

Should I pay for a car I didn't want? Political
representation and tax morale, a study of the
italian case

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Might we all seek harsh challenges, hurdles and mountains insurmountable: no frontier worth exploring has ever been welcoming, at first.

1 Introduction

According to the political theory of the State as a social contract by and between people, a State's *raison d'être* and its legitimation find reason in the deliberate choice of the people to submit to an authority, be it an autocratic regime or, in modern times, an elected collection of institutions, in order to ensure for themselves a degree of safety, paid for in freedom. Restrictive laws, the legal exertion of coercive force and taxation are all clauses within this theoretical contract, and it's also where this dissertation finds its inception. We understand, currently, that taxes are the "price" we pay for the collective spending of the state, in particular taxes are the contribution, often proportional to the means of the individuals, which we must yield to support the structure that allows us to do business and live our life safe from the forceful theft of either, in the form of laws to prevent physical harm to come to us, property rights to preserve our wealth and services to benefit our daily well being, like hospitals, schools, and many other public services. Beneath all of it, there lies the implicit understanding that the State spends and acts according to our expectations and desires in terms of how our country should be, but to assume that this would always be the case for all individuals would be quite nonsensical, thus we come to the core of this work: if the State is not the state I would like it to be, am I entitled to refute my duties to the community?

In each modern state, a portion of individuals eludes, either partially or completely, their fiscal duties, which we may define as part of their collective civic duty. Academically speaking, the study of it began within a framework of purely utilitarian motifs, such as it's the case with Becker's *Economics of Crime* (1968) and those successive works that built on his theory, and especially because those theories could not match empirical data, as it was the case for the portfolio modeling of tax compliance and the resulting estimates on risk aversion needed to explain the current level of compliance, as seen in Torgler with respect to models which only considered deterrence as the only motivation for an individual to pay their taxes.

"In many countries the level of deterrence is too low to explain the high degree of tax compliance.[...] tax compliance experiments mostly report a higher level of income declaration than the expected utility model would predict" - (Torgler B. 2003, Data from Torgler, 2002)

As we were saying, following the mismatch between theoretical predictions and empirical result, alternatives were proposed, either building on psychology and sociology notions to bridge said gap, or further detailing previous utilitarian theories. One of these two so called currents opted to enrich the classical take on compliance as a choice of benefits over risks, thus maintaining that deterrence would still be the primary drive of compliant behaviour, and working on issues of perception, asymmetry of information on the taxpayer side and sector specific nuances for certain types of employment, all of which distorted the otherwise empirically unfeasible model into fitting the data. Take for example a simple issue of perception: the common individual has no specific information on the exact extent with which the authorities investigate tax evasion and fiscal loopholes exploitation, thus he has to rely on estimates, that he builds upon information available to him. Furthermore, different cultures might foster behaviours that make people more or less inclined to willfully contribute, and such a motivation could very well stem from the perception of the individual that, when he contributes to a common good, he also gets to enjoy it. Agency, agenda and morals all contribute to the determination of tax morale, as we will see going forward.

2 Taxes, and the problem of History

To explain how the fulfillment of one's own fiscal duties came to be studied not only from a purely utilitarian perspective, but also taking into account other determinants, both demographic and social ones especially, we have to look first to the history of taxes, taxation, and how deeply political and cultural advancements influenced them along our specie's history of civilization and institutions.

From the perspective of the common man, taxes as an instrument are almost always perceived as forceful extraction, and with good reason: barring early human communities, from hunter-gatherers to early proto-agricultural societies where resources were shared within the group to either sustain the community (welfare) or provide common needs (public expenditure), almost all successive examples of tributes are the result of a coercive authority leveraging its power to take from those under its influence.

All civilizations with at least a primitive form of hierarchy have had some form of tributary system, be it in the form of contribution in kind, as it was the case for farmers in Egypt during the times of the Pharaohs, or in labour, if we take the corvee, or free labour owed by farmhands during the feudal ages in Europe, or ultimately in coin, for which we have a wide variety of examples, especially in the ancient history of this country (Italy).

Historically, taxes were levied off the people under the pretense of authority, whether justified by the role of protectors some individual or groups of individuals assumed or by divine right, as in "taxes owed to the crown because such is the will of God (or Gods)". One can easily see that, while perhaps some of the spending points of some of such authorities may have aligned with the interest of the populace, taxes were spent without considering the people's agenda: indeed, as common citizens had no part in determining the face and the agenda of their sovereign, they had little participation. Take for example the earliest examples of "complex" civilizations we have some records of: the Sumerians and the Kingdom of Egypt. In these areas, at some point in history, a central power rose, through most likely bloodshed and military conquest, to rule over a relatively vast extension of land and sea: while perhaps in the beginning the king's own coffers, land and the spoils of war were enough to maintain the king's army, court and administration and finance the crown's projects, with time a new and stable source of resources became fundamental to the perpetuation of authority.

2.1 Taxes in Ancient Mediterrean Empires

In the sumerian empire. under king Ur the 3rd, we find one the first prototypical forms of tax system, the **bala**, or "**exchange**" [3]. It seems the word implied that the resources the system levied off of the population, mostly in accordance to a region's specific production and in proportion to its productive capacity, were thought of as a price in exchange for protection against raiders and the financing of projects to the benefit of the population. On one hand we have still surviving documents referring to grain stocks to be stored and kept to feed the population in times of crisis, and state issued in-kind payments to artisans and specialists that could not grow their own food, thus enabling the development of arts and technology. On the other hand, we can see that "protection" here might sound like a hidden threat, not unlike those issued by criminal organizations, and we find in [3] a passage, roughly translated from a letter dated 1900 BC which was intended to serve as a warning:

Irra's son sent smuggled goods to Pushuken but his smuggled goods were intercepted. The Palace then threw Pushuken in jail!
The guards are strong...please don't smuggle anything else! [3]

Smuggling was a common form of tax evasion as taxes were mostly paid in kind during transits, in the form of border duties and fees, while households in general owed the State cattle and labour, to be used to the benefit, mainly, of the crown and its court and advisors. It is clear that, in relation to the model we've previously seen, in these contexts the models inspired by the economic theory of crime [1] would most likely explain the majority of tax evasion, since people would only pay their dues out of fear of the consequences of their refusal to comply, thus making their perceived expectations the only relevant determinant for action.

Similarly, in Egypt the preferred forms of taxation, it being an economy which only introduced coin in its later years, was in-kind, be it goods or labour, as it was the case for the Kingdoms of Mesopotamia. Egypt though possesses a considerably richer fiscal history, which shows the same issues most ancient societies faced as their administrative infrastructure grew: already under Hor-Aha (3100-3050 b.C) [5] there are recordings of a recurring event known as *Shemsu Hor* or "The following of Horus" during which the Pharaoh, accompanied by his retinue, guards and bureaucrats, would travel the kingdom. Different scholars noted how the *Shemsu Hor* served both as

a ritualistic reminder of the power of the crown across the land, to its citizens and nomarchs (local administrators), but also to save up on keeping a stable court with emissaries, since by travelling the land the Pharaoh and its ministers could directly gauge the wealth of the land and thus levy a corresponding tribute: it was, in a way, a ritualistic tax tour, and in the words of Toby Wilkinson [5]:

The Shemsu Hor would have served several purposes at once. It allowed the monarch to be a visible presence in the life of his subjects, enabled his officials to keep a close eye on [...] the country at large, implementing policies, resolving disputes, and dispensing justice; defrayed the costs of maintaining the court [...] and, last but by no means least, **facilitated the systematic assessment and levying of taxes**. A little later [...] the event was combined with a formal census of the country's agricultural wealth.

On the note of making it hard for the people to forget the presence and power of their rulers, if we had to model fiscal compliance, we could add, to the base model we considered for the sumerian example, either a psychological component to the evaluation of actual risk of audit based on how strong the impression of royal power was during those events, or add a non quantitative component that we could either label as "faith" or "loyalty", although ultimately the argument could be made that both are essentially grounded in fear for the majority of the population. Another interesting fact about agrarian taxation in ancient Egypt was that they invented one of the first recorded examples of production proxy to assess an estimate of the country's fields output: by measuring the Nile's floods levels, they would evaluate roughly how much water the various fields had received, and from that the crop expected yield. This was done in order to better discriminate between farmers who withheld their dues and those who effectively had had a bad year, and although the times were such that it is hard for us to imagine clemency from tax collectors, it is true that some form of tax exemptions existed: Rosetta's Stone was once part of a massive black slab which temples in the later years of the Egyptian Kingdom put up to remind tax collectors that within the property of the priests no tax was to be levied [6]. It is also critical to remind the reader here that the tax relief for priests contained in the Rosetta Stone was the consequence of a massive civil uprising after years of excessive fiscal pressure, and this gives us an insight over another possible component of tax

morale, which we may here define as the perceived "unfairness" of treatment of the ruler by its people, the extreme consequences of which led to many violent outbursts from the populace. Fairness may or may not have had such a positive influence on compliance, but its opposite did (and still will) spark many a revolutions.

2.2 Feudal Europe, The Magna Charta and the Politics of Taxation

The great empires of the early centuries (the roman republic and the roman empire) and the old liberal cities of Greece really didn't do much to innovate on the early taxation instruments we introduced before, but it is noteworthy that with the rise of a somewhat "middle" class of citizens, not noble born but ascended through economic or military endeavours nonetheless, taxes came to be applied to a slightly broader portion of the populace. The brunt of it was still on the shoulders of farmers, who essentially supplied via their dues the most of what was required to sustain vast armies and cities of bureaucrats. The development of broader commerce, however, opened up on new forms of trade fees and duties, and the taxation of slaves and land, now not the exclusive property of the noble ruling class, which still was in large part exempt from fiscal duties of their own. It is equally important to underline how even these great bureaucracies failed to tax capital (in the sense of income from ownership of infrastructures) and income, the idea still foreign to the administrators or strongly opposed by most political bodies (the only ones who would have suffered under these new measures) and the state financial necessities not impending enough.

With the fall of these large bureaucracies, so fell the entire system of administrations and officials, and with them, their taxation structure. The feudal kingdoms that rose from the ashes of the roman empire aimed to be as independent as possible, thus large scale organizations tended to be much less present than it was customary only a century back, and so were their pretenses and fiscal requests. Taxes were once again mostly levied off of the poorest inhabitants of the kingdom, who had to pay arbitrary taxes over the use of any resource, legally the sole property of the lord, in addition to free labour (called *corvèè*, from late latin *corrogata* or "owed") and mandatory military service. Nobles were also required to sustain similar duties, although much less frequently than in the past. Irregular, one time tax payments be-

came common place in from the 11th century, under the name of aid, which was requested on special occasions, to pay for ransoms and war expenses, and during particular events, such as was the case during the *Crusades*. We can see that the relationship between the people and taxes is essentially unchanged, with a tax behaviour governed by fear, with the exception of the occasional "enlightened" ruler. This was bound to change, particularly because of how arbitrarily aids were asked of the various barons and vassals in many kingdoms throughout old Europe. One such king, John of England, or as he was better known as, **John Lackland**, found himself a noble led uprising when half his barons refused to comply with his requests for loyalty and financing, thus birthing the one of the world's first, and certainly the most famous, constitutions. The *Magna Charta Libertatum*, signed in a small town near Windsor, was essentially a document with which the King bound its authority to a body of law beyond his power, and one of the main points to be stressed in the document is precisely that of taxes:

No scutage (compensatory tax to excuse one of military and labour duties) nor aid shall be imposed on our kingdom, unless by common counsel of our kingdom (with the consent of the barons), except for ransoming our person, for making our eldest son a knight, and for once marrying our eldest daughter; and for these there shall not be levied more than a reasonable aid. In like manner it shall be done concerning aids from the city of London [7].

Although this is still a far cry from actual representation, it's still a step forward, and an important precedent for future instances of requests and campaigns to obtain more popular inclusion in the government agenda: now tax compliance is also partly motivated by the perception that certain taxes, when approved by general counsel, are levied for reasons shared by (a very small portion of) those who pay them who are supposedly thus more inclined not to shy away from their fiscal duties.

Agency in the choices (and public spending in particular) of the government will be a chimera for the majority of the people until the early socialists movements born with the Industrial Revolution and the first democratic experiences following the French Revolution. Early examples of social expenditure include the English Poor Laws, which although thought originally as measures of partial oppression to punish vagrants and prevent otherwise "idle" able bodied men and women from leveraging the relative scarcity of

bodies after the Plague (to the benefit of landowners), in time became a body of laws and institutions to help orphaned children and unemployed citizens [8], at least those who did not qualify as "professional beggars", as the Law's formulation in 1601 would have it. These social measures were financed by a tax levied through parishes across the country, which though voluntary in the beginning, became compulsory when the measure was extended further and, most interestingly, while the amount to contribute was determined "according to his or their abilities", refusal to pitch in what was owed would result in expensive fines. This of course, while introducing a new social service to the benefit of the populace, did nothing to cater to the immediate interests of the taxpayers, who unsurprisingly strongly opposed any act that would strengthen the benefits provided: this opposition was based and supported by figures which in general saw poverty relief solution as either reinforcing the underlying problem or as wasteful patches to a natural process of selection, respectively the positions of **Jeremy Bentham** (father of utilitarianism) and **Thomas Malthus**, famous for his apocalyptic prospect for the modern world to come. Most likely a society culturally centered around productivity as a virtue could not harbour a sense of communal duty strong enough to justify reliefs for those it deemed, by choice or fate, incapable of being such, although perhaps the fact that the system was locally based, tied to figures of pauperistic faith and decentralized might have helped strengthen the emotional investment, the amount to be fined suggests that compliance was still motivated for the most part by fear of economic and legal consequences, although elements of shame and peer cultural pressure, as suggested by the studies of Feld, Frey and others, could also be included in a theoretical model.

The common thread linking these historical pieces of trivia is that there exists a clear divide between taxpayers, their interests and desires, and the expenditure of common resources: if indeed an army and a body of bureaucrats were necessary to maintain an ancient kingdom, it did mostly nothing for the taxed farmers, who suffered equally under both guards and brigands, in the same way in which, more than two thousands years later, social spending in the United Kingdom did help contain the worst social consequences of poverty, and thus contain social and urban degradation in certain areas, but that was the extent with which such an expense affected those who were financing the most part of it.

2.3 The 19th century, the Great War and birth of the Welfare State

Today's standard in the Western World is what we've come to define as the welfare state, and although relatively recent in its conception, some aspects of it are actually a legacy from older times, renewed in shape and scope.

Welfare expenditure is key because of what it implies: since it is almost universal in its application, in other words it directly impacts the vast majority of the population, we can safely assume that most taxpayers will see a link between their contribution and the services that are provided to them.

Social expenditure is a recent thing, as we said, because although examples of it exists throughout history, it is not until the second industrial revolution that it became a stringent societal necessity, together with direct and stable taxation to finance the growing public expenditure that came with it. Public schools, for example, though a common thing for the poor since the 11th century (mostly locally funded and promoted by the Church), became state-subsidized across Europe only from the early 1800s after two centuries during which education in general came to be regarded as a profitable social investment. In Italy it was in 1859 that through the Casati Law, named after the then Minister of Public Education, basic education was made mandatory and free, to be organized and funded by municipalities, and successively to be put in the hands of the State in 1933 under Benito Mussolini Fascist regime. Taxes like the newly introduced income tax paid for these services.

Basic measures of universal healthcare and social security pensions and insurances likewise brought taxpayers' interest ever closer to their duties: since Von Bismarck introduction of a social pension plan in 1889 [9] in Germany, throughout the 20th century almost all western countries decided between either a minimum pension for the elderly, to be financed by a tax, or a taxed subsidized voluntary pension and compulsory income-related pension. Today we have, in most European countries, a halfway solution of sort.

All these forms of public investment received a significant increase in the years that followed the World Wars, mainly due to the fact that state spending and taxation levels never truly subsided, and although they did decrease (during the Wars, the US would tax upwards to 94% of the national income) they never returned to pre-war levels [2]. As a matter of fact, the years following the end of the Second World War saw a surge in social reforms and a push to substantially expand on the measure already in place and to introduce new ones, also due to the expanded political influence of socialist

currents after the affirmation of the Soviet Union.

Finally, with the pieces of the history of taxes and public expenditure duly summarized, we come to the problem of how politics enter the question of compliance. Welfare is universal, but in its broad effect, it is uniform, and its employment and the tally it exacts not optional. Public spending can have different objectives, and different objectives caters to the interests of different people, though all people must bear the costs of said spending regardless of whether it matches their desired objective or caters to their interest, or as it is the case for certain specific taxes, to favour or discourage certain kinds of consumption or behaviours (tobacco, alcohol and gambling games are clear examples of that).

If we assume a certain political party to act and manage public resources according to the interests of the electors that cast their vote for it, we can expect these electors to comply more willingly to their fiscal duties when this party is ruling. As for the other electors, the rate with which they are more or less willing to comply under a party they did not vote for may depend on the distance that separates the ruling party's political positions from their first choice.

3 Tax Compliance and Tax Morale, a review of the relevant literature

Any who would endeavour to explore the dynamics of tax compliance, as with any subject, would find it well to, as they say, walk on the shoulder of giants. Taxes are perhaps one of the oldest subjects of economics, as they are also one of the oldest tenets of the many societies born of men. As we saw summarily seen, for the better part of our history, taxes were a vertical imposition, that regardless of their function, measure and destination of use, were paid by the vast majority for pure fear of retribution.

3.1 Economics of Crime and pure utilitarian models

3.1.1 Economics of Crime: the original model

As commented by Becker himself in his seminal work, *Crime and Punishment: An Economic Approach*, prior to the late 60s crime in general, even though it accounted for a significant portion of the economic activities in Western countries, was mostly ignored by economists who studied endlessly how the economy should have been instead of how it was. Becker's work, as noted in his own words, was itself very strongly rooted in contemporary economic thought: indeed, the entire purpose of his essay was to explore the problem of crime from a purely economical perspective, in particular to code criminal behaviour in a utilitarian framework for normative purposes. This is most evident in this telling quote from the essay's introduction:

how many resources and how much punishment should be used to enforce different kinds of legislation? [...] equivalently, although more strangely, how many offenses *should be permitted* and how many offenders should go unpunished? [1]

The intent here is not for the results to be descriptive, but *normative*, a very important conceptual difference, as we will see briefly. The way the author frames his analysis is terms of costs and potential gains, and as it is the case for all contemporary theories, individuals are assumed to possess perfect rationality and to act accordingly. Becker's main interest lied with a specific parameter, the number of "offenses" or reiteration of criminal behaviour, and consequently, on the variables that affected this parameters (he was also

interested in both the costs of each offense and the costs of altering the variables, but that does not pertain the subject of the present inquiry). The model he applies to the problem of criminal activity is a standard expected utility model, where an individual weights the benefit of criminal activities against the potential cost of getting caught, which includes the economic value of the penance and probability of getting caught, the individual's willingness to commit an illegal act and the availability of disposable income from both legal and illegal sources. Although admittedly a general "cultural" and potentially demographic component is included, the explicit variables upon which the model focuses on are the ones upon which a legislator would have power over.

$$O_j = O_f(p_j, f_j, u_j) \quad (1)$$

The above is the relation between the number of offenses by an individual j for a particular course of criminal activity O_j , his or her own "general characteristics" u_j , the probability of getting caught p_j and the dis-utility he or she would suffer were he or she apprehended f_j . Within a purely utilitarian framework, and assuming a somewhat perfect rationality, the focus of the model, it being normative in nature and relying on assumed generalization, such as the fact that, all other things constants, increasing the values for the penance or the probability to suffer it leads to a contraction in the number of offenses, or the frequency and amount of taxes evaded or under reported.

3.1.2 Economics of Crime: further developments

Picking up on this preliminary outline, Allingham and Sandmo further develop on this idea of a utility based model, in fact they explicitly quote Becker's work as primary inspiration for their own, although that is not the only one: indeed, they also list among others the works of Arrow (1970) and Mossin (1968) on optimal portfolio optimization and insurance policies under uncertainty.

The way the model is formalized is as a simple expected utility model, where the agent, or more precisely the taxpayer, seeks, in a very uncharacteristically rational way, the optimum to his problem, the problem of (not wanting to) paying taxes. As many economists who delved into the subject of tax compliance, the taxpayer wonders here on the question "Why do I need to pay taxes?" and, in the authors opinion, is faced with a continuous range of

possible solutions ranging from the riskiest bet of being a fiscal ghost to the safest option of fully complying with the law. The model's equation is the following:

$$E(U) = (1 - p)U(W - \Theta X) + pU(W - \Theta X - \pi(W - X)) \quad (2)$$

where p is the probability of audit, which here is assumed to always find illicit acts, W the income, exogenous but only known by the taxpayer, while X is the portion of income that the taxpayer declares, Θ is the present *tax rate* which is constant for any amount X declared, and finally π is the *penalty rate* that the authorities ask of the taxpayer should he or she be found under reporting. Intuitively, as any reasonable person would assume, as Becker wrote it should be assumed, an increase in either p or π would necessarily result in a decrease in the expected value for the taxpayer, who would be more wary of the risk of avoiding taxes; admittedly, though, Becker recognizes that the magnitude of their effect could be anything between major and minimal.

In light of this, the authors add to the second component of the formula a variable s_0, s_1 representing the "non-quantitative" characteristics of the taxpayers, which may affect the risk and its perception with a varying degree with respect to two "statuses", a "good citizen status" s_0 , and a "bad citizen status" s_1 , both conditional upon the state of the world, which depends on whether or not the defrauding taxpayer is caught by the authorities. However, that's how far this particular variable is investigated. The authors offer a purely analytical solution to the model, both in the static and in the dynamic case, which in the end establishes a relation between total income and declared income as a fraction of the total based purely on the attitude towards risk of the taxpayer (his risk aversion), for example a taxpayer adverse to risk would increase the fraction of declared income as the total income increase. The optimum also offers insight on the theorized relation between the fraction of declared income and both the tax rate and the penalty rate: the marginal effect of changes in the tax rate $\delta X/\delta\Theta$ has a mixed effect, part of it is always negative, reflecting the obvious reduction in utility, the other half has a sign depending on the taxpayer's attitude towards risk. Differently, the sign of $\delta X/\delta\pi$ is always positive, meaning that an increase in the penalty rate will always result in an increase in the declared income regardless of risk attitude, and the same is true for the relation between X and the probability of detection p .

These preliminary models, focused on purely financial constraints as primary

drivers of illicit behaviours lead to theoretically sound and sensible insights: an increase in the either penalty rate or probability of detection leads to an increase in declared income. Unfortunately, these conclusions are not supported by contemporary and future empirical data, for example the first thing we notice in the base model from [10] is that a high penalty rate should lead to an increase in compliance (declared income), whereas as reported in [11]:

(...), empirical evidence largely (if not universally) finds that compliance falls with higher tax rates.

We'll see later on that this dynamic is explained by many authors as a consequence of the relation existing between the willingness to comply and the perceived fairness of treatment. Another often highlighted shortcoming of such models is the over reliance on purely financial considerations: indeed both in [11] and in the works of Torgler [13] it is noted how, abiding by the model base form and the reported audit rates and penalties, the rational individual should either heavily under-report taxable income or over-claim fiscal deductions. In those same works and more, however, it is noted how empirical data from even the least compliant countries tax evasion rarely exceeds level far below those this "deterrence model" would predict, and even when trying to fit the data in the model, the degree of risk aversion that would be necessary to justify the findings is far higher than those reported in those countries considered in the analysis [13].

Part of the discrepancy can be filled by considering that a portion of the population doesn't really have a choice in terms of how much of its income is disclosed to the authorities: one can think of how salaries are paid in many European countries, where part of the income tax is actually paid for by the employer directly on behalf of the employee, or by how certain professions cannot complete commercial transactions in cash, making hiding wealth even more problematic or outright impossible and in turn reducing the portion of national income that could theoretically be hidden. To find reason behind what remains, some researchers tried to expand on the basic deterrence model by bringing sophistication to its basic components, for example by adding a positive (cost) coefficient to the hidden income to model the monetary cost of absconding said income, or focusing on perceived audit rates and penalties (which can vary based on the profession of the respondent) rather than actual ones.

Slemrod in his paper from 2001 [14] adds to Allingham and Sandmo's basic

idea a more complex depiction of the evasion process:

$$Y = \omega L - t(\omega L - A) - C(\omega L, A) + M \quad (3)$$

where Y is total disposable income, ω is the wage rate, L the hours worked, A the total amount of income avoided/deductions over claimed, M any non labour income, which here is assumed to be *untaxed* and finally C the cost of hiding earnings, expressed as a function of total income and hidden income. The model's basic assumption is that the cost of hiding taxable income increases with a positive increasing rate together with the amount avoided, thus creating in the taxpayer's problem a new condition for the optimum: the amount of income avoided is also bound by the increasing dis-utility coming from the cost of hiding it.

Other authors, as reported in [11] find that taxpayer believe tax audit rates to be many times higher than actual ones, while in another paper, contemporary to the above, Slemrod (et al.) reports curious findings regarding perceived audit rates and declared income, and proposes an explanation that essentially would have the taxpayer paying more than he rationally should due to his belief that audit chance depends also on his report [15], a conclusion drawn from the fact that a high income tax payer, on average, reported less when the audit was certain.

The general conclusion from these and other extension is however that it is unfeasible to include too many particular factors while retaining a clear-cut analytical result, this being a consequence of the difficulty of including more than a selection of these factors in a meaningful way within a coherent model. Furthermore, it doesn't advance the theory beyond the limitation inherent to its conception, it being that the only factors that influence compliance are financial, however complex their formulation may be.

3.2 Beyond financial constraints: The Norm models

By borrowing Doran's nomenclature [12] the alternative to a purely utilitarian model, also therein described as a "Deterrence Model", is a model which maintains that the reason for which a taxpayer complies with their fiscal duties is not to be found solely on objective or perceived deterrents, but rather in the individual relation to social norms and values, or in other words, to qualitative aspects of either the taxpayer or of the environment he/she lives in or of the other entities she/he interacts with, be them other individuals

or institutions.

Before delving into the specific of some of the many works, we shall consider a very broad definition of behavioural economics, that is, the field of economics that deals with the boundaries of unlimited rationality (as opposed to neo-classical theory which assumes it) and choice and perception biases. With bounded rationality we refer to the **limits of rational decision making** of individuals faced with real life problems, which may be difficult to frame or fully trace, may not present the individuals with all the necessary information or may not give the decision maker enough **time** for him/her to integrate said information to their full extent: to summarize, we say that individuals are, in this perspective, **satisficers**, i.e. they do not optimize but rather seek a satisfactory solution, and the degree with which the satisfying solution approaches the optimal one is by definition tied to the individual.

3.2.1 Limits on Perfect Rationality

Before delving into the "norm" aspect of the subject, which is the main focus of this dissertation, we'll briefly look at some other purely individual limitations of the rational thought process that come into play when an individual tries to solve the problem of optimal tax compliance. Unsurprisingly, individuals are not exactly machines, so they face limits to their capability of properly integrating and using information, for example the effects summarized in the notion of *mental accounting* which can be roughly divided into *endowment effect*, *sunk cost effect* and, when it doesn't fall within those broad categories, the nature and source of wealth is also a determinant.

To avoid straying from the chief subject of discussion, we will exemplify these additions in terms of how they can better contribute to the modeling of taxpayers behaviour. In its most basic definition, the *endowment effect* or divestiture aversion is the observed asymmetry [19] of value assigned by a decision maker based on the condition of possession, more specifically, he/she will experience a higher dis-utility parting with a portion of wealth with respect to the utility he/she would experience obtaining that very same sum. In terms of tax compliance, the endowment effect lends itself to an interesting interpretation of diverging behaviours between people under different tax filing procedures: assume two taxpayers, one sees its money taken on a daily basis, and then is asked to file for taxes to evaluate potential fiscal credit, while another retains his/her full income and then is asked to report it to cal-

culate the amount owed to the state. For both, lying has the same marginal cost in terms of potential additional losses (the fine is proportional to the amount "hidden"), but if we were to apply the evidence from [19] and other related publications we could hypothesize two different behaviours: the former, facing a potential credit, will give the perspective gain a certain weight and compare it against the potential loss from a fine; the latter, faces the same decisions in general terms, but he faces instead a choice between a certain expense and a potential one, having to choose how much of the wealth he currently possesses to give up. Based on the results from Kahneman et al., we would expect the former to comply (here being honest when filing for taxes) with a higher probability with respect to the latter, since he/she is in possession of the wealth whereas the other is not.

As it is the case for many commonly observed human behaviours, this very same dichotomy could be explained by referencing other known biases and irrational choice making processes. Frame dependence, or the theory of reference points, and loss aversion both would fit the dynamic of such a difference in choices. With frame dependence we reference the observed choice bias for which the same individual will make two different choices when faced with the same problem but presented in different terms [21], for example whether the same problem is presented in terms of potential gains or possible losses (in this case, we could also be referencing *loss aversion*). With regard to the situation presented before, the same conundrum there explained via the endowment effect could be just as well interpreted through the lenses of a difference in perspective or reference point: there is indeed a different perception of costs and gains when comparing potential credits and different amounts of debit. To better conceptualize how frame dependence could in general affect tax compliance, imagine the different responses that a taxpayer would have between seeing taxes as a lump sum payment (the evaluation of which he/she is unaware of) and being told that they are instead a specific percentage of his/her income. Percentage based frames in particular have been shown to heavily influence choice behaviours [21] to the point of affecting other known effects that fall under the mental accounting category, and indeed, based on the sum and percentage, we could hypothesize different reactions, as a percentage of the income the relevant information is the perceived fairness/psychological toll of the treatment, whereas as a lump sum perhaps the closest mean of comparison for the decision maker would be the opportunity cost of the amount in terms of alternative consumption.

Though many other facets of the limitations of unlimited rationality exists

and apply with uncanny specificity to the case of tax (un)compliance, we will do away with them to progress to social norms and the core of this dissertation's theoretical framework.

3.2.2 Introducing Social Norms: Fairness, Guilt and Anger

Although their inclusion in existing models represented a significant advancement in the theoretical framework of tax compliance analysis, the various elements included in the theory of bounded rationality and perception biases discussed above failed to account for all inconsistencies in documented tax behaviour. It is no secret that many observed behaviours, in general, are motivated by moral reason, often hard to rationalize. For example, in his 2012 book, social psychologist Jonathan Haidt [22] collects the results of a 10 year long collection of studies and experiments on morality, on the question of why people have such a different view on right and wrong, on the often irreconcilable manichaeism of moral standings across people of different culture and/or political beliefs. In one such experiment, he likens the conscious mind of an individual faced with a question of simple moral nature (is it right or wrong to do a certain thing) to a man riding an elephant, which the subconscious portion of the mind: the elephant turns on its own, whereas the rider simply accompanies the turn. In practical terms, what this metaphor signifies is that individuals elaborate a moral judgement *before* they can rationalize the motives behind their choice, he/she can immediately say whether something is right or wrong (morally), but when asked to explain *why* they thought it was so, they need time to elaborate, or as it is hypothesized, they need time for the rider to fabricate a reason behind the elephant turn. The reason for this intermission is to clarify that if one models behaviour based on elements that belong to the *surface* mind i.e. the illusion of perfect rationality, one would forgo crucial choice determinants that *do not* in fact appear within those elements, such as social norms and emotional decisions, and to the point of this dissertation, the "unconsciously felt" component of political identity and participation.

In order to better frame the present discourse, we will first review the modelling of the impact of social norms on social behaviour and choices, with a particular care for their implications in the case of tax compliance. Several scholars and researchers, some already back in the late 60s, discuss the phenomenon of *conditional cooperation*, i.e. the willingness of individuals to cooperate (for example, contributing to the cost of a public good) in relation

to the actual (or perceived) contribution (or commitment) to the same public good (or the same required duty) by *other* individuals. This is particularly interesting in the field of tax compliance, as taxes are in fact, and can be perceived as (with varying degrees), the cost of public goods (public funded services). Among the earliest experiments on conditional cooperation modelled specifically after the taxpayer's choice problem is one by Spicer and Becker [23], published in 1980, in which we find the results on an experiment on compliance conditional upon perception of "inequity" on the distribution of the fiscal burden. The way the experiment is set is straightforward: out of all the participants the researchers created three groups, representing three population segments by taxation level. To each of the participants, the authors told that their appointed tax bracket, or applied tax rate, was 40%, while depending on the group, they would be told that the *average tax rate* applied to the entire population was alternatively 65%, 40% and 15%. The aim of the study being to understand the relationship between perceived inequity and tax evasion, the results attained were perfectly in line with what it would be appropriate to call *sensible expectations* in that to a higher perceived inequity followed a greater tendency to evade. Although compelling, these results and their interpretation, rather than serving as evidence of the import of social norms and societal interactions in determining tax behaviour, shed light on the crucial impact of perceived *fairness*.

Furthermore, a lack of equity between the taxpayer's own tax rate and the tax rate of others causes a sense of distress. Being at a disadvantage in such a situation creates anger, according to Adams (1965) and Homans (1961), while being at an advantage creates feelings of guilt. People will engage in certain behavior, such as tax evasion, in an effort to restore equity. [24]

Equity theory, in its most general definition, deals in whether the distribution of resources and, indirectly, whether or not resources are extracted in manner that is fair to all parties involved. It lends itself naturally to the study of fiscal theory, and as we will discuss ahead, to the question this dissertation aims to answer.

As per the quote above, the experiment gave an important, although expected insight on the effect of perceived disparity of treatment on compliance to duty, but it is far from being the only one conducted in such a fashion, and not all results align: in [25] for example, an experiment almost identical to that of [23] is ran on, again, three separate groups, presented with the

same tax bracket but informed of the average applied tax rate to be either equal, higher or lower. The differences in compliance level were, surprisingly, not significant, perhaps informing the researchers that some other factors are yet more decisive in determining the individual's final choice, factors of, in lack of a better term, cultural nature, such as moral education, ethics, individualism vs sense of community and how elements such as age, formal education and marriage might interact with them, either strengthening them or having individuals lean towards either end of an imagined spectrum of cultural ideal. Or, as we endeavour to investigate, if politics and political conscience, either on their own or as factors interacting with the above mentioned cultural ones, might be somewhat impacting as well.

We have mentioned other, cultural factors, that go beyond the rationale of cost-benefit projections and affect the perception of whether or not a certain tax treatment, or any tax treatment at all, could indeed be defined as "fair" by the taxpayer. Quoting once again Jonathan Haidt's *The Righteous Mind* [22], owing to its massively broad scope of research, we have that in cultures that are less "western" and individualistic tend to prize, morally speaking, choices and therefore behaviours and policies that benefit the community, although this happens only when such a community is defined as including only that portion of the populace that the individuals perceives as its in-group: both US christian conservatives and Indian villagers (the two main samples used in Haidt's research) were quite morally unaffected by "global" social efforts, but were quite supportive of localized initiatives or, in the case of the US sample, those project that were directed at a cohesive idea of "America" that they perceived (they were asked) they belonged to: in both cases, individuals were more willing to share in the burden when the effects of their effort (an abstraction of the concept of public good) we mostly directed at either themselves but, more importantly, at those *others* they identified with community/family.

Also building upon the concept of the feeling of belonging, is the perception of moral wrongdoing: if the above reasoning based upon a *positive* moral push, at its opposite lies one instead based upon a *negative* moral pull. Said moral pull would be guilt, although its dictionary definition is rather limited with respect to the matter at hand. A more elaborate definition of, and model for, guilt is provided by Kuban and Watson [26], where they define *guilt* as moral feeling whose intensity, and therefore effect, is a function of five different factors: *distress, responsibility for a decision, justification for a*

decision, foreseeability of the consequences and the ubiquitous *personal values*. This distinction of different components to guilt offers us a handy framework in which to dissect the decision dynamic of an individual faced with a moral choice, and in particular, with a choice regarding a public good.

Guilt is an agitation-based emotion of regretting a wrong decision or action (Ferguson and Stegge, Measuring guilt in children: A rose by any other name still has thorns, 1998). Guilt occurs in response to an actual or imagined moral transgression. [29]

Guilt, above all, requires self conscience, and conscience of the choice, thus it implies, in our present discussion, that it implies that there must have been an explicit choice and that, whether that choice has been taken consciously or not, that its passing must be recognized as such by the agent.

Going over the four relevant factors (personal values are simply there to account for individual deviations from the pattern), first we have *distress*: clearly, the basic requirement for guilt is to be "affected" either directly or emotionally/morally by the consequences, whether real or imagined, of one's own actions. Secondly, we have *responsibility for a decision*, in that the agent must feel involved in the decision, i.e. he/she must believe that she has an option *not to act in a certain way*, therefore making it so that if the agent does not believe to have an alternative course of action, he/she will not feel at all responsible for the consequences of what amounts to a mandatory choice. Thirdly, to feel guilty one must be unable to *justify his/her decision*: in a way, this relates to the previous point, as it would stand to reason for a non-choice to be itself justified by its own inevitability, but the agent might also believe his decision to be the overall best possible one, in a way mitigating the psychological and emotional weight of responsibility for the consequences he/she might have wrought upon him/herself or others. Lastly, the *foreseeability of consequences* or how likely it would have been for the agent to predict the future implications of his/her past or present choices: an unlikely, unforeseeable outcome is unlikely to invoke a strong feeling of rebuke, while on the other hand, easy consequences would have a much greater impact, naturally conditional upon the agent's material or moral participation in them.

Before going over how this articulated model and the preceding importance of belonging/identity and a shared agenda/pursued ideal, we will briefly review the empirical results relating to the impact of guilt on behaviour in general and tax compliance in particular.

In [27] the authors investigate the effect of different deterrence mechanism,

financial and non-financial alike, and discover that between sanctions (purely financial), social stigma and guilt feelings, guilt was the most effective at inhibiting non-compliance in the subjects. Guilt is measured with a simple question evaluated on a likert scale on how morally wrong non-compliance is to the subjects, therefore making guilt a simple issue of moral and ethics.

Using guilt as a factor that alters rational component of a more classic tax compliance model, [28] instead develop an extension of the standard deterrence model which includes guilt as a single quantitative parameter, and they state that high levels of guilt or proclivity to the development of feelings of guilt could bias the agent's perception of audit probability, similarly to how religion can push people to maintain a virtuous behaviour by means of the internalization of "karmic" punishment.

These results are limited by the simplistic nature of their definition of guilt, but find confirmation in a more elaborate experiment reported in [29] constructed upon the theoretical model of guilt by [26] that was presented before. Here, the three main factors in the guilt model, that is foreseeability of consequences, responsibility of action and justification of choice, and their impact on tax compliance were tested in various combinations of levels (high, medium and low) against a sample of heterogeneous individuals that were asked to comment on the likelihood of voluntary tax disclosure of a third, imaginary agent. Setting aside the possible effect of using a proxy to test personal preferences rather than a direct question, most likely to keep the participants from being swayed by a desire to see themselves as more virtuous than they would normally be, the results are rather clear. Indeed:

the highest probability of amnesty disclosures occurred when each of the three guilt cognitions were high, and the lowest probability of amnesty disclosures occurred when each of the three guilt cognitions were low. [29]

To support the evidence on the effect of guilt, and in general, on the effect of moral emotions stemming from social interaction with the broader community, we cannot avoid mentioning *reciprocity* and *conformity*. Both are closely tied with the concept of conditional cooperation, and both have been employed to interpret results from empirical experiments on tax compliance and social interactions, results which can be found in the studies quoted in the comprehensive theoretical overview offered by Torgler and Frey in [24]. An individual may be less inclined to abscond his dues if he perceives that

other people are being honest, hence he would try to *reciprocate* their behaviour, either out of a moral obligation or out of fear of being branded an outsider, an idea calling back at the concept of social stigma. Conversely, the same individual will be motivated to evade his taxes should he have the perception that the his peers are also eluding their dues. These proposed explanation of possible behaviour dynamics are consistent with the results from [24], which state that perception of widespread evasion has a significant and large effect on tax morale, and that conversely, going to church, and therefore likely belonging to a tight nit community with well defined norms affects tax morale positively.

The same individual may instead avoid to shy away from his fiscal duty simply because of a desire to adhere to society's rules, and fulfill the social norm that requires him, and everyone else, to bear his share of the burden and provide for the community, in other words, to *conform* to the standard. Again, this might either be due to a positive desire for moral coherence, or out of fear of being ousted.

Thus having made clear that indeed tax behaviour is also affected by non rational, social elements that are not wholly individualistic, we progress to the final set of factors, those of political nature.

3.2.3 Politics, Agency and the Social Contract

Nothing is worse, or more of a breach of the social contract between citizen and state, than for government officials, bureaucrats and agencies to waste the money entrusted to them by the people they serve.

Robert Riley, Former Governor of Alabama, House of Representatives, Republican

Paramount to any effort to delve into the political aspect of pretty much anything that entails the relationship between the State, its representatives and the people, has to, at some point, traverse the familiar abode of the social contract theory. Although present in humanity's search for a reason for State and, more often, a justification for it, since Plato, the social contract theory is mostly tied to the works of Hobbes and Rousseau, respectively the *Leviathan* (1651) and the *Of the Social Contract (Du Contrat Social)*, 1762). Both these works were written in dark times, when the idea of men free from

a sovereign power could never be seen as anything other than chaos and war, so much so that of Hobbes most of today's students remember two things, the Leviathan's title and the ominous sentence "Homo homini lupus", man is wolf to man. The basic idea behind the theory is, however, essentially unchanged: individuals relinquish part of (or all of) their natural absolute rights in exchange for the State to become a guardian of a set of rights and, via the funding provided by coerced contributions (taxes), a provider of services deemed to benefit the public, the scope and details of which are defined on the proper "contract" which for modern states would be the Constitution on one hand and the Legal Codes on the other.

Since then, though, the role and scope of action of the State has grown considerably, and so has the agency and political weight of the "common man", and as we have seen in the historical overview at the beginning of this dissertation, has the share of resources that the State requires from its citizens to support its expenses. The State is indeed an important provider of many social services and public goods that in general benefit the population as a whole, but not equally: most welfare measures are usually targeted at specific segments of the population, and those that benefit from them, at least in many European countries and Italy is no exception, are usually those that contribute individually the least to it. It is only sensible to expect that different people, different groups in general, would have different ideas regarding what the State should do with the common resources, as it is the case that there are never, by definition, enough funds to satisfy all requests across the entire political spectrum. Not all groups however see their needs tended to, at least not all the time, since no matter which specific government type manages the State, it will always either do the interest of a certain group or groups, either for political support in authoritarian or aristocratic governments, or to match the desires of their electors for what concern democracies. Yet, *all* are nonetheless required to contribute, and therein lies the conundrum: can we expect individuals to pay, to contribute to public goods that either do not benefit them or result to be unappealing purely out of respect for the "rules of the game", motivated just by intrinsic motivation and legal deterrents?

Recovering the factors definition of guilt, and borrowing from Lysander Spooner's No Treason essay on the paradox of the social *contract* being a condition in which a man is born into rather than by choice, we can already see that a disillusioned citizen, witnessing his/her government spend his/her money on an agenda that is not her own, would already have less reason to

be *distressed* by her choice not to contribute, a choice for which she would find a strong *justification* in that she has no agency in the pursuits of the government and that that which is presented to her as a choice is really not one, as even if she wanted to she would not be able to "opt out" of the social contract lest she leaves the country. *Agency* in particular has been proven to be a crucial factor in determining the effect of political involvement on tax compliance, as is reported in [30], where using Switzerland as a sample, in particular the ISSP's tables on Religion II from 1998 and an index on direct democracy from a previous work of other co-authors, Torgler discovered that the direct involvement of the citizens in the legislative process by means of direct democracy instruments, broadly employed across Swiss cantons, had a high and statistically significant impact on the proxy for tax morale. The results suggest that when the people are directly involved in the process that determines where their resources are spent, in other words, when they have the perception that their preferences and priorities are taken into consideration, they are more willing to contribute. A similar effect was registered in the years following the fall of the Soviet Union, where the wave of bureaucratic reforms had a significant impact on tax revenues and in general, the quality of the relationship between the population and the institutions. Up until now we've seen how crucial *agency and involvement* are, both as factors directly affecting tax behaviour and as indirect influences on moral forces, such as guilt. Direct democracy in particular provides an insight on the magnitude of the effect that the perception that the State is aligning itself with certain groups' agendas or priorities, in other words, with how strongly their interest is *represented* politically and within the institutions. It would be within reason then to speculate that perhaps political representation of certain interests, or groups, could also affect tax behaviour, and what's more, that perhaps rather than representation per se, the effect could be explained by the gap between the actual representation, made rigid within certain periods of time by electoral cycles and relative power stability within the institutions, and *desired representation*, which instead can be much more flexible and easily affected by specific events. Perhaps certain political parties represent the interests of those who would see less government and welfare, that would rather be independent than assisted, while others caters to specific economic and social interests, to the dissatisfaction of other segments of the broader populace, thus motivating a less compliant behaviour in those individuals that either feel no agency or are provided with reasons to justify illicit choices and refute moral responsibility. Luckily, the fervent interest

that Italy has in politics, and the constant need for surveys to gauge the political mood of the nation theoretically provide us with ample data to work with.

4 Model and Data

4.1 Chalking out the profile of tax evasion

In a little known short story by novel author Valerio Evangelisti, two vikings discuss on the critical importance of intelligence regarding the coming raid from an opposing party. The core of the discussion is their inability to properly gauge the number of oncoming ships, for there is a heavy fog at sea. The first viking complains that it is impossible to even have an estimate, for they have too little information, to which the second responds "...all we need to do is count the trees they felled". The punchline here is that the island is a desert of rocks and walruses, but the point the second viking makes is sound: even if something is invisible, if you see what it interacts with, you can chalk out its outline.

The problem of correctly estimating the true size of the so called shadow economy is of itself worthy of an entire dissertation, but it being only instrumental in this one, we elect to only briefly introduce some alternative measures before delving into the model of choice.

Doing away with the naivety that would be entailed in a direct approach based on a survey asking the question directly to dishonest and honest taxpayers alike, there are nonetheless many recorded attempt at estimating the shadow economy via surveyed data, for example A first way of gauging the girth of a country "submerged" economic life indirectly is by comparing two measures of some national account, theoretically identical but obtained via different proxies or with differing data. Such measures could be the discrepancy between national expenditure and income statistics, which more often than not reveal that the expenditure side is significantly larger than its counterpart, pointing to an invisible "other" source of income for the nation's consumers. This approach though suffers from two critical shortcomings: the first is of a practical nature, as national accounts are often smeared by well-known measurements errors [11]; the second, more theoretical, pertains the logic behind consumption habits, sources of wealth not included in the income statistics and the issue of what we could call the "circular" shadow economy, the sum of transactions that never interact with the observed economy (full circle from irregular source of income to untraced consumption).

Another discrepancy measure is the one obtained by assuming labour force participation to be constant over time and thus interpreting variations in the official rate of labour force participation as indicative of variations in the

shadow labour market. Even more than the above, this solution is subject to a number of structural issues, for example the simple fact that people may work on both sides of the economy (ISTAT, 2017) and that, even accounting for the general economic performance to control for systemic variations in the employment rate, shifts in the economic paradigm might produce similar effects to those presumed to be due to increased irregular employment.

Diverging slightly from the previous two, another model that has seen some use is the "Transaction Approach" [16] in which a constant relation between GDP and total volume of transaction is assumed in a reference year (based on a reference sample) and any variation of that ratio is calculated for the following years, or rather, what is calculated based on the relation is the *total nominal GDP* obtained through the transaction volume, assumed to be accurate and comprehensive of all the facets of the economy, and the *officially measured GDP* provided by government agencies. Since the ratio is assumed to be always correct and stable, the difference is explained as indicative of movements in the shadow economy. The problems of this model are, above all, the strict assumptions that must be made regarding the velocity of money and the ratio between total transaction volume and total nominal GDP, and on a secondary note the fact that it doesn't account for the effect of past or present economic performance on consumption habits (and therefore transactions), of the kind that would for example affect consumers' saving preference.

Lastly, we come to the our approach of choice, as presented in [17], the *Cash Demand Approach*: among the different indirect approaches to the estimation of the shadow economy, this one assumes that, as is often observed, many if not all non-registered transaction are conducted via channels untraceable by construction, that is, in cash. Thus having so assumed that all transactions in the shadow economy are paid in cash, the idea is to study the cash demand, thereby hypothesizing that an increase in the observed variable (controlling for a series of potentially correlated covariates) implies a possible increase in submerged commercial activity. These covariates, which we'll see shortly, are in general all those factors to which we could easily ascribe part of the dynamics of cash demand, such as general economic performance, total currency volume and potential legal quantitative limits to cash transactions. As it is still an indirect method, it suffers from potential biases, for example the fact that it fails to account for the evasion that is done via accounting manipulation rather than untraced transactions, or the fact that it cannot distinguish easily between the unexplained portion that might refer

to shadow activity and that which instead is ascribed to pure preference of payment means by the individuals, in other words a potential "cultural" factor which we may only marginally control for by reviewing availability and cost of digital payment financial services.

Having reliable data for the period of interest (2012-2019) we proceed to employ an adapted version of [17] model to the Italian case, with data from the OECD Stat repository for monetary volumes and interest rates and figures from the Italian ministry of Finances for the average declared income of the interested categories (further elaborated ahead in the paper).

$$M1_t = \alpha + \beta_1 M1_{t-1} + \beta_2 M3_t + \beta_3 month + \beta_4 i_{long} + \beta_5 i_{short} + \beta_6 cashceil_t + \beta_7 appliedt_t + \beta_8 inflCPI + u_t \quad (4)$$

M1 is the money aggregate containing all liquid assets, in particular it holds physical currency, demand deposits, traveler's checks and ready-to-withdraw accounts, in other words our observed variable for cash or equivalents: it is both the observed variable and a covariate (lagged) to account for "inertia" in cash-holding dynamics. M3 is the closest estimate of the entire money supply, as it contains M1 and all near-money, financial funds and long term deposits as well as large financial assets, and together with the lagged term for M1 should control for the most direct effects on current M1. The month dummy is really a period dummy, increasing from the first noted period of observation, to account for possible trends rather than cyclical seasonalities, whereas the interest rate variables i 's (OECD Stat) account for the opportunity cost of holding onto liquid assets instead of investing them. The cash ceiling dummy can hopefully explain how legal limits to the usage of cash in payments might alter consumers currency holding preferences, as should the inflation, taken as the inflation of the consumer price index (CPI) to cover for the varying need of liquidity arising from variation in prices. The applied tax rate on personal income, calculated as the effective tax rate applied to the average declared income for selected professions, should account for the part of shadow economic activity motivated by purely utility-based reasoning. On the note of specifying why the income data is not the national average we must recall the fundamental issues with non-corporate tax evasion, that is, tax evasion not performed via accounting manipulation. We can divide the entire workforce in roughly three main "types" based on their ability to elude or hide their income from the state: the first one, which we may call "fully exposed" receive their income in such a way that they are not

even presented with the chance to misrepresent their financial status, such as corporate employees and/or professionals that for a variety of reasons are required by their clients and suppliers to provide full recordings of their services or provisions. The second one we may refer to as "partially exposed": the vast majority of professionals fall under this category, in which a formal registration is required to operate, so there must be a trace of regular activity, but day-to-day business still offers chances to provide unrecorded services paid in untraceable means (cash). Lastly, the remaining workforce we might refer to as "easily hidden", owing to the fact that these workers may or may not be registered and thus, may or may not be "fiscal phantoms" operating therefore completely outside the regular economy. The problem with the first and the third category is that, for the purposes of our analysis, that is to answer the question "Does representation affect compliance?", the former are irrelevant data wise, as they are not presented with a choice, while the latter are not only nigh impossible to track if invisible, but might not be able to comply at all i.e. the impending penalty should their past be exposed could be too high for a newfound honesty to offset it. That leaves the middle category, whose declared income has been shown to shift with the years also according to tax rates and transparency measures, as seen in [15] and [13]. Abiding by the classification of professions implemented by the Italian ministry of Finances, the categories considered, for independent workers and professionals (Partite IVA), were:

1. Artisans, manufacturing activities: mostly registered, if nothing else for advertisement purposes and certificates, nonetheless are prone to offer discounts on unrecorded transactions;
2. Construction: both companies and independent professionals, must be registered for official commissions and significant private contracts, but can operate without traceable payment for minor jobs;
3. Retail and Wholesale, mechanical workshops: once again, registration is mandatory and often checked, but can often omit receipts when concluding commercial exchange that do not require it from the client side;
4. Restaurants, Hotels and Catering: must be registered, especially those who work in the food industry, but are not always required to register all sales transactions;

5. Real estate: requires a license, but can mediate without officially registering a transaction and bears no legal responsibilities when facilitating direct contracts between privates;
6. Healthcare and Social Services: must be registered to operate but are not always required by their clients to provide proof of services;

Having clarified the specific for the data selection behind the value of the applied (effective) tax rate, we'll also underline how the data is annual by construction (people file for income taxes only once a year), so to adjust it to the monthly observations for the M1 the annual value has been applied unchanged only to the month of June (legal formal deadline for material delivery of personal income statements), while for the remaining months the value is the weighted average between the two closest full values (i.e. June 2015 - June 2016).

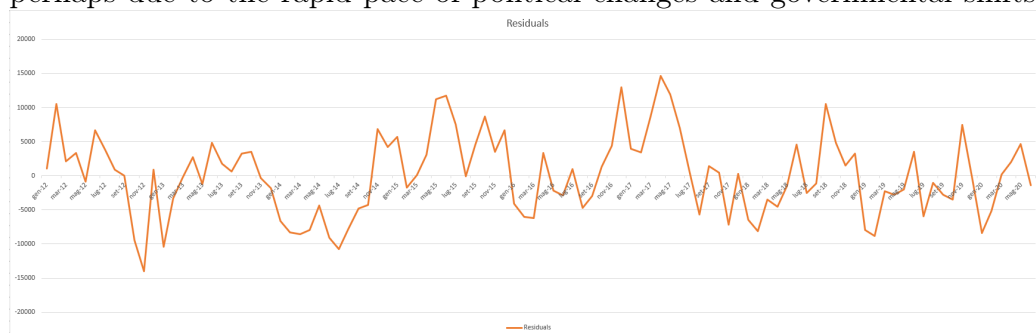
Data are available from January 2008 to June 2020, although we are forced to restrict the data range as we progress due to data unavailability.

R square	0.998941962			
R square adjusted	0.998850948			
Std Error	6103.055317			
	<i>Coefficients</i>	<i>Std Error</i>	<i>Stat t</i>	<i>Level of Significance</i>
Intercept	-2799712.251	288252.6259	-9.712703372	8.29103E-16
M3	0.644151335	0.028082702	22.93765557	4.65023E-40
lagged_M1	-0.029195827	0.009813527	-2.975059367	0.003732123
dummy_period	2521.899653	180.4079119	13.97887502	1.38984E-24
Long-term interest rates, Per cent per annum	-6035.194507	1122.903614	-5.374632721	5.66228E-07
Short-term interest rates, Per cent per annum	9561.835432	5134.781694	1.862169806	0.065736669
dummy_cash_ceiling_1k	-9322.237497	2580.933961	-3.611962816	0.000492479
Actual_applied_income_tax_rate	10785589.92	1209760.725	8.915473699	4.02724E-14
inlfCPI	2841.960901	2818.583857	1.008293897	0.315929614

The equation adapted from the CDA model explains almost all the variance of the observed variable, with all the covariates exhibiting a high level of significance. In particular, we notice how all the coefficients exhibit signs that are coherent with what we would normally expect, with one notable exception: the applied income tax rate indeed presents itself with a positive coefficient, rather unusual considering that a higher taxation should lead to a reduced disposable income and therefore to a contraction, although perhaps small in magnitude, of the overall portion of liquid money. Instead, we find a positive correlation, rather high in value and statistically significant,

indicating that as taxation increases, so does the preference for cash or its equivalent: remaining within the framework of the CDA, this would stand to show an increase in the size of the shadow economy, or rather, an increased desire to conduct untraceable transactions. This is a fortunate result, as it shows that a) the method is likely to correctly trace cash payment dynamics and b) that it is indeed, in all likelihood, a viable proxy for the estimation of irregular economic activity (which we presume to be positively correlated with the tax rate).

If we observe the plot of the residual across the period under observation, we notice that, aside from not conforming to a white noise function as we could have expected, it somehow matches governmental dynamics and exhibits periods of consistent deviation from the supposed "normal" level. For example, take the period from January 2014 to July 2017, corresponding to the Renzi government up until its dissolution following the constitutional referendum in the late 2016 and the following months of interim government under Gentiloni. If we stand to see the residual as a potential proxy for shadow economic activity and "dishonest behaviour" we can see that during the first year, and especially after the landslide the Democratic Party achieved during the European elections, perhaps indicative of a high level of national unity and trust in the government, the proxy registers a subnormal degree of non compliance. This trend is inverted in the following year, when Italy as a country no longer seats as temporary head of the Union, and new financial constraints are requested to maintain financial aid, with a very negative impact on the perception of the population, owing also to the ever turning cogs of political rivalries. Finally, after Renzi resigns, we witness another notable spike in illicit activity, followed by a much more "noisy" period, perhaps due to the rapid pace of political changes and governmental shifts.



Having obtained a rather interesting result, we set out to apply the residuals to the political data we've gathered, in hopes of finding evidence of a "party" effect or a "representation" effect on the supposed illegal economic activities.

4.2 Representation and Politics

Ere we say anything on how the data were collected and how they were transformed, we must clear away a rather philosophical impediment to the present model: whether or not the representatives from certain political parties stay true to their words, hence actually making the interest of the electors they committed to represent, and remain coherent to their program as it was communicated during the campaigning preceding the election, is not our concern, thus it is enough that they are still ascribed to their party for us to assume they are still representing the project they obtained their votes for.

The idea is to measure the impact of institutional weight, popularity and the combination of the two, to probe for a possible effect of political dynamics on tax behaviour and the shadow economy in general.

Political weight is pretty straightforward to explain: barring the complexities of power balance of commissions, seats of honor and other amenities that characterize Italy's political life, we define the political weight as the number of votes a party can muster within the Chambers of the Parliament, to put it simply, the number of deputies and senators registered with them. The data source for this are the two official websites for the two Chambers, in which for each *parliamentary group* it is possible to find the entire history of seat swaps, substitutions and exchanges, which was then used to update, starting from the initial number of seats won through the election by each party, the exact power structure of the parliament on a monthly basis. Since a single seat transfer, barring exceptions represented by extremely famous politicians, equals a negligible power shift, seat swaps were registered only in the month in which a given party accrued a total of at least 5 transfers, which can be seen as the granularity of the analysis. Other parallel datasets were constructed for the same period detailing the shifts in government holding, specifically a party is defined as "holding power" if one of its representatives sits as either serving Prime Minister or as one of the Ministers. The aim here was to understand whether executive power held more influence than legislative and representation over individual behaviour. A mirror database covering instead which parties were at the *opposition* is also prepared in order to properly explore all the possible combinations of effect.

To obtain a measure of the "desires" of the people we employ the one information resource that Italy above everything else holds in abundance: political surveys. With a frequency surpassing two surveys every ten days, the Italian population's electoral preferences are constantly observed, therefore providing us with a potential pool of very detailed and high frequency data. Since political surveys are conducted by private contractors, commissioned by news agencies and politicians alike, their results are not exactly publicly available. The web site Youtrend.it holds a complete database of every political survey ever published in the news since 2012, but unfortunately only had the years 2017, 2018 and 2019 available for download, with the rest being just poor quality images of tables, making their extraction impossible via conventional means and unfortunately limiting our data sample to those years that were available in a suitable format.

It is crucial to understand here that these two different data sets, one observing the political reality, the other instead depicting the desired political landscape, are not, in their basic form, comparable at all: due to the complex system of uni nominal and pluri-nominal electoral colleges the conversion from percentage preferences to the actual corresponding number of seats and vice versa is virtually unattainable, as we cannot be sure of where those who answered the survey would vote and thus how their preferences would translate in terms of elected representatives and majority bonuses, nor of the specific age of the respondent, whose preference might either affect just the House of Deputies or both it and the Senate.

To circumvent this compatibility issue, we transform both sets of measures into their corresponding percentile ranks, with the choice of percentile rank over the normal rank being motivated by the varying number of political actors across the period of interest. The non-negligible limitation of such a solution is that rank is inconveniently foggy, since while in a race, a winner is such because he ranks first, in politics there is a huge difference between a party that leads with 2% more seats than its second closest competitor and one that can effectively take political action without compromising due to overwhelming number advantage, a difference that is not captured by rank measures. However, due to our inability to solve the issue of cross data comparison, the rank remains presently the most effective solution, thus our solution of choice.

Using the residual from the CDA regression as a proxy variable for the dynamic of illicit economic activity, we run a series of simple regressions on both the institutional ranks, the survey ranks, the governmental binary ar-

rays and all possible combinations of the three, with particular care for the combination of institutional and survey rank, which we could interpret as a measure of the distance between actual representation and *desired* representation, which could very well be a source of dissatisfaction and provide a handy *justification* for non compliance, once again borrowing from the model definition of guilt. The form of the equation is as follows:

$$CDA_{residuals} = \alpha + \sum_i^I \beta_i x_i + \gamma EUuncIndex + c \quad (5)$$

Where $CDA_{residuals}$ are the residuals from the previous equation, is the intercept, the sum is the vector of ranks for the different political parties, be them institutional ranks (from actual representation and political weight), survey ranks (desired representation) and alternatively the vector of 1s and 0s defining the composition of the government in charge. Finally $uncIndex$ is the Europe Policy Uncertainty Index, added to the model to account for the possible effect of generalized uncertainty. In addition to the three different "pure" datasets, we combine them to also analyze their interactions, namely that between institutional rank and government and institutional rank and opposition, to gauge whether being in the seat of power or campaigning against it inhibits or enhances the natural effect of individual parties' weight, and between institutional rank and survey rank, again, to probe the existence of a "misrepresentation effect".

5 Results and conclusions

Of the various datasets, pure and composite, only one provided significant results. Indeed, neither the survey ranks, the desired representation, nor the government/opposition status provided significant results, these regressions exhibiting adjusted R squared close to 0 and not even a single significant coefficient. The combined datasets fared no better, as they too failed to provide any worthwhile result. However, the dataset containing the percent rank of the *institutional* political weight of the parties actually delivered, presenting us with significant coefficients for the covariates representing most major political actors and, once cleaned of those minor parties with little to influence on the greater political discourse, highlighted notable effects that lends themselves to appealing interpretation.

R al quadrato	0.227351914			
R al quadrato corretto	0.135369999			
Errore standard	5541.394309			
	<i>Coefficients</i>	<i>Standard Error</i>	<i>Stat t</i>	<i>Level of significance</i>
Intercept	6087624.999	1733383.181	3.511990346	0.000718438
FI (PDL)	85892.17794	33841.53761	2.538069603	0.012992508
FLI (Fini) - AN - Fratelli d'Italia	-5005756.069	1422794.075	-3.518257602	0.000703825
NCD - Alternativa Popolare	104938.2174	31898.20839	3.289784057	0.001466444
Verdi - LEU - SEL	4191.525515	23546.63664	0.178009521	0.859144087
Lega	572671.2827	176401.1707	3.246414298	0.001679702
Articolo 1 - LEU (post 2016)	-77728.4064	19966.16846	-3.893005638	0.000197813
L'Ulivo - PD	-4661737.378	1325152.417	-3.517887692	0.00070468
M5S	-1841909.585	526957.0446	-3.495369507	0.000758593
Minor Parties	48958.11547	14630.48501	3.34630844	0.001226485
Uncertainty_index	17.57104795	21.06063079	0.834307772	0.406473983

Firstly, the high level of significance for almost all coefficients, in particular all of those belonging to major parliamentary forces, is a result that strongly hints that there is indeed a relationship between representation, political agendas and tax compliance, by itself offering evidence that individuals are affected in their choices and behaviour by the presence, and therefore presumably the behaviour, words and declared intentions of certain political powers, in other words, people have expectations based on the dominant power and act accordingly (under the assumption that our proxy is indeed accurate as the effect of tax rate seem to suggest). The second most striking finding are the *signs* of the coefficients, which could be revealing of the nature of the perception that the population has of its politicians. Assuming our reader is not informed on the political landscape of Italy, we shall

briefly try to fit the major parties into clearly defined categories of voters: Forza Italia (Popolo della Libertà) and Lega Nord (later Lega) have always been strongly supportive of *autonomous workers, entrepreneurs and owners of commercial activities* in general, exhibiting a clear distaste for taxes and social spending (although that is less true now for Lega), so we would expect them to conduct reforms that would lessen the tax burden upon those categories, categories that made up the sample from which we estimated the *applied tax rate*, the categories which we identified as those more likely to have means and motivation to evade. It would then appear rather surprising that they would exhibit a *positive* relationship with out shadow economy parameter, we would expect those professionals to behave better as they see their agenda pushed forward by the parties that have long represented them, unless of course the observer remembers another interesting detail about the political heritage of these parties: indeed, both have, on multiple occasions (Berlusconi, FI founder and long time president was rather famous for this) would offer extremely convenient tax pardons, upon which a non complying taxpayer with a long history of tax evasion could cancel his/her entire history of overdue contribution for a significantly reduced fee. If seen under the light of this recurring event, it would then be far easier to frame this positive relationship within the idea that, knowing that tax pardon is likely to come, taxpayers are even less motivated to pay their dues, either because they see the convenience of a discounted amnesty, or because they are well aware that even if they were to pay, many of their fellow countrymen would not reciprocate, thus losing their intrinsic motivation to comply.

On the other hand, parties like Partito Democratico (PD), Liberi e Uguali (LEU) and the Movimento 5 Stelle (M5S) either appeal to categories that greatly benefit from state welfare, and thus over-benefitting from state-provided public goods, or to professional categories that *do not have* the option to evade, like public servants, bureaucrats and private employees. For these parties and their agenda, public spending and welfare are irreplaceable staples, thus they would never offer pardons and instead would intensify tax collection efforts. Under their government, not only it could be that a higher public spending might increase the perceived benefit of state services, thus positively motivating voluntary contributions, but would also discourage would be evaders, who would have worse prospects should they be caught.

To sum up, we have offered a broad theoretical framework to explain the various facets of tax morale, we have reviewed albeit briefly the history of mankind and taxes to point out when individuals might have started to feel morally compelled to contribute, and then we have passed through most of the better known theories that frame individual choices within parameters of rational, moral or emotional nature. By employing a well tested model for the estimation of the size of the shadow economy, we have obtained a proxy that is positively correlated with a measure of effective tax burden, thus somewhat supporting its efficacy. We endeavour to investigate whether misrepresentation and lack of agency can affect tax morale and tax compliance, yet we find that rather than representation, what appears to be most influential is the expectations that taxpayers might have regarding policies and fiscal outlooks under different parties.

With the idea of possibly expanding this analysis, some ideal extensions would entail the recovery of the full survey database, as perhaps with a longer series more significant results might resurface. Another interesting element to add would be a measure of political *noise*, to investigate whether, rather than the political weight, the determining factor could be the *perception* of political import by the population. Lastly, repeating the analysis without having to resort to the use of percentile rank might shed more light on the effect of large and small advantages within the Houses of the Parliament.

References

- [1] Gary Becker, Crime and Punishment: An Economic Approach. Journal of Political Economy n 76, 1968
- [2] Bernard Salanie, The Economics of Taxation, Economica, Paris, 2002
- [3] Tonia Sharlach, Provincial Taxation and the Ur III State, Leiden, The Netherlands: Styx/Koninklijke Brill. 2004
- [4] Andre Dollinger, Dues and Duties: Taxation in Ancient Egypt
- [5] Wilkinson, Toby. The Rise and Fall of Ancient Egypt. Random House Trade Paperbacks, 2013
- [6] Charles Adams, For Good and Evil: The Impact of Taxes on the Course of Civilization, 1992
- [7] Stephen Langton, Magna Charta Libertatum, 1215
- [8] Sidney & Beatrice Webb, English Local Government: English Poor Law History Part 1, Political Science Quarterly, 1928
- [9] "Social Security History". www.ssa.gov. Retrieved 2019-04-08
- [10] Allingham & Sandmo, INCOME TAX EVASION: A THEORETICAL ANALYSIS, 1972
- [11] Alm James, What motivates tax compliance?, 2018
- [12] Doran Micheal, Tax Penalties and Tax Compliance, 2009
- [13] Torgler, Benno, Tax morale in transition countries. Post-Communist Economies 2003
- [14] Slemrod J. , A General Model of the Behavioral Response to Taxation, 2001
- [15] Slemrod J. & Blumenthal M. & Christian C., Taxpayer response to an increased probability of audit: evidence from a controlled experiment in Minnesota, 2001
- [16] Feige, Edgar L. How Big is the Irregular Economy, Challenge, 1979

- [17] Schneider F. , Estimating the Size of the Danish Shadow Economy using the Currency Demand Approach: An Attempt, The Scandinavian journal of Economics, 1986
- [18] Tanzi V. , The Underground Economy in the United States: Annual Estimates, 1930-80, 1983
- [19] Kahneman, Daniel; Knetsch, Jack L.; Thaler, Richard H. . "Experimental Tests of the Endowment Effect and the Coase Theorem". Journal of Political Economy (1990)
- [20] De Bondt WFM, Makhija AK, Throwing good money after bad?: Nuclear power plant investment decisions and the relevance of sunk costs, Journal of Economic Behaviour & Organization, 1988
- [21] Timothy B. Heath, Subimal Chatterjee and Karen Russo France, Mental Accounting and Changes in Price: The Frame Dependence of Reference Dependence, Journal of Consumer Research, 1995
- [22] Haidt Jonathan, The Righteous Mind: Why Good People Are Divided by Politics and Religion, 2012
- [23] MICHAEL W. SPICER and LEE A. BECKER, FISCAL INEQUITY AND TAX EVASION: AN EXPERIMENTAL APPROACH, National Tax Journal 1980
- [24] B.S. Frey, B. Torgler, Tax morale and conditional cooperation, 2007
- [25] Webley, Paul, Robben, Henry, Morris, Ira, Social comparison, attitudes and tax evasion in a shop simulation, 1988
- [26] Kubany E., Watson S., Guilt: Elaboration of a multidimensional model, The Psychological Record, 2003
- [27] Grasmick, H., Scott, W. . Tax evasion and mechanisms of social control: A comparison with grand and petty theft. 1982 ,Journal of Economic Psychology
- [28] Erard, B., Feinstein, J. The role of moral sentiments and audit perceptions in tax compliance. 1994 Public Finance

- [29] Dunn P., Farrar J., Hausserman C., The Influence of Guilt Cognitions on Taxpayers' Voluntary Disclosures, 2018, Journal of Business Ethics
- [30] Torgler B., Tax morale and direct democracy, 2005, European Journal of Political Economy