crucial role in determining people's views on their own involvement in big, long-lasting informal economies. Since members of such societies surely do not manifest strong cues towards the individual taking part of informal transactions, he must have, according to this theory, problems identifying himself with this sector and also issues recalling such experiences.

Similarly, other studies (Laird and Bresler, 1992; Schachter and Singer, 1962) conclude that to determine their inner states, individuals take into account information not only from their own behavior but also from their context. People belonging to a certain group may therefore feel different emotions towards a specific action in contrast to others, because their context is not the same. This could mean for example, that when consumers are downloading unlicensed software in some country, they may express little or no resentment due to the lack of strong intellectual property legislation, and therefore feel it as acceptable and also no hesitation in performing so. In contrast, in other countries where this laws are well established in their set of values, people may think of such as acting deliberately against their beliefs, be more cautious and more likely ending refusing to do so.

Another part of this self-inferring process is affected by parents. They have of course, a strong influence in setting their child's set of values (Hitlin, 2006). As is the norm in high dimensional informal economies, parents actively take part in the informal markets and often work in informal sectors. Because of this, children themselves would be less likely to struggle emotionally when they interact with the informal world.

But what specifically motivates people to form attitudes via this self-perception process? Zanna et al. (1987) argue that individuals would bother to reflect upon their behavior and infer an underlying disposition when they have received a direct inquiry concerning their attitudes, or when they have perceived a cue implying that it may be functional to form attitudes. Again, is this lack of inquiry, so present in a mostly informal economy, that could perhaps make individuals less self-aware of their involvement, and generate a bias in their judgement.

However, the resultant attitude since a self-inference from behavior has been made displays remarkable strength (Zanna et al., 1987). This occurs because people recognize that their own behaviors are a highly reliable and relevant indicator of their attitudes. Nonetheless, as people repetitively perform a particular action, the

strength of this formed attitudes decline. Next section is going to address this point, that of repetition as a source of reducing inner conflicts.

2.1 Misconceptions and repetition

Cognitive dissonance theory suggests that when individuals hold two or more cognitions that are contradictory, they will feel an unpleasant state-dissonance until they are able to resolve this state by altering cognitions (Festinger, 1962). A person who experiences internal inconsistency therefore tends to become psychologically uncomfortable, and is motivated to reduce the cognitive dissonance by making changes to justify the stressful behavior. These changes include adding new parts to the cognition causing the psychological dissonance, or by avoiding circumstances and contradictory information likely to increase the magnitude of the inner conflict (Festinger, 1962).

If then, for example, an individual buys groceries without asking for an invoice, knowing that this implies that the seller would not pay taxes for that sale, he will probably feel (at least for some short period of time) uncomfortable due to this contradiction between his acts and beliefs. However, how is this dissonance different in a context where seemingly everyone behaves similarly? This could serve as a source of motives for the individual to resolve the inner inconsistency, and could successively employ it for future purchases. Consequently, a "tolerance" for dissonance might be created.

Precisely this was shown by Brehm and Cohen (1962) in a famous experiment, where they analyzed the effects of repeated "dissonances" on attitude change. In the study, two groups were formed. In one, subjects were in the predissonance condition, and were required to write four separate essays against positions they currently held. In the other, they were in the preconsonance condition, and were told to write four essays in favor of positions they currently held. All participants were then induced to write a fifth essay which was counter attitudinal. In this essay, half of the subjects in each group was given little justification for writing the fifth essay, and the remaining half was given a great deal of justification. Results showed significant attitude change in the preconsonance condition, while no attitude change in the predissonance condition, confirming then that "dissonance tolerance" was built within the latter group.

Consumers who have lived in big-sized informal economies and actively engaged in informal transactions should have built this tolerance, and thus show little to none internal conflicts while performing such transactions. This lack of attitude change may further encourage a misperception of his involvement in this sector.

Summarizing, individuals in these societies lack strong cues to infer their involvement, as most of them actively participate in it, and also their parents have lived with it and implicitly transmit it in their values. And even when this involvement is perceived, repetition of these actions contribute to diminish the inner conflict. Lastly, how can gender, socioeconomic status and education level be related to this error in judgement? Informality holds a strong relation with these features, and can thus explain how involved individuals are depending on these characteristics. To comprehend how these variables interact in the Paraguayan context, a quick description of the structure and size of the local informality is provided.

2.2 Paraguay's Context and some Data

Paraguay is a small, land-locked country located at the heart of South America. Its percapita GDP is near 4.365 dollars, poverty rate is about 26% and life expectancy is approximately 73 years.⁴

According to the most recent report by the DGEEC⁵, economic activities with the greatest participation in the informal sector are construction, commerce, restaurants, and hospitality; that is, the tertiary sector. In turn, this sector represents towards 50% of the Gross Domestic Product⁶.

The same report also shows that informal workers could be characterized by their low education level. 98.1% of the population without education (no years of schooling) is employed in the informal sector. In contrast, 37.7% of the population with 13 to 18 years of schooling is employed in the informal sector. Also, young workers show a greater level of informal employment. It affects more than 90% of the employed population from 15 to 19 years, while the population of older adults employed in the informal sector figures just above 70%.

⁴World Bank Database

⁵Dirección General de Estadísticas, Encuestas y Censos, Press Release (2018, October 25). *DGEEC presentó datos sobre ocupación informal en el país*. Retrieved from <https://www.dgeec.gov.py>

⁶Central Bank of Paraguay Database

Moreover, the rate of informality for women is greater than that for men, both in rural and urban areas. However, in absolute numbers, men have a greater presence in the informal workforce.

A large part of the problems of the labor market is seen in underemployment, through wages that are less than the minimum wage, and in the migratory pressures from the formal sector to informal sector. Among those employed that have earnings less than the minimum wage, more than 70% are informal, and as one moves up the wage bracket, the percentage of those informally employed decreases. Approximately one-third of the Economically Active Population (EAP) is self-employed, almost all of which is in the informal labor market.

Finally, the percentage of informality remained about 65% in the period stretching from 2012 to 2017. This characteristics give the ideal ground to evaluate the hypothesis that people have an inaccurate perception of their own involvement. How this was tested is detailed in the next section.

3 Data and Methods

In order to determine the bias in judgement of individuals, a short survey was administered, and a total of 223 responses were collected. The survey consisted of 12 questions, all of them being close-ended, and was made online through the Google Forms platform. Some missing data was obtained, and non-parametric methods were used for handling them. Finally, these methods were also employed to analyze the bias in respondents.

3.1 Data

The surveyed participants consisted of college students of both genders, from different universities, and all of them being located in Asuncion. The data was gathered over a period of two months, and responses were kept under anonymity. The first four questions were related to gender, education level, majors, and socioeconomic status. Then, the respondents were asked to rate themselves, on a scale from 1 to 7, being 7 the most involved, how involved they think they were with the informal sector. Afterwards, they were asked a total of 6 questions, on whether how frequent they took part on very common informal activities. Paraguayan students were very likely to do. After answering all these questions, they were asked again to rate themselves on the same scale. This difference between their initial and final response was the primary variable of interest.

The initial informative questions were asked in order to establish how they interact with the bias individuals manifest. In addition, they served for some sort of distraction to capture their very first impression in the first auto-evaluating question. In the same spirit, the respondents were never told that the survey was about informality. Furthermore, the final section consisted exclusively on common informal activities transactions, in the pursuit of really letting the surveyed think about his relation with the informal world.

3.2 Methods

To test the hypothesis that individuals showed a bias in their perception, a Wilcoxon signed-rank test (Wilcoxon, 1945) was made on their initial and final responses. On the other hand, to see how this bias was related to the other variables, a Mann Whitney U Test (Mann and Whitney, 1947) or a Kruskal-Wallis Test (Kruskal and Wallis, 1952) was used, depending on the number of levels the variable had. Finally, to compute the missing data in the major variable, K-Nearest Neighbors Algorithm (Lesmeister, 2015) was performed.

4 Results

In the following tables, the results on how frequently informal activities were performed by the respondents are shown. The first four variables correspond to: asking for an invoice on purchases below roughly 4 dollars, to how often they watched online movies, read "pdf versions" of textbooks, and bought goods from street sellers. The most common activity was to read pdf versions of books (70% affirmed with at least sometimes doing so). The last two asked whether they have or not bought at least once resold tickets, and bought or downloaded unlicensed software. The latter was performed more frequently than the former (67% responded at least with an affirmative answer).

These common activities were mostly unnoticed by the respondents and affected their views on their involvement with the informal economy. The graph below shows the distribution of both responses, with their bias measured as the difference between the first and final answer. The dashed line represents the median of each variable. Even though the two responses had the same median and IQR (of 4 and 2, respectively), strong evidence was found in favor of a difference in their initial and final responses ($V = 3,595.5$, $p\text{-value} < 0.00019$).

Transaction	Never	Almost Never	Rarely	Sometimes	Frequently	Almost Always	Always
invoice	49	46	28	27	26	24	23
movies	33	52	23	29	31	27	28
pdfbooks	17	34	16	37	48	50	21
stseller	28	78	34	43	28	11	1

Transaction	Never	Yes	Yes, more than once
ticket	151	54	18
unlicenssoft	73	103	47

Table 1: Periodicity of Informal Transactions

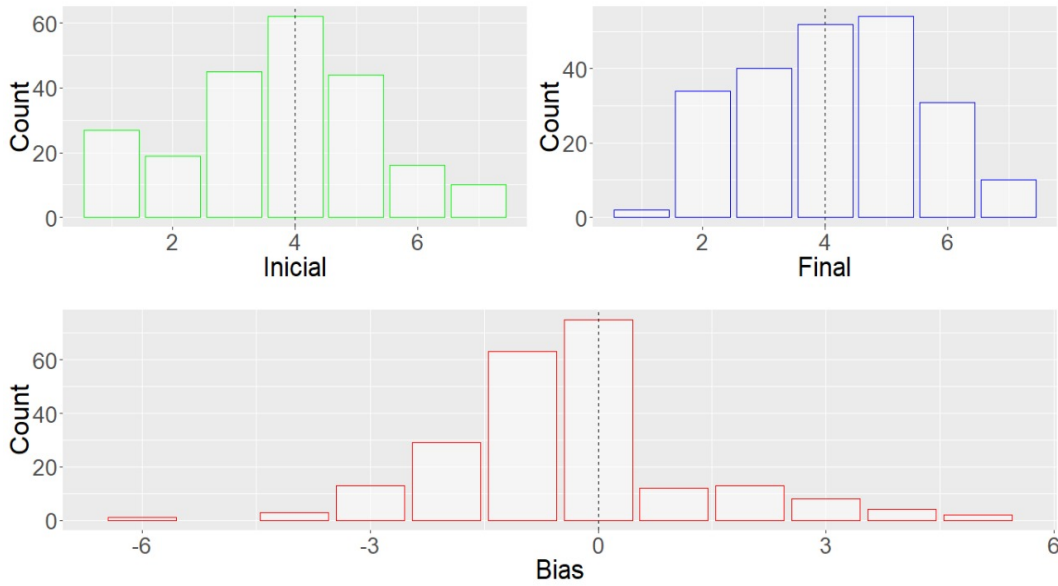


Figure 1: Difference in Responses

4.1 Bias and the other variables

In this section, the difference between the initial and final response reported by the respondents is analyzed by its relation to their education level, gender, socioeconomic status and area of study.

Education level did not show a strong relationship with bias. Only the fifth year students (which represented about 27% of the sample) showed a different median with respect to the other groups. Overall, there is insufficient evidence that the distribution of bias between educational levels differ in location ($H = 6.2626$, $p\text{-value} > 0.28$).

Gender wasn't either a significant predictor of the difference in responses. Although the median for females was 0.5 lower than for males (and made up 59% of the data), there is not enough data to conclude that gender contributed to explain the bias shown by respondents ($W = 6,078$, $p\text{-value} > 0.87$).

Socioeconomic status was measured by how much students contributed with their college expenses. Education costs solvanted by students was taken as an indicator of economic hardship (which was the most frequent level and made up about 40% of the sample). This variable was not uniformly distributed among the bias distribution, and accordingly, enough evidence was obtained to reject the hypothesis that the bias is independent from the underlying socioeconomic status ($H = 19.166$, $p\text{-value} < 0.0008$).

Missing data was collected in the major variable. Furthermore, there were in total 25 different majors reported. To improve the accuracy of the imputation, these were subsequently grouped in 5 categories, or areas of study. In the following section, a review of this variable and the imputation model is given.

Education Level	1st year	2nd year	3rd year	4th year	5th year	Done/Not in College
Bias	0 (2.5)	0 (3)	0 (2)	0 (2.5)	1 (3)	0 (3)

Gender	Male	Female	College Costs	Myself	Mostly by Myself	Half of it	Mostly by Parents	Parents
Bias	0 (1)	-0.5 (1)	Bias	0.0 (1.00)	-0.5 (1.00)	-1.0 (1.25)	0.0 (1.00)	-1.0 (2.00)

Table 2: Median Bias (and IQR) by Education Level, Gender and Socioeconomic Status

4.1.1 The KNN Model

In total there were 4 missing observations. In the next graph, the distribution of area of study, and their initial and final self-evaluation responses is presented. For more clarity, only a subset of the data is displayed, and points were given a small random movement to avoid superposition. The more frequent areas of study reported where Business and Economics (58%) and Social Sciences (16%).

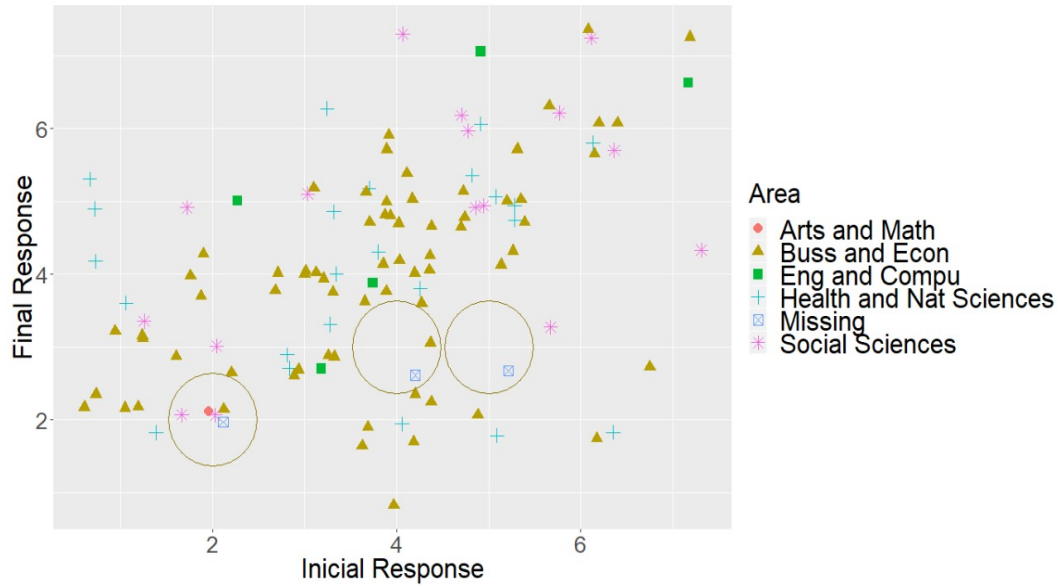


Figure 2: Areas of Study and Self Rating Questions

Gender, education level, socioeconomic status, both self-rating questions, and the six informal activities questions were used as regressors (making up a total of 11 variables) for imputing the missing data. If they were not already, all of the regressors were turned into numeric and were subsequently standardized. The model relied on euclidean distance to select the nearest neighbors. To pick the best value of the numbers of neighbors to be considered, 10-fold validation was performed, which gave 17 as the number of neighbors with the best accuracy (of 58%). Finally, area of study had a significant effect on the bias expressed by the participants ($H = 20.174$, $p\text{-value} < 0.0012$).

Nº of Neighbors	11	13	15	17	19
Accuracy	0.557 (0.003)	0.568 (0.005)	0.571 (-0.004)	0.579 (0.003)	0.578 (-0.006)

Table 3: Model Accuracy (and Kappa-Statistic) by Number of Neighbors

5 Discussion

When big informal economies fail to diminish their size, public policies must deal with another issue: that individuals themselves don't always recognize their involvement in it. In countries like Paraguay, where most people have lived in such an economy since they were born, and their parents have only had an even bigger informal sector, people got very used to the informal way of life.

In this way, as informality got so installed, cues towards the individual taking part of it also got weaker. Consequently, as self perception theory states, this lack of unambiguous cues leaves the individual at a similar position as an outside observer. Inferring its own involvement gets harder, and this difficulty was confirmed by this study. Results strongly support the hypothesis that people have a wrong judgement on their involvement in economic informality.

The bias found in respondents was explained partly by their socioeconomic status. This may be due to the fact that lower income often do not permit students to acquire formal, more expensive goods and services, like licensed software and textbooks. As they need these items for college, and there is no way to acquire licensed software for less than 200 dollars a year or even more for books, they have no other way but to get them informally. This necessity may serve as a source to solve the dissonance generated by purchasing these goods, and help them to evade forming a strong attitude against it.

The area of study to which students belong also was an important predictor of the bias. Naturally, areas that hold a stronger relation with the problem of informality like the Social Sciences and Business, may contribute to raise awareness of one's own involvement, as they are more in contact with it.

The present study had its limitations. Firstly, students in Paraguay usually work and study at the same time, and also contribute to at least some portion to their college expenses, indistinctly of their income level. This makes it a flawed indicator of socioeconomic status. Also, there was no distinction between education level and age, and perhaps this had an effect on establishing its relation with bias. Finally, the small sample size must also be mentioned.

This study has shown a relation between a country with high levels of informality and a weak perception of their citizen's involvement. It would be exciting to see how this perception is altered in one where informality is much lower, to test whether citizens of more developed nations are really more aware of their participation in informality. Furthermore, it would be interesting to analyze how foreign citizens adapt to big informal nations. To evaluate how quickly, if they do, begin to have an inaccurate judgement of their own involvement.

Given the wrong perception of individuals, future public policies should aim not only to lower tax evasion but to raise awareness in them. They must invest in public campaigns, to try to awaken citizens and transform the ambiguous cues that exist in economies with big informal sectors into stronger ones. In this way, people deciding to participate in informal markets would have to deal with stronger inner conflicts, and would be more reluctant to get involved.

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