NÚMERO 5

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Compliance with Norms: The Case of Tax Compliance in Latin America

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Abstract

This paper analyzes the effect of enforcement on compliance with norms. I propose an inverse association between the legitimacy of a rule and the degree of enforcement needed to ensure compliance. As the individual costs rises the legitimacy of such norm decreases. This individual material cost benefit analysis is being checked by a social value function where non-material utilities might override a natural tendency of defying compliance to costly norms. Where the perceived value of a norm is high the perceived costs of compliance diminish and the legitimacy of that norm increases. Thus, the necessary level of enforcement in these scenarios is lower than in societies where such norms are not perceived as valuable. Using the example of taxation, I develop a simulated game showing that good enforcement has limited result in social adverse conditions, and conversely, poor enforcement can yields good results where the norm is more legitimate

Resumen

Este trabajo analiza el efecto del enforcement[1] (ejecución) en el cumplimiento de las normas. Propongo una asociación inversa entre la legitimidad de la regla y el grado de enforcement necesario para asegurar un amplio cumplimiento de la misma. Cuanto mas se incrementa el costo individual del cumplimiento menor es la legitimidad de esa norma. Este análisis costo-beneficio material e individual es controlado por una funcion del valor social de la norma donde las utilidades no materiales pueden mitigar la tendencia natural a desafiar un cumplimiento costoso. Donde el valor percibido de la norma es alto, los costos percibidos del cumplimiento decrecen, y la legitimidad de esa norma aumenta. Por lo tanto, el nivel necesario de enforcement para estos escenarios es menor que en sociedades donde la misma norma no es percibida como muy valiosa. Utilizando el ejemplo de los impuestos, desarrollo una simulación en cuyo juego se demuestra que un buen enforcement obtiene pobres resultados en condiciones sociales adversas, y por el contrario un magro enforcement puede generar buenos resultados donde la norma es mas legitima.

[1] Por falta de una adecuada traducción utilizo el término inglés.

Introducción

Tax evasion is widespread in Latin America. Many countries collect less than half of total taxes due. Some countries, however, have good tax administrations but they still face difficulties in collecting a good share of their taxes. Others do not have a very developed tax administration but have relatively good tax compliance results. How tax administrations affect the level of compliance?

Elsewhere I have proposed a model that focuses on the subjective analysis of costs and the social construction of norm abidance as mechanisms to explain disparities in compliance behavior (Bergman 2001 A). I have stressed the need to look for economic, as well as social and cultural variables, to account for individual decision-making, and which have a bearing on tax compliance. I said that behind any norm there are two components; legitimacy and sanctions, and that without enforcement the norms and rules tend to fade. In this paper I will further develop the notion of enforcement, with special emphasis on taxes. I claim that the weakness of most states in Latin American in enforcing their laws and the subsequent de-legitimacy of norms and rules explain the inability to generate a sense of obligation among citizens and taxpayers. Therefore, poor enforcement has generated stable noncompliance equilibrium. Tax compliance is also played as an assurance game between players where individuals' expectations are that all others will cheat and thus it becomes rational to evade taxes. To break that impasse there is a need for a credible enforcer that can overcome a tradition of resistance of compliance. The institutional design of the enforcer, however, is so weak and dependent on other players that cannot reverse the status quo. Threats can become credible only when they are backed by strong institutions, and generally within a favorable compliance environment.

This paper has two sections. The first discusses the theoretical aspects of the enforcement of norms, the role of legitimacy and develops a theoretical conceptualization of the relationship between enforcement, individual cost of compliance and legitimacy. The second section analyzes the particularities of compliance with taxes. I extrapolate the concepts developed in the first section and present a simulated game in order to expose the effect of culture, norms and enforcement on tax compliance rates.

Part I: Norms and Compliance

Norms are expected behavior regularities backed by force. Norms can be informal or formal. The former are social norms and the latter are legal rules, statutes, laws, etc. What distinguishes social norms from legal norms is the type of sanctions that backs them. Social norms are enforced by the threat of

informal sanctions such as shame, guilt, shunning etc, and formal norms are backed by the threat of legal sanctions. The enforcer of social norms are the members of a community that shares the values of the norm, the enforcer of legal norm is the state (Elster 1989, Posner 2000).

The type of enforcement affects the development of norms. As opposed to the informal sanctions of social norms, the formal or legal enforcement is based on impersonal relations where sanctions are executed by institutions that command a certain level of legitimacy. This leads to rules where there is higher atomization among individuals due to the effective mediation of institutional enforcement, but also to a value-diminishing trend of the legal norm.

Informal sanctions (shaming, shunning, guilt) are more effective in closer social groups. Such enforcement leads to values that enhance interpersonal norms in order to resolve collective endeavors. For example, a social convention such as gift giving can signal different norms such as appreciation, genuine love, reciprocity, loyalty, etc. In each case the sanctions for its violation has different meaning. In social groups where the institutionalization of gift giving is weak, i.e., for example, where there are not fix secretary days, no birthday presents, etc, the value of gift giving would be higher and therefore, it will create incentives for the gift receiver to be more appreciative, more caring, more loyal, etc. On the other hand, where gift giving has become institutionalized, the sanctions for not compliance are very high but the values this norms embrace are not as important for that community. In sum, the institutionalization of a behavioral regularity does not command a higher value for that norm but might command stronger punishment for its violation.

The institutionalization of a norm means the public formal recognition of the mechanisms that activates sanctions, and the reasonable expectations that they will be applied. Thus, institutionalization of norms depends on the predictability of sanctions. The higher the expectations of sanctions to be imposed, the more institutionalized the norm is.

An example will illustrate this relationship. In many social orders the respect for privacy is considered a norm. Avoiding noises after certain hours is a convention that responds to such norm. The type of enforcement an individual can mobilize depends on the perceived effectiveness of sanctions, and on the mores of such social group. A person can approach the neighbor and threat calling the police, i.e. that will seek formal enforcement of its right for privacy. S/he can also approach the neighbor claiming that the noise is very disturbing and prevent him/her to sleep. The effectiveness of the second strategy depends on the receptivity of informal sanction by the person being enforced. To the extent that sharing good neighborhood is important (usually when there are fluid contacts between them) then the threat of a

conflicting relationship nurtured in day-to-day contacts is jeopardized by the violations of the respect for privacy.

In sum, *formal sanctions* are effective to the extent that the police shows-up and is capable to impose the sanctions. Calling the police, however, does not particularly enhance fraternity, good manners and fluid contacts between neighbors. Conversely, *informal sanctions* are effective to the extent that prestige and fluid close-knit relations are important for the players, and therefore neighbors are more responsive to the needs of each other.

A crucial difference between formal and informal sanctions lies on the predictability and generality of enforcement. If the police is called to enforce a rule will most likely act in the same way regardless whose neighbor has called in. Conversely, informal sanctions, depends on many other variables: The structure of the interactions between neighbors, hierarchies between players, the receptivity of the enforced person for being shunned or feel compelled to be a good neighbor, etc. In sum, informal sanctions are usually more stringent but less predictable. Formal sanctions more lenient but more predictable.

The more institutionalized sanctions are, i.e., the more predictable they are, the lower the severity of these sanctions but the higher the probability of imposition. This means that predictability allows for the relaxation of sanctions in exchange for much higher regularity of expected behavior.

I claim that formal rules are abided to the extent that the probability of sanction's imposition increases. Informal rules abidance increases to the extent that the importance of interpersonal relations, and thus the costs of punishment are higher for the group.

Legitimacy and Enforcement

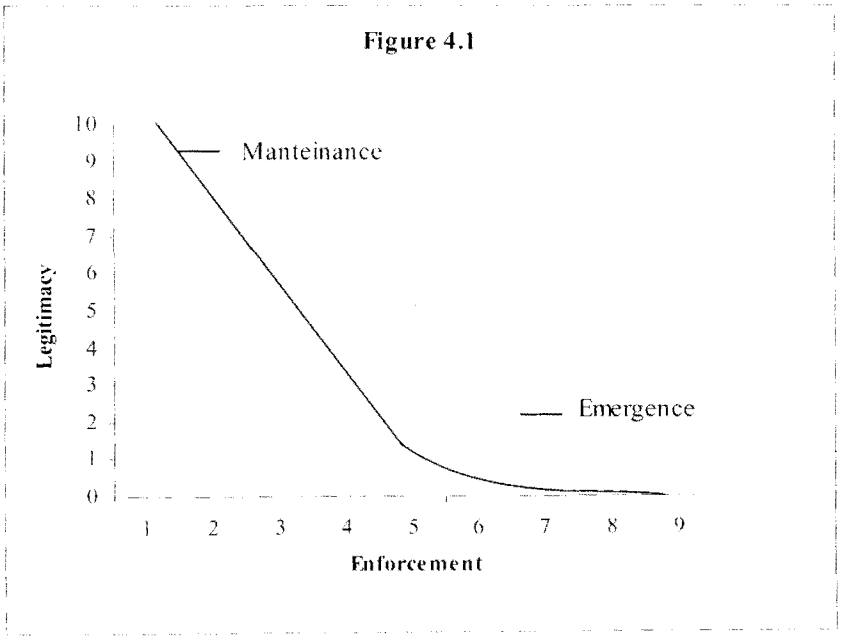
There is a need to distinguish between two different phases of norm enforcement: the emergence and the maintenance. An emerging norm generally requires higher enforcement than a norm already rooted in the community. I call *norm emerging enforcement* to the type of enforcement for the first phase, and *norm maintenance enforcement* to the second. In short, the type of enforcement is tied to the legitimacy of the norm, i.e. to the extent that the value of a norm has been embraced by the community.

Figure 4.1 describes the inverse relationship between the legitimacy and the enforcement of the norm. The more legitimate the norm is the less enforcement is required. Conversely, the lower the legitimacy, the higher the resources the enforcer needs to allocate in order to ensure that people will abide and finally embrace the norm. The goal for every norm is to gain such wide legitimacy that enforcement will be kept to a minimum. That is the nature of tax compliance. The lower the legitimacy of the taxes the more the

enforcement needed, and thus, the harder to attain good tax compliance rate.

This description identifies the general compliance function and the areas where norm maintenance and norm emergence are usually located. Notice that norms that have high legitimacy require at least some measure of enforcement. Otherwise, free riders can take over and ultimately the norm might fade. Notice also that even with strong enforcement compliance requires some level of legitimacy. Even totalitarian states cannot rely solely on brute deterrence to guarantee compliance (that is also why the curves smoothes and never reaches the axis).

FIGURE 1 LEGITIMACY AND ENFORCEMENT OF NORMS



But not all maintenance rules require "mild enforcement." Remember that what affects enforcement is the level of legitimacy. Taxes are rules already established in most countries but the threat of free riding is higher than on many other rules because the costs of compliance are also much higher. Therefore, the higher the direct costs of conforming to rules the higher the temptations to free ride. For example, conforming to a rule of going to the polls every four or six years is less costly than paying taxes every month. Moreover, when costs are lower the acceptance of a norm is higher. People have less trouble abiding to rules such waving the flag on independence-day than making costly payments from their income. The former norm is embraced easier than the second. There is more need of enforcement in the

latter than the former, since legitimacy is higher when costs are lower. This is known and understandable.

What requires a better explanation is why the legitimacy of taxation is higher in some countries than others. If the assumption that nobody likes to pay taxes holds, then the legitimacy of taxation is exogenous to the norm. Two alternatives answers are possible: 1) that the threat of sanctions enhances legitimacy, i.e., that people come to embrace the norm because otherwise will be penalized in such a way that the sanctions are perceived costlier than tax compliance. 2) That the norm efficiently resolves a collective problem where the perceived benefits of compliance exceed the perceived costs.

Let's examine first a singular norm as an example. Altruism, an extreme norm of costly participation, can survive in a world of at least several altruists. To the extent that altruism is not the norm but the exception, people will cease to be altruist. People embrace altruism despite its costs because breaching it or free riding is highly penalized within a society of altruists (Mark 2002). Formal or informal sanctions must be effective otherwise the norm fades. Altruists believe that their contributions to society bring welfare to the community. Altruism provides non-monetary rewards to the giver. Altruists perceive these rewards more beneficial than the money or other material gifts s/he provides.

More importantly, altruism successfully resolves distribution and survival problems in a collective. Altruism increases welfare and people come to perceive that it brings more benefits than harm (Lee *et al* 1999, Healy 2000). The community embraces this norm and nobody questions it. It confers high status to the altruist because it solves important problems for the collective.

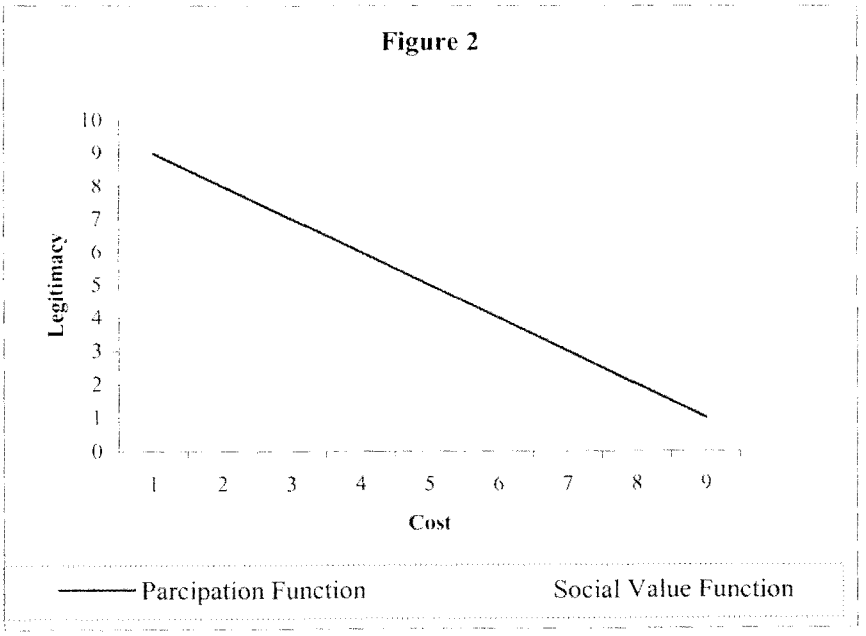
Of course tax compliance is not altruism. Rarely taxpaying confers status and prestige to the taxpayer. But it shares with altruism the basic axiom of costly participation. In that sense, people abide to costly actions if the perceived benefits of such action exceed the costs of punishment, and the rewards of participation in the collective confers certain meaning to the individual. Those who participate tend to embrace the norm. Tax compliers tend to believe in taxation. Tax cheaters either defy the norm or just pay lip service to it.

Figure 2 describes two relationships between legitimacy and subjectively perceived cost. Both association are inversed. The first is participation. In a pure state of nature the individual conformance to norms leads to decreasing legitimacy as its individual cost rises. As mentioned, the higher the individual cost for abiding the norm (paying taxes, contribute to charities, etc) the lower its legitimacy. A profit maximizer will prefer to incur in as less cost as possible to obtain higher payoffs from a norm. In this sense, the higher the perceived cost (i.e., the sanctions exceeding the benefits of a

transaction) the lower the tendency to embrace the value that promotes higher individual costs. For example a pure selfish person will downplay blood donation as a preferred norm if the perceived pain and costs of giving blood is higher than the prestige, recognition or other values that check the tangible costs of blood donor.

This is an endogenous factor of compliance. I will call it the participation function. Unless other factors check egoistic behavior, i.e., holding constant all other factors, the higher the perceived individual cost of adhering to a norm or rule, the less a person will be willing to embrace it.

FIGURE 2: LEGITIMACY AND COST: PARTICIPATION AND SOCIAL VALUE FUNCTION



A second exogenous association is between the social value attributed to the norm and the costs for violating it. In this case the individual cost is inversely perceived to the value of the norm. For example, in a community where charity is highly valued, a donor who fully embraces this norm perceives much smaller the material cost of a high donation than in a community that does not values charity as a very important norm. The same donation will have different material cost. Very high cost where the social value of the norm is low, and very low cost in high social value environment. Of course, what greatly determined a perceived low material cost of a high donation are the perceived non-material benefits a donor receives from that donation. These benefits are associated to the strength and level of adherence to the social value of such norm. Therefore, the more important is the value of the norm for that community, the lower the perceived material

cost for the members (because other non-material benefits increases the personal utility).

The social value function is also inversed, i.e., the higher the legitimacy the lower the cost. Nonetheless, what determines cost in this function is not the objective participation but the way people perceived the social utility of the norm. To the extent that people perceived that norms are efficient, are good mechanisms to solve collective actions, etc, the social value of these norms increase. The level of sanctions also increases. A high rank norm carries stiffer penalties than a low ranking norm, because free ride is perceived as a serious threat to the general welfare (that is why a very important norm such respect for other lives carries a punishment of life in prison or execution). When the social value is low, the sanctions attached to the norm are less important. Desecrating a flag where patriotism has a high-ranking value carries high social punishment and legitimacy tends to increase. Conversely, where patriotism is not high, the individual cost of desecrating the flag is un-consequential because the legitimacy of the norm is not high. Thus, high legitimacy carries stiff penalties and low legitimacy generally implies lower effective sanctions.

In sum, it is the general welfare combined with stiff penalties what leads individual to embrace the values; not out of raw selfish interests but a mixed of fear of punishment and believes in general welfare. Primarily, this is an exogenous factor. The legitimacy of a norm results from a social equilibrium where general welfare is higher than without such norm.

Optimal Enforcement

What is the optimal enforcement needed to ensure compliance with a norm? This sections addresses this issue and propose a mechanism to estimate the level of enforcement, either informal or legal, to generate broad compliance.

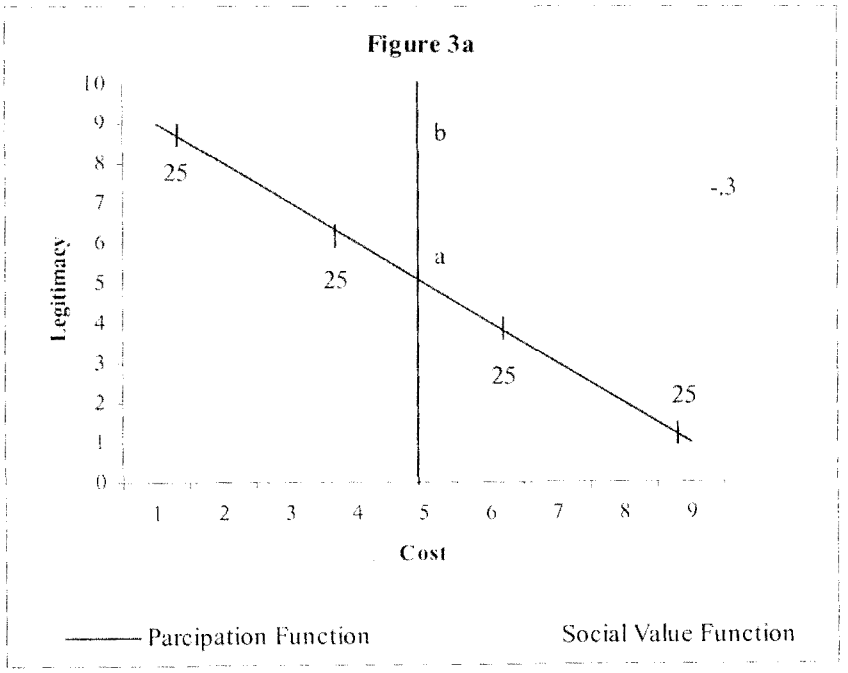
The achievement of optimal enforcement is determined by the intersection of the mean of individual material cost and the slope of the social value of the norm. Figure 2 has shown the two inverse functions. While the participation function tends to be stable,[2] the social value slope changes according to the distribution of the population adherence to the given norm. When the distribution is even, that is when the percentage of the population is evenly divided across the slope, the value of the slope is closer to -1. But when the variance around the mean of legitimacy is small irrespective of the material costs the social value slope is flatter and approaches to 0. Conversely, the higher the dispersion around the legitimacy mean, the steeper the social value slope. Therefore the flattest the social value function above a threshold level of legitimacy the more general the level of adherence to the

2 This slope can also change but generally the individual material costs can be measured and remain fixed

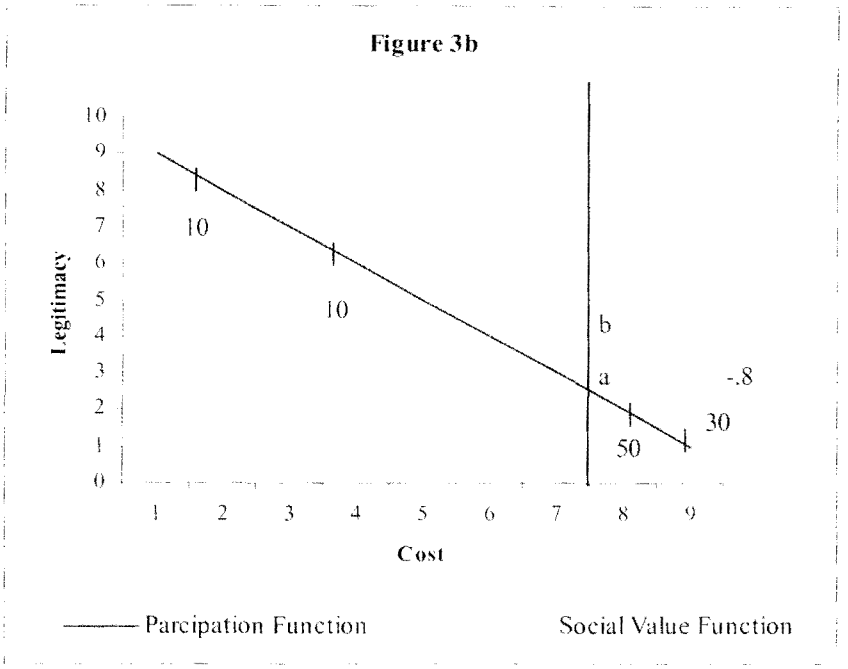
norm, and the steepest the slope the higher the differences among the population.

Since I assume, for the purpose of this exercise, that the participation function is fixed (also at -1), the population is distributed along the slope according to the cost of compliance explained before (in this case 25% at each point). Figure 3A shows that when the population is evenly divided, the mean material cost of compliance for the population is estimated straightforward. Figure 3B shows that when the distribution is skewed to one side the average cost will lean to the skewed side. The mean cost is the compound average of costs within a population. In figure 3A the mean cost 5, and in Figure 3B is 7.5. However, the social value slope differs according to the value of the norm in the community and consequently the willingness of that community to mobilize formal or informal sanctions[3].

FIGURE 3A AND 3B: OPTIMAL ENFORCEMENT



3 The value of the slope could be estimated with a regression line, assuming a linear relation. This might not, however, be always the case or a good step. The function has to be estimated according to the shape of the distribution. A regression line will be a good fit when the sums squares make sense, in other words, when the distances between the line and the observation allow for a good fit. Otherwise a curvilinear relationship will yield a better nonlinear function. For this exercise I assume that all social values functions are regression lines.



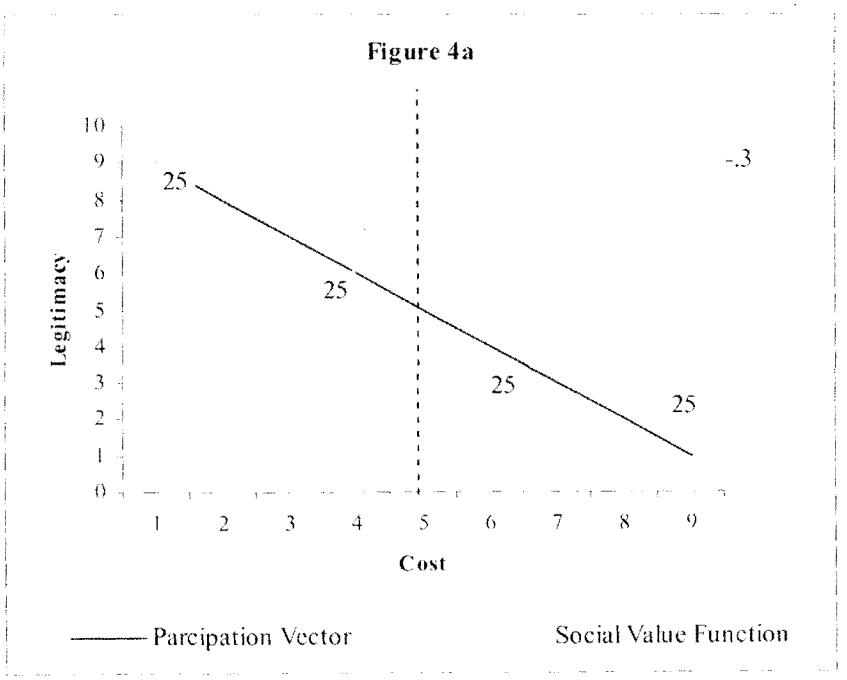
To achieve optimal enforcement there is a need to estimate the intersection between the average material cost and the social value slope. That intersection point (b) also determines the level of legitimacy of the norm. Since we know from figure 4.1 that legitimacy is directly inversed to enforcement, the level of enforcement needed can be easily inferred. Notice that without the social value function the only way to estimate enforcement is through the participation vector (a). But this does not account for other costs that might increase or decrease the real legitimacy of the norm. Only by incorporating the social value of a norm, a better approximation is achieved. More importantly, this enables to distinguish between two or more different societies. While the mean of the material cost could be the same in two countries, the adherence to the norm might diverge, leading to a different level of total legitimacy and thus promoting differences in the type of enforcement needed. As said, this cannot be estimated by solely analyzing individual costs of participation.

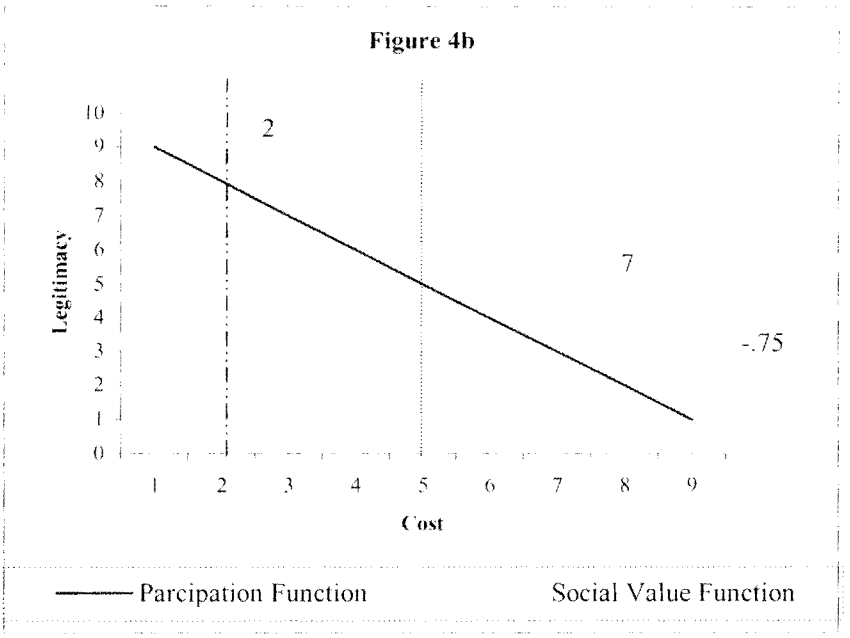
Notice also that as the average cost of compliance to the norm increases, the social value decreases. This is intuitively in the right direction. As the average burden of complying the norm rises, legitimacy decreases, and consequently more enforcement is needed to ensure wider compliance. That is why norms that force a large number of people to incur in higher costs are prone to stronger challenge from its members unless a strong social value can override these highly perceived material costs.

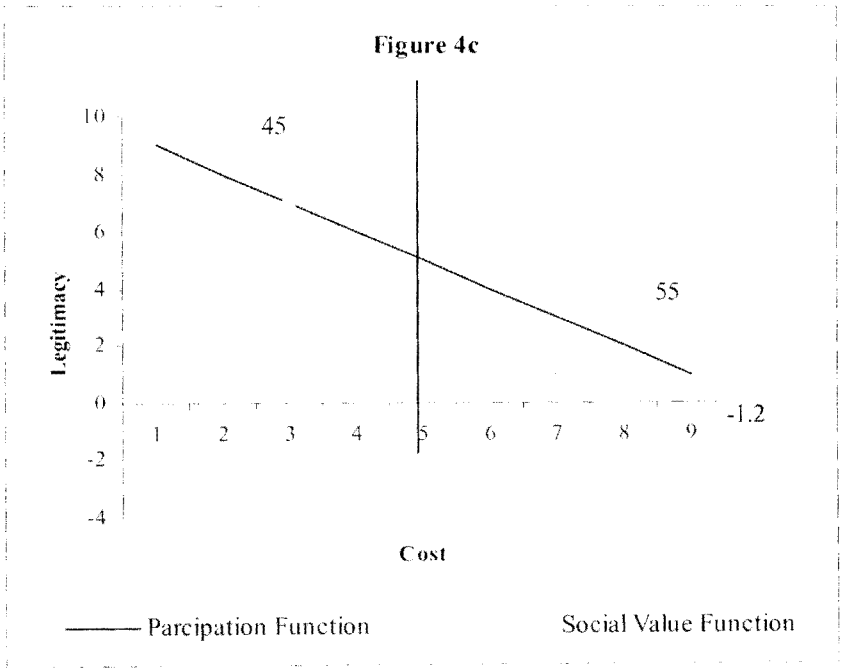
Example

I present here an example to illustrate these concepts. I concentrate on one case: gifts to charity.

FIGURE 4A, 4B AND 4C: VARIATIONS OF THE NORM OF GIVING TO CHARITIES ACCORDING TO THE DIFFERENT VALUES AND AVERAGE COSTS







In the first case shown in figure 4A, I assume that the burden of participation costs is evenly divided among community members, but its social value is very high. Here most of the community members fully embrace the

norm even for those that value somewhat the norm despite a heavy cost of compliance. The social value slope will be -.1 and the participation cost is 5. This is probably a close-knit collective where contributing to charities is highly regarded as a virtue, specially in religious communities.

In the second community of figure 4B the material cost is also 5 but here only a quarter of the population rank the value norm somewhat high with small cost and 75% are distributed on the opposite southwest quadrant. Therefore, the slope is -.75 and much steeper[4]. The intersection is at a much lower legitimacy and consequently requires higher enforcement that in the first case. Notice also, however, that if the average material cost is for example 2, the potential legitimacy will be very high. These are cases where giving to charities is not costly, and although many people do not rank very high that norm they nonetheless do not challenge it because material costs are minimal. Cases where the majority of the population disregards the value of charities are most modern societies where the extent of approval is strongly dependent to the material costs.

Finally, the third scenario of 4C is when the social value of the norm has a very diverge support. 45% strongly approve it and 55% strongly disapprove it (a regression line here will not be a good fit). As the average individual costs increases the level of enforcement also rises. The steeper the slop the more enforcement is needed. When the average cost approached to 10, however, the legitimacy reaches 0. In this case the norm is virtually un-enforced because, as stated before in Fig. 1, legitimacy and enforcement never reaches the axis. Thus, as the social value becomes seriously contested, the higher the cost the less the probability of an effective enforcement.

In sum, compliance with a norm is tied to the individual material cost and the adherence level of social adherence to such norm.

Part 2: Enforcement and tax evasion

I have presented thus far a general framework to examine the relationship between enforcement and norms. I will concentrate in this section on the particular problem of compliance with taxes using, at times, some lessons from game theory.

The decisions to comply with taxes can be described using different games, but mostly it is considered a coordination game (Alm and Mckee 2000) for different levels of income as well as an assurance game. People cooperate (comply) if and only if others do the same. There are several mechanisms to ensure cooperation, but for this case the role of the enforcer is paramount.

In most Latin American countries enforcement of formal rules is very weak. Tax compliance is poor because the basic assumptions of the assurance

4 In fact this function is better described as a parabola.

game are consistently violated. In these countries players avoid being suckers and tax evasion is the most rational behavior. Why enforcers fail to do their job?

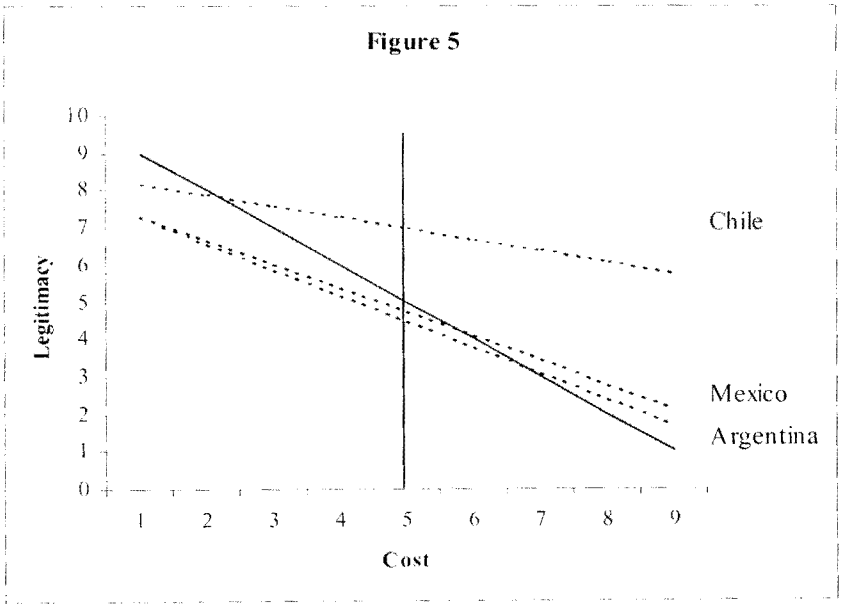
Undoubtedly, this is a major question that needs to be addressed comprehensively. Here I provide a road map of how to understand the failure of enforcement for taxes. The conclusions of the previous section is further developed in order to understand that tax compliance transcend the field of effective tax administration. It includes several institutions, formal and informal, legal and non- legal that directly affects the way taxation is individually perceived and its associated costs subjectively processed. Chile, the U.S., Germany, many of the Scandinavian nations, etc, have better tax compliance not only because the perceived costs of punishment in these places is higher, but also because, for an array of reasons, the resistance for being taxed is lower. Conversely, Argentina, Brazil, Mexico, Indonesia, etc have higher tax evasion because the legitimacy of authorities in general and of taxation in particular is lower, and the perceived payoffs of cheating are higher than in the other nations. As opposed to Judge Holmes' maxim, taxpayers have come to believe that taxes are not the vehicle to "live in civilized societies" because the individual psychological and material costs of cheating are very low. Only suckers get taxed. Under this scenario, the level of enforcement needed to reverse such noncompliance equilibrium has to be extremely high. This is indeed a very difficult endeavor.

Figures 2 have shown that taxpayers do factor endogenous as well as exogenous considerations in tax compliance. A flat exogenous vector means that when legitimacy is high the norm requires lower enforcement. In these cases, also, violation carries stiff penalties because the norm became very legitimate. The conditions for the assurance game are met. People who comply must have certain warranties that free riders will be severely punish. That feeds legitimacy. This is what happens in countries where tax compliance is higher. People pay taxes because the costs of violating the rule in these environments is very stiff and promote the general adherence of the norm, despite the individual cost of compliance.

Figure 5 describes the tentative social and participation functions for Chile, Argentina and Mexico. For comparative purpose, although it is not clearly the case, lets assume that for the three nations the participation has the same average material cost (at level 5) and similar variance. I also assume that the social value of taxation in Chile is higher that in Mexico and Argentina, and there are no major difference among the last two. Therefore, for achieving similar compliance, it is expected that the higher legitimacy in Chile will require less enforcement efforts that in Mexico or Argentina.

The compliance with VAT in Argentina during the 1990s was higher than in Mexico for the same period.[5] Assuming that taxation has a similar lower and decreasing social value in both countries, the difference in compliance must be explained by the effectiveness of enforcement. As mentioned, legitimacy determines optimal enforcement, but does not fully tell the actual effectiveness of the tax administration. Although a superior tax administration in adverse social environments cannot dramatically increase compliance rates, it is capable of somewhat compensate for lower legitimacy. This is what distinguishes Mexico form Argentina. The DGI in Argentina is a much better tax administration than the SAT in Mexico, which contributes for a slightly better compliance rates. Still, none of them come close to the compliance rate of Chile[6].

FIGURE 5: DESCRIPTION OF TAX COMPLIANCE IN ARGENTINA, CHILE, AND MEXICO



Two other processes affect general compliance with taxes. First, when the legitimacy of a norm is highly ranked the penalties attached for the violations are more severe. Second, where legitimacy is high, the needed enforcement is lower. Thus, the less enforcement needed the more optimal the resource allocation to ensure wider compliance. This brings a virtuous circle where the

5 Argentina averaged 62% compliance during the 1990s and Mexico close to 55% for the same period (Bergman 2001 B)

6 In the simulated game I develop later in this paper the difference between good and poor tax administration yields a 10% difference in total aggregate compliance. Effective administrations generate more compliance than non-effective tax administrations, but on no more than 10%-12%. Of course the model is far from complete, but it shows the trend.

less enforcement needed fosters the development of better enforcement agencies. The combined effect of these two processes enables the development of credible threats where the probability of detecting tax evasion rises and the severity of penalties increases.

In addition to the efficacy of tax administration other variables account to the level of compliance, particularly the distribution of the tax burden. As said, holding constant social value function, the legitimacy of taxation would be inversed to the tax burden. All things being equal, the more a taxpayer has to pay taxes (the closer to 10) the less s/he will embrace the norm. This means that higher proportions of people with high tax burden will pose more legitimacy problems to the norm. Thus, a country where 1% of the population has a tax burden of 10, and 99% of taxpayers a tax burden of 1 will not need much enforcement to ensure compliance. Conversely, where many taxpayers must incur in higher costs to comply with taxes (more people closer to 10), legitimacy will diminish.

In short, the legitimacy of taxation in Chile is slightly higher that in Argentina. The respect for norms and abidance to rules in general is indeed much higher. Therefore, governmental rules are considerably more legitimate in Chile than in Argentina, including taxes. Thus, the exogenous social value vector is higher in Chile and the penalties for breaking the law are more severe, and more importantly, more *credible* than in Argentina. This is why the similar level of enforcement yields better compliance results in Chile than in Argentina, or for that matter, better in Germany than in Italy.

Why countries with similar history and that share many cultural attributes have developed such different social or exogenous factor? What accounts for the development of such social and cultural effects on compliance is the evolution of social and legal norms, and particularly their effective enforcement. In sum, compliance with taxes depends on institutions. The institutional design of social and political endeavors in Chile has been more successful than in Argentina. Taxes are being paid more in Chile because this country has developed better institutions that contributed to a more compliance friendly environment.

Tax Enforcement Strategies

Tax administrators have a basic dilemma. They can develop strategies for monitoring and control a wide number of taxpayers or they can concentrate in several exemplifier cases, hoping that these cases will send the right message to the community. The majority of tax administration policies are determined by this basic predicament. In-depth audit strategy or wide covered audit

strategy responds to the way this dilemma is resolved[7]. The criminal punishments of tax evaders, the strategies of registration, the requirements in tax filing, etc, are measures tied to the goals of tax governance, and ultimately to the tax policy. All seek the optimal mechanism to achieve higher revenues via better compliance.

In addition to what I have emphasized thus far, the success of different measures depends, however, on other exogenous factor that at times transcends the tax administration capacities. To ensure that taxes must be friendly in order to facilitate the enforcer's job depends on the capacity of the legislator to understand compliance constraints as well as to the political incentives of legislators to enact taxes that allow for better monitoring. The swift and effective prosecution and punishment of tax evaders requires the whole court and prosecutorial system to operate using tax criteria sometimes beyond the understanding of judges and prosecutors.[8]

Therefore, the institutional capacity of enforcement depends on many institutions that very rarely coordinate in order to achieve optimal results. This is particularly problematic in countries with poor democratic traditions, and/ or those that failed to develop a strong civil service.

As I have shown in figure 1, I assume that norm emergence enforcement requires, in principle, higher enforcement than norm maintenance enforcement. In a community where rules are widely approved people will cheat less and enforcement shifts to maintaining the level of compliance. Tax compliance is higher where the norm has wider legitimacy. In these cases the effective strategy of enforcement is to ensure that free riders get caught and punish, that most people do not feel exploited by other tax cheaters. Otherwise, the compliance equilibrium becomes unstable.

Conversely, where tax evasion is widespread the best strategy for tax administrators must be of norm emerging enforcement. It is true that in countries such as Mexico or Argentina the history of taxation is long, but it is also true that in these countries tax evasion has been the norm rather than the exception and therefore, the level of legitimacy is low. Higher fiscal deficit have pressured for more taxes promoting higher incentives for taxpayers to evade taxes. As I have shown before, more people with a higher tax burden undermine even more the social legitimacy of the norm. In this case, to reverse the compliance trend, there is a need to examine norm emergence enforcement strategies.

The reversal of tax evasion becomes very difficult precisely because noncompliance equilibrium tend to be stable. The fiscal crises in Latin America during the 1970s, 1980s, and 1990s increased rather than decreased

7 In depth audit strategy means a small coverage of cases selected for audits but a very detailed and in-depth investigation about the accuracy of the audited tax returns. Wide coverage audit strategy means a much larger sample of cases for audits but with a less profound analysis of the returns.

8 See Bergman 1998

individuals' tax burden, augmenting the incentives of players to defect from cooperation. Only a powerful social and exogenous factor mitigates the strong pull towards noncompliance. For a varied of reason, however, the absence of such factors inhibited the development of a strong compliance culture.

Of course, this conclusion does not imply that tax evasion is static. Changes are possible, and indeed they have occurred. In principle, in the history of taxation, most tax laws suffered some degree of resistance. Since nobody likes to pay taxes, at one point, all taxes required norm emergence enforcement. Otherwise, tax evasion becomes prevalent. But precisely, the effectiveness of enforcement at the emergence phase dictates the success of enforcement at later stages. In order to understand the effect of the enforcer in individuals' compliance decision there is a need to present the formal decision making paradigm of taxpayers.

Decision under uncertainty

The most basic assumption of a simulated compliance game is that taxpayers make tax decisions under a given level of uncertainty about the possible costs of compliance. This uncertainty is restricted. A taxpayer will know exactly how costly will be to comply, but does not know what is the likelihood of being detected and punished in case of noncompliance and she have only a rough idea of how much will the cost of sanctions be. Thus, the basic tax compliance game can be converted in a 2x2 table where the payoffs of complying or not complying are as follow:

TABLE 1: PAYOFFS MATRIX FOR A SIMPLE TAX COMPLIANCE GAME UNDER UNCERTAINTY

A. Cost			B. Reversed cost (payoffs)		
	ENFORCED	NON ENF.		ENFORCED	NON ENF.
COMPLY	100	100	COMPLY	100	100
DO NOT COMPLY	200	5	DO NOT COMPLY	5	200

It should be reminded that in this game we are interested only in the taxpayer payoffs. I am developing a more comprehensive game elsewhere by including the tax administration counterpart (Bergman *forthcoming*). For the time being lets assume that a given taxpayer must decide whether to comply or not with taxes. Assuming that its tax liability for that period is 100, the cost of compliance, whether that taxpayer is audited or monitored, etc, or is not enforced will remain the same.[9] On the other hand, this taxpayer faces

[9] In fact the real cost is not the same since an audit requires that the taxpayer must incur in additional time and other indirect costs, even if s/he is in full compliance. But for the purpose of this exercise we will not consider these additional costs.

two radically different outcomes for noncompliance. If she cheats and is not enforced her costs will be 5 (most taxpayers pay at least some of their taxes dues). However, if she does not pay and get caught cheating (assuming that the enforcement is effective in detecting noncompliance) the cost obviously is very high. In addition of the tax owed, this taxpayer will incur in penalties stipulated by law. For this case the cost will be 200.

The second payoff matrix (B) is just the reverse of the cost matrix (A) for the purpose of presentation. Since pure strategies are better understood looking at higher payoffs, it is easier to look at the noncompliance and non-detection as the higher payoff outcome.

What will be the optimal decision for a taxpayer given this matrix? If this player knows in advance the rate of enforcement (for example the number of audits in a tax bracket range) she can estimate probability of detection and consequently will take risks according to her own levels of risk aversion or risk tolerance. But since the probabilities of being selected to audits or other enforcements are basically unknown to the taxpayer, the best strategies are difficult to estimate. A maximax or optimistic (choosing the maximum value in row and column) will lead to a noncompliance decision which is hardly rational since there is no basis to assume that ultimately the costs will be higher. In the maximin strategy this player will comply and therefore the payoff will be known in advance. This more pessimistic strategy assumes that the first step is to choose the option less costly between being enforced or non-enforced (people do not control nature) and then the higher payoffs between the two alternatives left. In other words choosing the best of the worst possible alternatives. As known, this is a good strategy when differences in payoffs are small (Colman 1995). Usually, this is not the case in tax compliance games.

Games of chances involving uncertainty are intractable compared to those involving mere risk. A conservative but best first step strategy for this case might be to comply and review the strategy after additional information is gathered about the nature and the chances of audit and sanction to this given player or to other known taxpayers. In other words, a rational cautious decision is to play several rounds and then estimate probabilities of detection and sanctions.

Tax compliance is by nature an iterated game. People make successive moves according to the payoffs of previous rounds. In table 1 I have presented the basic payoffs matrix of a one shot game. But people file taxes regularly, and they learn about other taxpayers audit experiences. They rely on professional advice and personal tax history. In short, although the exact probability of selection to audit remains unknown, taxpayers have some idea about the chances of being selected for audit and the level of sanction in the event of being caught cheating.

In the following section I present a series of simulation based on evolution games on tax compliance. Far from being comprehensive, these simulations attempt to show the role of enforcement under different scenarios, and its impact on compliance. Although the models focus on taxes, the general principles can be applied to almost every other norm.

A formal simulation to explain compliance rates

Assumptions

The most basic assumption is that people are rational and pursue the maximization of their own benefits. Cultural explanations are not given but are the result of rational behavior of players.

The second assumption is that, all things being equal, the outcome of previous round affects the behavior of future rounds. As mentioned, individual tax decisions are repetitive. In iterated games players decide to comply or to cheat base on previous experience. The following are the rational decisions of taxpayers given their immediate payoffs from previous audit or non-audit experience. Let A stand for Audited in previous round, C for compliance, NA for non audited in previous round, and NC for noncompliance. Therefore:

If A and C then C (1)
If A and NC then C (2)
If NA and NC then NC (3)
If NA and C then ? (4)

It is reasonable to assume that previous audits will likely determine future compliance[10]. If a taxpayer has cheated and was audited she will report accurately in the following round, if she was audited and complied she will continue to do so. Conversely, if she cheated and was not audited she got away with a higher benefit and there are no reasons to believe that she will not continue to cheat.[11] These three cases are, therefore, straightforward and predictable. The question remains open for the fourth case in which a taxpayer complied in the previous round and was not audited.

[10] This is not always the case. If an audit of a tax evader is poorly performed it create incentives for this taxpayers to continue cheating. For the purpose of this simulation lets assume that audits are well done and deter taxpayers from cheating in future rounds.

[11] There are some instances where a tax evader can retract from cheating and shift to compliers, particularly for those who cheat under severe circumstances or that they have a deep sense of guilt. Again, for the purpose of this simulation, lets assume that there are no people in this category.

Since tax administrations audit a small fraction of taxpayers the probability of selection is low but the effect on compliance decision is cumulative for the next three or more rounds. Given that the outcome of (1), (2), and (3) is predictable, the only question open is what will decide a complier that has not been audited. Leaving risk constant and assuming that change from compliance to noncompliance is only determined by probability of selection,[12] a higher audit rate will reduce the number of compliers tempted to cheat. On the other hand, since the effect is cumulative for only a certain amount of rounds, audited taxpayers will ultimately change to noncompliance.

In this case I propose a complex yet reasonable criteria regarding the probabilities of compliance or noncompliance. A non-audited person that complied will shift to noncompliance based on the combination of exogenous and endogenous factor. The endogenous factor is determined by the incentives a person has to breach the norm that she has abided by before. Whether because of the costs or the lack of commitment to the norm a person might feel tempted to cheat on the norm. Also, a reverse in the conditions that allow compliance in the first place might have suddenly changed. For instance, a taxpayer that have a profitable business and yet has paid all the taxes might later reverse into noncompliance if the economic conditions for her business changed for the worst. Paying taxes might lead to losses and this taxpayer might be tempted to explore noncompliance in order to stay in business. Lets call this endogenous factor I, for incentives.

The exogenous factor is determined by the way she perceived the environment. If a person feels that cheating will not be detected then that person might suddenly change behavior. Usually this is what happens when new information alters previous individual equilibrium. But primarily, a person might change to noncompliance if she finds out that many other people cheat and get away with it. This raises exploitative feelings that might that lead to non-cooperative behavior. Thus, the more people cheat the more likely honest taxpayers will be tempted to escape compliance. Lets call C for this contagious effect.

For practical reasons I propose to measure the likelihood of shifting from compliance into noncompliance as the product of these two factors. The incentives (endogenous) factor is a number between 0 and 1 that measures a subjective dimension of commitment to the norm. The contagious (exogenous) factor is the probability of shifting on the basis of knowing other cheaters. Therefore, in a world of 80% of cheaters, the probability for a given taxpayer to know other cheaters will be 80%. Conversely, in a world of 20% of cheaters, such probability diminishes to 20%. For the purpose of simplicity, lets assume that in a world of X% of cheaters, the contagious factors will be that X

12 I assume that such probability is determined by the audit rate. Taxpayers learn that more audits lead to higher probability of selection.

percentage. Therefore, shifting from compliance to noncompliance is determined by I*C. For example if I is .5 and the percentage of cheaters is 30%, the compliers who will remain in that category will be 85% of that population and 15% will shift to noncompliance (50%*0.3= 15%). Of course, the higher the world of cheaters and/or the higher the endogenous incentive to break the rule, the more people will cease to adhere to a norm.

Table 2 and table 3 present a simple game based on a model that includes previous payoffs for future decisions. Lets assume that:

- There are two large groups, compliers and cheaters. Compliers report 90% of their legal taxes dues (I assume that nobody pays all their taxes), and cheaters vary their compliance rate. I assume that on the first round 1/3 of them cheat 25% of their tax dues, 1/3 50%, and 1/3 75%.
- People will tend to increase their level of cheating if they were not caught. Some of the cheaters of 25% at T1 will be tempted to cheat 50% at T2. Only a fraction of taxpayers move into higher brackets of tax evasion.
- Audits and other enforcements are effectively conducted and there is also a weighted random selection of cases for audits (both assumptions are not entirely accurate in the real world).[13]
- The total number of taxpayers enforced is 5%. We will call audit to the entire range of in-depth enforcement measures.
- The effects of audits in a given round affect compliance for three successive rounds.[14]
- Taxpayers will test limits and shift from low noncompliance to higher noncompliance.
- Two types of simulations are presented. The first is based on different random selection of cases for audits. The second is based on a more weighted selection of cases, where the probability of selection is generally twice as large when the cheating is 75% compared to 25% (see appendix for details). The first simulation assumes a poor tax administration (TA), the second a good TA.

[13] In the real tax world, however, tax administrations and other agencies enforce the law far from randomly. Police target potential criminal offenders, regulators target businesses under suspicion of violating regulations, and tax administration select cases for audit on the basis of information provided in the tax returns and its comparison with other taxpayers.

[14] Tax administrations have also difficulties in detecting the full the extent of tax liabilities. Audits uncover only part of taxes due and therefore the payoff for a tax evader will be determined by the quality of the audit. The asymmetric information between auditor and audited benefits the latter that can estimate the real cost of enforcement and determine for future rounds the potential benefits of cheating.

- Each simulation has three starting scenarios. The first is a world of 50% compliers and 50% cheaters, the second is a starting universe of 80% compliers and 20% tax evaders, and the third begins with 20% of tax compliers and 80% of tax evaders.
- The value of I is .3 and fix for all simulations presented. This is hardly the case in the real world but for the purpose of this exercise I decided to leave it constant to allow for a better comparison between compliers and cheaters. Opportunities to cheat, risk aversion levels, etc, greatly affect Incentives (I).
- For the purpose of this simulations lets assume that every taxpayers has to paid 1$ in taxes for the period. Therefore the distribution of different taxpayers at different levels of compliance yields a total tax compliance rate for that population.

Given these and other assumptions (detailed in appendix) the results are presented in the following tables:

TABLE 2: SIMULATIVE EVOLUTION OF TAX COMPLIANCE WITH RANDOM SELECTION OF ENFORCEMENT

TABLE 2[a]

	COMPLIANCE	**NON COMPLIANCE (% OF COMPLIANCE)**												
			75%			50%			25%			TOTAL	TOTAL	% OF
ROUND	AUDITED	NON-AUDITED	AUDITED	NON-AUDITED	TOTAL	AUDITED	NON-AUDITED	TOTAL	AUDITED	NON-AUDITED	TOTAL	COMPLIANCE	NON COMPLIANCE	COMPLIANCE
1	2.50	47.50	0.83	15.83	16.67	0.83	15.83	16.67	0.83	15.83	16.67	50.00	50.00	**70.00 %**
2	2.27	38.11	1.07	20.31	21.38	0.79	15.04	15.83	0.87	16.55	17.42	45.38	54.63	**69.14 %**
3	2.09	29.77	1.23	23.29	24.52	0.78	14.79	15.57	0.90	17.15	18.05	41.86	58.14	**68.36 %**
4	1.98	27.60	1.31	24.85	26.16	0.78	14.86	15.64	0.93	17.70	18.63	39.58	60.42	**67.71 %**
5	1.88	25.72	1.37	26.00	27.37	0.79	15.06	15.86	0.96	18.22	19.18	37.59	62.41	**67.08 %**
10	1.57	19.90	1.46	27.68	29.14	0.87	16.57	17.44	1.10	20.85	21.95	31.47	68.53	**64.39 %**
15	1.46	17.74	1.40	26.58	27.98	0.91	17.27	18.17	1.23	23.42	24.65	29.20	70.80	**62.51 %**

TABLE 2B

	COMPLIANCE	NON COMPLIANCE (% OF COMPLIANCE)												
			75%			50%			25%			TOTAL	TOTAL	% OF
ROUND	AUDITED	NON-AUDITED	AUDITED	NON-AUDITED	TOTAL	AUDITED	NON-AUDITED	TOTAL	AUDITED	NON-AUDITED	TOTAL	COMPLIANCE	NON COMPLIANCE	COMPLIANCE
1	4.00	76.00	0.33	6.33	6.67	0.33	6.33	6.67	0.33	6.33	6.67	80.00	20.00	**82.00 %**
2	3.82	67.62	0.51	9.75	10.26	0.32	6.02	6.33	0.35	6.62	6.97	76.44	23.56	**81.40 %**
3	3.64	59.20	0.68	12.87	13.55	0.32	6.07	6.39	0.36	6.86	7.22	72.84	27.16	**80.72 %**
4	3.47	55.90	0.82	15.59	16.41	0.34	6.41	6.75	0.37	7.09	7.47	69.37	30.63	**79.99 %**
5	3.29	52.48	0.96	18.21	19.17	0.37	6.96	7.33	0.39	7.35	7.73	65.77	34.23	**79.17 %**
10	2.41	35.74	1.49	28.32	29.81	0.61	11.51	12.12	0.50	9.43	9.93	48.14	51.86	**74.23 %**
15	1.82	24.50	1.65	31.34	32.99	0.84	16.04	16.88	0.69	13.13	13.82	36.31	63.69	**69.32 %**

TABLE 2C

	COMPLIANCE	NON COMPLIANCE (% OF COMPLIANCE)												
			75%			50%			25%			TOTAL	TOTAL	% OF
ROUND	AUDITED	NON-AUDITED	AUDITED	NON-AUDITED	TOTAL	AUDITED	NON-AUDITED	TOTAL	AUDITED	NON-AUDITED	TOTAL	COMPLIANCE	NON COMPLIANCE	COMPLIANCE
1	1.00	19.00	1.33	25.33	26.67	1.33	25.33	26.67	1.33	25.33	26.67	20.00	80.00	**58.00 %**
2	0.97	13.47	1.37	25.99	27.36	1.27	24.07	25.33	1.39	26.47	27.87	19.44	80.56	**57.65 %**
3	1.01	9.20	1.33	25.32	26.65	1.21	23.05	24.26	1.44	27.44	28.88	20.21	79.79	**57.53 %**
4	1.10	10.90	1.25	23.74	24.99	1.16	22.11	23.27	1.49	28.25	29.74	22.00	78.00	**57.61 %**
5	1.17	12.18	1.20	22.72	23.91	1.11	21.16	22.27	1.52	28.94	30.46	23.35	76.65	**57.70%**
10	1.33	15.32	1.13	21.51	22.64	0.92	17.43	18.35	1.62	30.74	32.36	26.65	73.35	**58.23%**
15	1.38	16.25	1.17	22.14	23.30	0.83	15.71	16.54	1.63	30.91	32.54	27.63	72.37	**58.74%**

TABLE 3 SIMULATIVE EVOLUTION OF TAX COMPLIANCE WITH WEIGHTED SELECTION OF ENFORCEMENT

TABLE 3A

	COMPLIANCE		NON COMPLIANCE (% OF COMPLIANCE)											
ROUND	AUDITED	NON-AUDITED	75% AUDITED	NON-AUDITED	TOTAL	50% AUDITED	NON-AUDITED	TOTAL	25% AUDITED	NON-AUDITED	TOTAL	TOTAL COMPLIANCE	TOTAL NON COMPLIANCE	% OF COMPLIANCE
1	0.50	49.50	1.00	15.67	16.67	1.50	15.17	16.67	2.00	14.67	16.67	50.00	50.00	**70.00 %**
2	0.50	41.58	1.00	20.53	21.53	1.50	13.72	15.22	2.00	14.18	16.18	47.08	52.93	**70.17 %**
3	0.50	34.47	1.00	24.07	25.07	1.50	12.90	14.40	2.00	13.56	15.56	44.97	55.03	**70.37 %**
4	0.50	33.28	1.00	26.36	27.36	1.50	12.52	14.02	2.00	12.84	14.84	43.78	56.22	**70.64 %**
5	0.50	32.17	1.00	28.33	29.33	1.50	12.40	13.90	2.00	12.10	14.10	42.67	57.33	**70.88 %**
10	0.50	27.80	1.00	34.57	35.57	1.50	14.09	15.59	2.00	8.53	10.53	38.30	61.70	**71.58 %**
15	0.50	25.19	1.00	36.83	37.83	1.50	16.84	18.34	2.00	6.13	8.13	35.69	64.31	**71.70 %**

TABLE 3B

COMPLIANCE		NON COMPLIANCE (% OF COMPLIANCE)										
ROUND	AUDITED	NON-AUDITED	75% AUDITED	NON-AUDITED	TOTAL	50% AUDITED	NON-AUDITED	TOTAL	25% AUDITED	NON-AUDITED	TOTAL	TOTAL COMPLIANCE	TOTAL NON COMPLIANCE	% OF COMPLIANCE
1	0.50	79.50	1.00	5.67	6.67	1.50	5.17	6.67	2.00	4.67	6.67	80.00	20.00	**82.00 %**
2	0.50	74.23	1.00	8.87	9.87	1.50	3.72	5.22	2.00	3.18	5.18	79.73	20.27	**83.06 %**
3	0.72	68.99	1.00	11.50	12.50	1.50	2.73	4.23	1.78	1.78	3.56	79.72	20.28	**84.12 %**
4	1.47	68.32	1.00	13.55	14.55	1.50	2.11	3.61	1.03	1.03	2.05	79.80	20.20	**85.04 %**
5	1.88	67.30	1.00	15.33	16.33	1.50	1.75	3.25	0.62	0.62	1.24	79.18	20.82	**85.45 %**
10	2.29	58.42	1.00	23.70	24.70	1.50	2.67	4.17	0.21	0.21	0.42	70.71	29.29	**84.35 %**
15	2.01	45.33	1.00	32.44	33.44	1.50	6.74	8.24	0.49	0.49	0.99	57.34	42.66	**81.05 %**

TABLE 3C

COMPLIANCE		NON COMPLIANCE (% OF COMPLIANCE)										
ROUND	AUDITED	NON-AUDITED	75% AUDITED	NON-AUDITED	TOTAL	50% AUDITED	NON-AUDITED	TOTAL	25% AUDITED	NON-AUDITED	TOTAL	TOTAL COMPLIANCE	TOTAL NON COMPLIANCE	% OF COMPLIANCE
1	0.50	19.50	1.00	25.67	26.67	1.50	25.17	26.67	2.00	24.67	26.67	20.00	80.00	**58.00 %**
2	0.50	14.32	1.00	26.78	27.78	1.50	23.72	25.22	2.00	25.18	27.18	19.82	80.18	**58.08 %**
3	0.50	10.38	1.00	26.55	27.55	1.50	22.52	24.02	2.00	25.56	27.56	20.88	79.12	**58.35 %**
4	0.50	12.41	1.00	25.35	26.35	1.50	21.43	22.93	2.00	25.81	27.81	22.91	77.09	**58.80 %**
5	0.50	14.04	1.00	24.69	25.69	1.50	20.32	21.82	2.00	25.95	27.95	24.54	75.46	**59.25 %**
10	0.50	18.71	1.00	25.23	26.23	1.50	15.92	17.42	2.00	25.13	27.13	29.21	70.79	**61.46 %**
15	0.50	20.66	1.00	27.70	28.70	1.50	14.03	15.53	2.00	22.62	24.62	31.16	68.84	**63.48 %**

This simulation yields several conclusive results. First, audit rate is important in developing individual perception of selection for audit, but it is usually marginal simply because most taxpayers cannot be audited. Second, and more importantly, the selection of cases matters more than the audit rate. The selection of cases according to the perceive severity of cheating yields much higher tax compliance rates because people at higher brackets of tax evasion perceive the threat as more meaningful.

Third, good administrations, those who select better because they have good information systems etc, are capable even in very adverse conditions to get reasonable results (3C). Poor administrations have, on the long run, a deteriorating effect on compliance (2B). Fourth, good administration yields a distribution of taxpayers that cheat moderately (some overstated deductions or understated income), but generally yield a small number of large tax evaders. Poor administrations generate a considerable number of large tax evaders (3A vs 2A, 3B vs 2B, 3C vs 2C). If we assume that each round equals a tax year, then a good administration coming from poor compliance will take about 15 years of strong enforcement to reach the level of compliance of more tax abidance societies without strong TA.

The most important conclusion, however, is that the distribution among compliers and violators at the onset matters a great deal. Higher noncompliance at the norm emergence phase inhibits the establishment of a tax compliance environment. After many rounds, the highest compliance rate is for 3B that has initially the highest numbers of tax compliers. Moreover, the same initial distribution with a poor tax administration (2B) still yields higher compliance rates in t25 than a tax noncompliance society with an effective administration (2C). If a society with good compliance and poor enforcement (2B) can develop even a slightly better TA, it will reach equilibrium between T10 and T15 at higher compliance rates than a poor compliance society with good enforcement (3C). However, a compliance society that has initially a poor tax administration (2B) will deteriorate slowly but steadily and will only reach equilibrium at much lower levels of compliance. In other words, bad enforcement within honest taxpayers will not hold for long. However, in this environment, moderate enforcement will yield very good performance.

This is a strong proof that culture affects compliance. The distribution of conformance or non-conformance to law within a society that has a law abidance tradition accounts largely for the degree of success of a new norm. This simple evolutionary game explains why culture affects tax compliance. On the other hand, such model does not imply that noncompliance trends cannot be reversed. It is far from being deterministic. After all, some countries with large tax evasion have indeed changed. But such change required extremely effective institutions and very stringent enforcement for a sustained period of time.

Summary

This model is based on simple assumptions regarding the rationality of taxpayers. In good compliance climates, most taxpayers cheat "a little" but they refrain from non-reporting the lion share of their income. In tax environment of poor compliance most taxpayers take larger risks. Enforcement can only contain somewhat the flow from compliance to evasion; but cannot by itself transform, in a short period of time, a noncompliance society into a compliance society.

This model suggests that compliance with norms benefits from effective enforcement, but more importantly is tied to the environment in which taxpayers operate. Under the assumption that nobody likes to pay taxes, there are still social settings where even poor enforcement does not have harmful consequences, at least in the short run. But poor enforcement of norms that have strong material costs will ultimately diminish general compliance. As costs of compliance rises there is a need for better tax administrations. Since paying taxes is by definition very costly, the legitimacy will not be very high, and consequently the need for enforcement is more important than with other widely accepted norms. That is why, without good enforcement, tax compliance will tend to decrease.

Similar enforcement, however, yields better results in law-abiding societies, because resources are more efficiently allocated and therefore the threat of punishment for violators become more credible.

Concluding Remark

Compliance with taxes depends on many factors. Favorable economic conditions, the nature of the tax system etc, have independent effects upon compliance. Controlling for these and other factors, I argue that a culture of noncompliance could be reversed by alteration in the weight of the exogenous enforcement component. In other words, enforcement must be wider, effective and costly for tax evaders. I will predict that the same level of enforcement in Chile and Argentina yields different results because at the onset the distribution of compliance was significantly different. Holding constant other variables, for Argentina to be as successful as Chile requires the former to execute an even better enforcement for a very extended period of time.

Appendix

The following is the formal shifts of taxpayers in round x to round x+1 according to the four possible categories of compliance (90%, 75%, 50%, 25%). These are only for taxpayers non audited at previous round.

$C1_{i+1} = cu1_i * 0.3 * na1_i$

Where:

$C1_{i+1}$ = General pool of taxpayers who comply at 90% in period i+1.

$cu1_i$ = Percentage of taxpayers who comply at 90% out of total taxpayers in period i.

$C2_{i+1} = cu2_i * 0.3 + na2_i * 0.9$

Where:

$C2_{i+1}$ = Taxpayers who comply at 75% in period i+1.

$cu2_i$ = Percentage of noncompliance taxpayers (comply at 75%,50% y 25%) out of total taxpayers in period i.

$na2_i$ = Taxpayers who complied at 75%, non audited at period i.

$C3_{i+1} = na2_i * 0.1 + na3_i * 0.9$

Where:

$C3_{i+1}$ = Taxpayers who comply at 50% in period i+1.

$na2_i$ = Taxpayers who complied at 50%, non audited at period i.

$C4_{i+1} = na3_i * 0.1 + na3_i$

Where:

$C4_{i+1}$ = Taxpayers who comply at 25% in period i+1.

$na3_i$ = Taxpayers who complied at 25%, non audited at period i.

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