# ECONOMIC SHOCKS AND TAX MORALE

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# Thesis Summary

Tax revenues constitute a fundamental way for countries to generate public revenues that make it possible to finance investments in human capital, infrastructure, and the provision of services for citizens and businesses in order to support ongoing economic development (Burgess & Stern, 1993). It is therefore important to understand the factors that may influence citizens' decisions to evade, or not evade, paying taxes, among other levers that governments should consider to increase tax compliance. This thesis aimed to consider various economic and/or political shocks, using the transition of communist regimes and the Great Recession as examples, and to explore how related elements may have had an effect on, or an association with, citizens' tax morale, i.e., willingness to pay taxes, as a proxy for tax compliance. Despite the extended tax evasion literature that has assessed different factors that influence tax morale in various settings, as covered in the literature review section, there is limited literature that considers the context of economic shocks, like recessions, or significant changes in political and economic regimes, as in the case of transitioning from Communism. In this thesis I viewed these settings as introducing unique factors that influence tax morale and explored the severity of the economic impacts and how governments responded to these economic shocks. Understanding these factors is important as governments typically experience a greater need to increase their revenue after recessions or as part of an economic transformation.

The thesis is comprised of six chapters. Chapter 1 presents the introduction, including the motivation and objective of the thesis, as well as a review of tax morale literature. Chapter 2 considers the effect on tax morale of being a citizen of a country with a communist heritage. The empirical analysis examines 85 countries around the world, 25 of which have a communist heritage (i.e., are ex-communist), based on a conceptual framework informed by existing literature on tax morale and the psychology of living in an ex-communist country. The results of the analysis show that living in a country with a communist past has a negative association with tax morale. This effect seems to be persistent many years after these countries transitioned out of Communism. The related hypothesis argued that individuals from countries with a history of Communism carry a psychological baggage that is in many ways unique from those living in countries that do not share this heritage.

In Chapter 3 I consider the role of the great recession of 2007–2009 as an economic shock broadly across countries to assess the potential association between citizens' tax morale and their governments' roles, if any, in triggering the recession, the severity of the economic impact, and the nature of the governments' responses. I did this by building a rich secondary data set that included responses from the World Values Survey (WVS), among other sources, and by

applying qualitative comparative analysis (QCA) to conduct a cross-country comparison of 14 countries. The analysis points to an association of positive change in average tax morale per country and change in the ruling party when the trigger of the recession is considered internal. Meanwhile, positive change in tax morale was associated with countries that had no change in ruling party when the trigger of the recession was considered to be due to external factors. Economic conditions appeared only as a peripheral contributing condition in the identified configurations, while smaller fiscal stimulus packages — contrary to expectations — formed part of the configurations associated with a positive change in tax morale.

In Chapter 4 I consider the great recession of 2007–2009 in the United States to assess the potential association between U.S. citizens' tax morale, and the severity of the economic impact and how the U.S. government responded to this financial crisis. I did this by building a rich secondary data set across 29 states from various U.S. government sources and the WVS as input for empirical analysis. The empirical analysis of tax morale across 29 states implied that state-level change in unemployment rates, GDP growth, and foreclosures did not seem to influence individual tax morale. Furthermore, the total size of stimulus packages in each state did not seem to have a statistically significant association with tax morale, when controlling for the change in the individual states' tax policies. Direct stimulus, i.e., household transfers, had a small negative effect on tax morale.

In Chapter 5 I then consider the effect of the intensity of protests across the various governorates in Egypt during the Arab Spring on Egyptians' tax morale and on their embrace of democracy. I measured protest intensity by the per capita casualties (killings and injuries) per governorate during the Arab Spring. The analysis in this section leverages the WVS, specifically Wave 5, which took place before the Arab Spring (2005–2009), and Wave 6, which took place after the Arab Spring (2010–2014). The empirical analysis shows that while the occurrence of the Arab Spring had negative association with tax morale, the intensity of the protest per governorate seemed to have a positive association with tax morale. It also showed that embracing democracy was positively, though not statistically significantly, associated with tax morale. Introducing the embrace of democracy diluted the effect of protest intensity. There was also an empirical positive association between protest intensity per governorate and the increase in the embrace of democracy by Egyptian citizens. Finally, Chapter 6 concludes the thesis by summarizing the study's key findings, policy implications, limitations, and avenues for further research.

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# 1. Introduction and Literature Review

## 1.1 Overview and Motivation

Tax revenues constitute a fundamental way for countries to generate public revenues that make it possible to finance investments in human capital, infrastructure, and the provision of services for citizens and businesses in order to support ongoing economic development (Burgess & Stern, 1993). It is therefore important to understand the factors that may influence citizens' decisions to evade, or not evade, paying taxes, among other levers governments should consider to increase tax compliance. One important aspect to growing tax revenue is to increase tax compliance by reducing the difference between the taxes due, which taxpayers should have paid within a specified period of time, and the amount of tax that has actually been contributed to the state budget (Gemmell & Hasseldine, 2012; Raczkowski & Mróz, 2018). Indeed, International Monetary Fund (IMF) research has affirmed that the extent of tax compliance has important implications for tax revenue yield, efficiency, and for the fairness of any tax system, and that tax evasion undermines revenue collection, distorts competition, and undermines a country's development prospects (Dabla-Norris et al., 2010). To clarify, *tax evasion* is defined as intentional illegal behavior, or as behavior involving a direct violation of tax law to escape the payment of taxes. This includes either failing to file taxes, despite being part of the tax system/formal economy or failing to file due to being part of the shadow economy. In contrast, *tax avoidance* refers to taking "legal" means to identify tax loopholes to pay fewer taxes (Rogers-Glabus, 2015).

A fundamental difficulty in analyzing tax evasion is the lack of reliable information on taxpayer compliance. After all, tax evasion is illegal, and individuals have strong incentives to conceal their cheating, given financial and other penalties that are imposed on those who are found to cheat on their taxes (Alm, 2012). Meanwhile, the *shadow economy* refers to economically legal but hidden activities, in the sense of "black" work, and to some illegal hidden activities, like the trade of illicit drugs or prostitution. The first part, legal undeclared work in the shadow economy, usually involves tax evasion, but taxes can also be evaded while pursuing activities other than those of the shadow economy (Bühn & Schneider, 2012). While the shadow economy is clearly not synonymous with tax evasion, researchers often use shadow economy estimates to proxy the amount of tax evasion (Alm, 2012).

Due to the difficulty of observing tax evasion in the field, since it is an illegal and hence a hidden activity, and due to the fac that direct observations are typically available only for the small fraction of taxpayers audited (Cummings et al., 2009), tax morale is widely centered in tax evasion literature and hence was also used as the main dependent variable

in this thesis. Tax morale has been used in the literature as a proxy for attitudes toward tax evasion and describes the moral principles or values that individuals hold with regard to paying their taxes (Alm & Torgler, 2006). Several studies have shown that tax morale has a significant positive effect on tax compliance decisions (e.g., Cummings et al., 2009; Halla, 2012). Tax morale is typically captured in the literature using questions such as, "Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between: Cheating on taxes if you have a chance." Respondents are asked to evaluate this statement on an ordered scale from Never Justifiable (1) to Always Justifiable (10).

This thesis aimed to shed light on the factors that impact tax morale in the context of economic and/or political shocks, using the transition of communism regimes and the Great Recession as examples to explore the tax morale of the citizens of impacted countries. Despite the extended tax evasion literature that has assessed different factors that influence tax morale in various settings, as covered in the literature review section, limited literature has considered the context of economic shocks such as recessions or significant changes in political and economic regime as in the case of transitions from Communism. In this thesis I viewed these settings as introducing unique factors that influenced tax morale and examined the severity of the economic impact and how the governments responded to these economic shocks. Understanding these factors is important as governments typically need to increase their revenue after recessions or as part of an economic transformation.

## 1.2 Thesis Objective

The objective of this thesis was to consider various economic shocks and how related elements may have had an effect on, or an association with, citizens' tax morale. Accordingly, the thesis includes three papers, each considering an economic or political shock, related factors, and their influence on tax morale. This thesis contributes to tax evasion literature in several ways. For example, the analysis in each paper was informed by a new data set developed from a variety of sources, including some extracted from internet archives, to consider both individual-level observations and country-level factors. Furthermore, I constructed a theoretical framework for each paper, building on the existing literature, while considering factors rarely considered in existing literature, such as the potential effect of the duration of the communist regime (Chapter 2) or the potential effects of the nature of the stimulus packages (Chapters 3 and 4) on citizens' tax morale. The chapters in this thesis are as follows:

- *Chapter 2*: Assesses the effect of being a citizen of a country with an ex-communist heritage on tax morale and considers how long ago the country transitioned from Communism and the duration of the communist regime, among other factors, as part of the analysis.
- *Chapter 3*: Considers the role of the great recession of 2007–2009 as an economic shock broadly across nations to assess the potential association between citizens' tax morale and their governments' roles, if any, in triggering the recession, the severity of the economic impact, and the nature of the governments' responses.
- *Chapter 4*: Considers the Great Recession of 2007–2009 in the United States to assess the potential association between U.S. citizens' tax morale across 29 states and the severity of the economic impact and how the U.S. government responded to this financial crisis.
- *Chapter 5*: Considers the democratic transition following the Arab Spring in Egypt in 2011, analyzing political shock and tax morale. I consider the effect of the intensity of the protests across the various governorates in Egypt during the Arab Spring on Egyptians' tax morale and embrace of democracy.
- *Chapter 6*: Covers overall policy implications and offers concluding remarks.

The next section presents the broad tax morale literature review that informed the overall analysis and themes considered in this thesis. However, there is also a dedicated literature review section in Chapters 2–4 to address the specific context and research questions in each chapter.

## 1.3 Tax Morale Literature Review

### 1.3.1 Traditional Economic Model of Tax Compliance Research

Research on the determinants of tax evasion was initially focused on pure cost–benefit analysis driven by fear of punishment or the fear of paying a penalty when evading taxes. This application of the traditional economic approach, dubbed the Allingham–Sandmo–Yitzhaki or ASY model (Allingham & Sandmo, 1972; Srinivasan, 1973; Yitzhaki, 1974), was based on the economics-of-crime question, also known as the Simple Model of Rational Crime or SMORC (Ariely, 2013). In this approach, individuals are assumed to follow a rational economic choice by maximizing their own utility. Utility in this case is defined from a self-interest perspective as increasing one's own income under conditions of uncertainty of detection. Accordingly, this model of Expected Utility Theory (EUT) of tax evasion predicts a negative relationship between tax rates and evasion whenever fines are imposed on the evaded tax (Piolatto & Rablen, 2017; Yitzhaki, 1974). However, empirical evidence has not clearly supported the various iterations of the ASY model, and there was a call to incorporate behavioral elements in analysis (Alm, 2012; Pickhardt & Prinz, 2014); research on tax evasion thus extended to include behavioral and cultural elements.

The cultural context of tax evasion has been studied in various contexts, mainly in Europe, Latin America, and the United States. *Culture* can be defined as the social norms and individual beliefs that sustain equilibria as focal points in repeated social interactions (e.g., Greif, 1994; Schotter, 1981). For example, Lubian and Zarri (2011) highlighted the change in attitudes towards tax evasion between southern and northern Italy, offering a possible explanation for macro-regional differences in tax evasion attitudes as being related to differences in the stock of social capital between southern Italy and the rest of the country. Moreover, Alm and Torgler (2003) used data for many Western European countries to show that taxpayers from northern Europe exhibited higher tax morale (i.e., willingness to pay taxes) than those from southern Europe.

### 1.3.2 The Slippery Slope Framework

One of the key advancements in literature, to incorporate the behaviors and attitudes of citizens in tax evasion research, has been the Slippery Slope Framework (SSF) (Kirchler, 2007; Kirchler et al., 2008; Kirchler et al., 2010). SSF was born in the field of economic psychology to explain the puzzling findings in tax compliance decisions, and particularly: (1) the high degree of tax compliance in many countries where the level of deterrence is low (Slemrod, 2007;

Torgler & Schneider, 2009), and (2) the huge differences in tax compliance between countries or regions despite the same tax and punishment policies (Rothstein, 2004). SSF endeavored to integrate the economic and psychological factors into a two-dimensional framework asserting that both the power of authorities and the trust in authorities can solve the social dilemma of tax compliance.

The first dimension, the *power* of tax authorities, is broadly defined in this context by taxpayers' perception of authorities' capacity to detect and punish tax evaders (Gangl et al., 2015). The dimension of power can be further considered as having two different forms: *coercive* and *legitimate* power. The perspective on coercive power is based on the economic approach from Becker (1968), which argues for strict control and punishment to influence individuals' utility functions and, in turn, their behavior. Perceived coercive power originates from the pressure applied through either punishment or remuneration. The second and more recently developed approach by Tyler (2006) argues that legitimate power, i.e., the power of accepted authorities, is more appropriate and effective at shaping individuals' behavior than severe controls and punishment. Perceived legitimate power originates from legitimization, knowledge, skills, access to information, and identification with the powerful party, and it comprises soft forms of power (French & Raven, 1959; Gangl et al., 2015).

Coercive and legitimate power are not seen as opposing entities but as independent factors (Hofmann et al., 2014). Authorities can wield coercive power without legitimate power, legitimate power without coercive power, and they can wield both qualities of power at the same time (Hofmann et al., 2014). Hartl et al. (2015) argued that the perception of coercive and legitimate power may differ according to taxpayers' prior experiences with the government in general and with tax authority specifically. For example, factors like a change of government after an election or a revolution can prompt a change in the belief of the intensity of power. Furthermore, as descriptions of prior events are used to qualify current judgments, a change could foster contrasting effects. A change of description of the tax authority often leads to a comparison process in which new evidence on the tax authority is evaluated in contrast to the previous description. For instance, after experiencing a shift from high to low coercive power among the tax authority, taxpayers may react with less compliance than they would within the specific prior descriptions of power, even if key economic figures remain constant. On the other hand, a shift from high to low legitimate power indicates that the tax authority has reduced its services, which generally leads to decreased reciprocal behavior. Taxpayers experiencing these contrasting descriptions might be less compliant than taxpayers who do not undergo this change, but who constantly face low legitimate power.

The contrast of described power (low to high power or high to low power) may therefore impact tax evasion (Hartl et al., 2015).

The second dimension is *trust* in authorities by taxpayers. This relates to the psychological bases of tax compliance and results from taxpayers' general opinion that tax law and regulations are clear and easy to follow and that tax authorities are operating fairly and benevolently in the interest of the community. I use the psychology definition of *trust* to refer to the willingness of a party to take a risk (Lewis & Weigert, 1985) and "to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party" (Mayer et al., 1995, p.712). Like power, the dimension of trust can be further considered as having two forms: *reason-based* and *implicit* trust, which draws on Castelfranchi and Falcone's (2010) work. Reason-based trust results from a deliberate (rational) decision. For example, wahl and Braithwaite (2001) contended that taxpayers' evaluation of a local tax bureau's performance affects tax compliance. Thus, the extent to which the tax office delivers on its charter can be a factor affecting compliance. Ho et al. (2013) concurred with this, stating that as tax authorities fulfill their promise their willingness to follow tax requirements may be higher (Abubakari & Adafula, 2013). Implicit trust is defined as an automatic, unintentional, and unconscious reaction originating from associative and conditioned learning processes and memory, and it is expected to emerge in situations in which shared social identities are activated (Castelfranchi & Falcone, 2010; Coulter & Coulter, 2002). Considering trust from these two lenses benefited the present tax evasion research since it is possible to argue that there are different triggers and implications of these two aspects of trust. For example, it can be expected that an authority who is perceived as belonging to the same category as the taxpayer will be evaluated positively and the implicit trust will be higher than the trust in authorities perceived to belong to another category (Tanis & Postmes, 2005).

Empirical evidence generally supports the relevance of power and trust as determinants of tax compliance (Kirchler et al., 2010; Kogler et al., 2013; Wahl et al., 2010). It is worth noting that power and trust can co-exist in the form of legitimate power (driven by fair elections, transparency, etc.), fostering voluntary tax compliance (Gangl et al., 2015). Furthermore, Frey (2003) suggested that, "tax morale must be put in the general context of the relationship between citizen and the state" (p. 389). The political disaffection thesis argues that when citizens lose trust in government, they begin to believe that tax liabilities are too high (Rudolph, 2009). Consequently, distrust in government may provide the means whereby taxpayers rationalize evasion. In a series of studies using information from the WVS, Torgler (2003,

2004) found that trust in government is positively related to individuals' willingness to voluntarily comply with tax laws in various countries (Jimenez & Iyer, 2016).

In terms of triggers of the perception of government with regard to trust and power, literature provides several indicators. For example, Sheffrin and Triest (1995) examined the relationship between the perceived honesty of government and compliance and found a significant positive relationship. Taxpayers' trust in the government was related to their perceptions of corruption in the government. Existing evidence suggests that there is a positive correlation between corruption and tax evasion. The two often coexist and reinforce one another (Amundsen, 1999; Barreto & Alm, 2003; Litina & Palivos, 2016). Furthermore, as Torgler (2005a) noted, the more taxpayers participate in political decisions, the more the tax contract is based on trust and, therefore, the higher tax morale. This argument was strongly supported by empirical evidence provided by Pommerehne and Weck-Hannemann (1996), who found that tax evasion was lower in those Swiss cantons in which citizens enjoyed direct rights concerning budgetary decisions. On the other hand, dummy variables for regions or countries are difficult to interpret due to their "black box" potential (Lago-Peñas & Lago-Peñas, 2010).

Meanwhile, Frey and Feld (2002) used Crowding Theory to show the impact of the behavior of the tax authority on tax compliance, implying that taxpayers' tax morale increases when tax officials treat them with respect. In contrast, when tax officials solely rely on deterrence, taxpayers tend to respond by actively trying to avoid taxation (Feld & Tyran, 2002). The "respectful" relationship of tax authorities to taxpayers will bolster tax morale, while an "authoritarian" relationship using instruments of deterrence has two countervailing effects: first, the change in relative prices (a higher probability of being punished) reduces the incentive to evade taxes, while, second, tax morale is undermined or crowded out. Feld and Tyran's (2002) experimental analysis supported this theory. They found that tax compliance was higher on average in endogenous fine treatment, in which subjects were allowed to approve or reject the proposal of a fine, in contrast to exogenous fine treatment. The main explanation why people showed higher tax morale if they were allowed to vote on a fine was legitimacy. Not only did subjects who approved of the fine in the endogenous fine treatment have considerably higher tax compliance than subjects in the exogenous fine treatment; the researchers also found that the reciprocity norm extended beyond voting issues. The more subjects expected others to comply with tax law, the higher their tax morale as well, and the higher their tax morale, the more they expected others to contribute (Feld & Tyran, 2002).

### 1.3.3 The Fairness Paradigm

Fairness can be defined broadly as both an aversion to inequality and a concern for reciprocity, where how people feel about others depends on how they expect to be treated. From a tax compliance perspective, fairness and justice are related to the perceived balance of taxes paid and public goods received, and to the perceived justice of procedures and consequences of norm-breaking (Hofmann et al., 2008). The fairness paradigm is mainly driven by equity theory (Pritchard, 1969) and by the idea of how social proximity and citizens' sense of justice relate to the extent and procedure of sharing public services; these in turn influence tax evasion attitudes (Andreoni et al., 1998; Kirchler, 2007; Kirchler et al., 2008). In addition, Cummings et al. (2005) and Torgler (2004) combined experimental and survey data from the United States, Botswana, and South Africa to investigate whether cross-cultural differences could explain tax compliance behavior across these countries. Their results indicated that the observed differences in tax compliance behavior could be explained by differences in the fairness of tax administration, in the perceived equity of the fiscal exchange, and in the overall attitude toward the respective governments across countries (Alm & Torgler, 2004).

The existing literature has indicated that tax evasion is also related to taxpayers' dissatisfaction with the provision of public goods by the government (Alm et al., 1993; Porcano, 1988; Spicer & Lundstedt, 1976). The degree of taxpayers' satisfaction with government seems to play an important role. Alm et al. (1992) analyzed the recognition of government services and concluded that there appeared to be limits to how much governments could affect compliance by increasing the individual payoffs to tax payments. They also noted that the results suggested that government can increase compliance by providing goods that their citizens prefer more, by providing these goods in a more efficient manner, or by more effectively emphasizing that taxes are necessary for receipt of government services. Moreover, there seems to be a negative correlation between tax evasion and spending on publicly provided goods, such as education and health (Litina & Palivos, 2016; Mauro, 1995, 1996; Tanzi & Davoodi, 1997). Furthermore, Lamberton et al. (2014) argued that tax aversion is created through the decoupling of tax payments and the public goods obtained in return and that this disconnect places distance between payment and benefit, decreasing taxpayers' perceptions of the tax-funded benefits they receive. Data suggest that the under-recognition of benefits is widespread: in one survey among Americans who claimed that they had never used a government social service, 53% had in fact taken out student loans, and 40% had benefited from Medicare (Mettler, 2011). Because perceptions of such benefits are low at the time of payment, decoupling may undermine tax compliance (Soman & Gourville, 2001; Thaler, 1999).

### 1.3.4 Social Norms and Tax Morale

Social norms consist of a pattern of behavior that must be shared by other people and sustained by their approval and disapproval. Having a socially shared belief on how one ought to behave can arguably trigger an enforcement mechanism in the form of informal social sanctions (Elster, 1989; Fehr & Gächter, 1998). Wenzel (2004) argued that the relationship between strong social norms to comply and actual compliance is mediated by people's attachment to their reference group or society. This is in line with Self-Categorization Theory (Turner et al., 1987), which assumes that individuals are more likely to be influenced by the norms established by their group if they consider the group to which they belong to be highly relevant for their self-image and if they identify with their group. Numerous researchers have pointed to social norms being an important predictor of tax compliance. For example, Frey and Torgler (2009) suggested that since tax compliance takes place in a social context, conditional cooperation is thus an important factor to explain the extent of tax morale and tax evasion. They found empirical evidence for Western and Eastern European countries that tax morale decreased if taxpayers perceived that tax evasion was a common phenomenon, while tax morale increased if other taxpayers were perceived to be honest. Similarly, Porcano (1988), O'Donnell (2005), and Hofmann et al. (2008) explained that, depending on the perceived evasion in one's reference group, such as professional groups, friends, and acquaintances, and the acceptance of evasion, taxpayers may decide to either comply or evade taxes. This led to a number of papers confirming the importance of communicating social norms regarding the payment of taxes as a social duty to citizens, alongside evidence that the majority of other taxpayers in their country/region paid their taxes on time, to increase the tax compliance rate (Alm et al., 1999; Hallsworth et al., 2017; Hofmann et al., 2008). That said, other scholars conducting field experiments did not find significant effects in communicating that the majority of taxpayers were compliant with the law (e.g., Blumenthal et al., 2001; Dwenger et al., 2016; Fellner et al., 2013). This contradiction in findings may be attributed to the identification problem in measuring the effects of social interactions (Blume & Durlauf, 2006; Manski, 1993). The identification problem arises from the fact that interdependent behavior takes different forms that are difficult to isolate. In Manski's (1993) terminology, the propensity of an individual to evade may genuinely vary according to the behavior of the group (endogenous interactions such as social conformity and social learning effects), but it may also vary with the exogenous characteristics of the group members (Fortin et al., 2007).

Furthermore, social psychology research has evolved to suggest that social norms are not a single construct, and that there are four different types of norms: (1) personal, (2) descriptive, (3) injunctive, and (4) subjective. These norms differ in their source and in the influence they have on individuals' conformity to a group. These norms not only influence

tax compliance decisions in varying degrees but are also interrelated. Jimenez and Iyer (2016) argued that the relationship between these norms and their individual impacts on compliance behavior is important because efforts to increase compliance can be targeted to influence a specific subset of norms. They summarized these four norms as follows. First, *personal norms* denote an individual's own moral standards and behavioral expectations (Cialdini & Trost, 1998; Wenzel, 2004). Personal norms develop through the internalization of the social norms of the groups an individual identifies with (Wenzel, 2004). Second, *descriptive norms* are perceptions of how other members of a group actually behave (Bobek et al., 2013). Descriptive norms are based on the actions of other members of a group and may sometimes conflict with the behavior the group approves of (Cialdini & Trost, 1998). Descriptive norms can encourage compliance with tax laws or evasion by helping individuals justify their actions. Third, *injunctive norms* are perceptions of what behaviors most people in a group approve or disapprove of (Cialdini & Trost, 1998). These are the norms that most people refer to when they discuss social norms in general (Allison, 1992). In contrast to descriptive norms, which describe how people actually act, injunctive norms represent how people should act (Bobek et al., 2013; Kallgren et al., 2000). Fourth, *subjective norms* are often referred to as peer pressure. Subjective norms are the perception of how most people important to an individual believe he/she should act (Fishbein & Ajzen, 1975). Since subjective norms represent the norms of those closest to an individual, their influence on behavior may be stronger than other norms.

## 1.4 Dealing with Endogeneity

Since the empirical chapters in this thesis relied primarily on observational survey data from the World Values Survey (WVS), there were potential endogeneity problems. As a result, I cannot claim strict causality from the analysis. In the context of tax morale, several mechanisms can generate endogeneity. Unobserved factors such as deep-seated cultural norms or historical experiences may simultaneously affect both tax morale and key explanatory variables (for example, perceptions of government performance or exposure to economic shocks). Moreover, tax morale and political attitudes may be jointly determined: greater trust in government can foster higher tax morale, but high tax morale and civic engagement may also strengthen democratic institutions and state capacity over time. Such feedback loops make it difficult to interpret simple cross-sectional correlations as causal effects (Glaeser et al., 2000).

Because of these issues, the empirical results presented in Chapters 2–5 are interpreted as associations in a given direction (positive or negative), rather than as definitive causal effects. Each chapter includes a *limitations* or *endogeneity* subsection that discusses the main identification challenges in more detail. For example, in Chapter 2 the definition of *ex-communist* countries creates potential selection issues: countries that successfully transitioned from Communism could systematically differ from those that did not. This threatened the internal validity of the estimates and made it difficult to isolate the effect of the communist legacy on tax morale. I used robustness checks using alternative definitions of *ex-communist countries* to assess how sensitive the results were to this source of selection. Related concerns arose in Chapter 3, which examines how the size and composition of fiscal stimulus packages during the Great Recession were associated with tax morale. Here, omitted variable bias was a central issue: countries that provided larger stimulus packages were unlikely to be random but might systematically differ in their unobserved characteristics, such as administrative capacity, institutional quality, welfare state structures, or civic culture. These same features were also likely to influence tax morale. If they were not fully observed and controlled for, the estimated association between stimulus size and tax morale could be biased. In this sense, omitted variable bias can be viewed as a particular manifestation of selection bias, where selection into the "large stimulus" group was driven by underlying country characteristics.

Chapters 4 and 5 consider more dynamic political and economic environments, where reverse causality and simultaneity become especially relevant. In Chapter 4, government responses to the financial crisis could have been shaped by prior levels of tax morale, while at the same time influencing future tax morale. In Chapter 5, protest intensity, democratic attitudes, and tax morale around the Arab Spring could have evolved jointly, with attitudes both affecting and

responding to political events. These dynamics made it particularly challenging to disentangle causal relationships using simple cross-sectional comparisons.

To reduce (though not fully resolve) these endogeneity concerns, I adopted several strategies in the empirical analysis. First, all chapters include a rich set of individual-level controls (ex., age, gender, income, education, and employment status) and, where relevant, country-, state-, or governorate-level variables (ex., inequality, corruption, welfare state characteristics, and indicators of the crisis). These controls helped account for observed heterogeneity. Second, when multiple WVS waves were available, the analysis exploited repeated cross-sections (not a panel of the same individuals) and focused on within-country or within-governorate changes over time rather than on purely cross-sectional differences. Country, state, or governorate fixed effects and wave (time) fixed effects were included where appropriate, so that identification came from changes over time, the net of time-invariant unobserved heterogeneity and common shocks. Third, standard errors were clustered at the relevant country, state, or governorate level to allow for within-cluster correlation in unobservables. Despite these steps, endogeneity could not be completely ruled out, particularly with respect to unobserved time-varying factors and feedback between attitudes and political or economic conditions. The results in this thesis should therefore be viewed as providing robust evidence on patterns of association between tax morale and the shocks and institutional features studied, under clearly stated assumptions, rather than as delivering fully identified causal effects.

# 2. Ex-Communist Heritage and Tax Morale: Is There a Universal Connection?

## 2.1 Introduction

Over the past decades, more than 25 countries have transitioned from Communism, with most of them beginning this transition in the early 1990s in the Eastern European bloc. As part of this transition, many ex-communist countries started adopting open market policies and an economic reform agenda, including adopting tax reform initiatives based on Western tax structures. It is worth noting that taxation is, by and large, the most important source of government revenue in nearly all countries. According to the most recent estimates from the International Centre for Tax and Development, total tax revenues account for more than 80% of total government revenue in about half of the countries in the world, and more than 50% in almost every country. Tax evasion in ex-communist countries is persistently higher than the world's average; the estimated overall average shadow economy (a proxy of the extent of tax evasion) in countries with a communist past is ~34% of GDP, while the global average is ~31% of GDP (Mai & Schneider, 2016; Medina & Schneider, 2018). It is therefore important to understand if there are unique factors influencing tax evasion activities, and hence tax morale, in ex-communist countries.

Tax morale is a proxy for attitudes towards tax evasion, describing the moral principles or values that individuals hold about paying their taxes (Alm & Torgler, 2006). There is limited literature considering tax morale in ex-communist states, with exceptions like Trüdinger and Hildebrandt (2013) and Torgler (2012). Their research focused on European countries and at a single point in time, rather than conducting analysis over multiple periods of time as in the present study. To complement this scarce literature, the present research built on two strands of the literature: the first covers the societal and psychological impacts on citizens living in countries with a history of Communism (Abbott et al., 2011; Alesina & Fuchs-Schuendeln, 2005; Klicperova et al., 1997; Letki, 2004; Pop-Eleches & Tucker, 2011), and the second considers the behavioral factors impacting tax morale (Alm & Torgler, 2004; Gangl et al., 2015; Hayoz & Hug, 2007; Lisi, 2014; Slemrod, 2009). This chapter combines and builds on these two strands of literature to consider how the unique elements related to living in an ex-communist country may have an association with tax morale. The aim was to assess whether lower tax morale (i.e., willingness to pay taxes) is associated with the heritage of Communism and with the duration for which a country was under a communist regime, the main independent variables.

The contribution of the present study to the field is threefold. First, this chapter leverages a longitudinal data set from five waves of the WVS (Inglehart et al., 2014), including 225,312 individual observations across 85 countries, 25 of which are ex-communist, spanning the period 1990–2014. This approach enabled the higher accuracy of estimates compared to using observations from a single WVS wave to assess the lingering effects of the communist heritage. Second, the theoretical framework included factors rarely covered in depth in existing tax morale literature, such as the potential effect of the duration of a communist regime on citizens' tax morale. Third, the theoretical framework considered three factors as mediating variables on the potential association of communist heritage and tax morale: trust in government, political apathy, and expectations of government responsibility.

The results of the analysis showed that living in a country with a communist past had a negative association with tax morale for individuals living in these countries. This effect seemed to be persistent many years after these countries transitioned out of Communism. Further analysis implied that this negative association with tax morale applied specifically to ex-communist countries that were currently under democratic regimes. Furthermore, the analysis showed that the duration of communist regimes had a negative association with tax morale, many years after the transition from Communism. Meanwhile, trust in government, expectations of government responsibility, and political apathy did not appear to be meaningful mediating factors to the effects of the ex-communist heritage on tax morale.

## 2.2 Background and Literature Review

### 2.2.1 Living in an Ex-Communist Country

The literature on individuals living in countries with a communist heritage pointed to a tense dynamic in the relationship between citizens and the communist state. Communist states tended to have tight media control and pushed for heavy communist propaganda. Although this propaganda was not generally believed en masse, it produced confusion and doubts about reality (Almond, 1983). The double standard of truth and the conflict between official ideology and the dismal reality led to hypocritical behavior and a double standard of morality or a "divided self" (Scheye, 1991). It also resulted in learned helplessness (Maier & Seligman,1976), implying that, to survive, it was to one's advantage to lie and deceive others (Klicperova et al., 1997). During Communism, dishonest behavior towards the government was often seen as acceptable and even praiseworthy due to the regime's perceived illegitimate power.

Furthermore, under various forms of Communism, citizens typically relied on and expected the government to be responsible for their well-being. With most services and products supplied by the public sector, the state assumed a patriarchal relationship with citizens. Empirical analysis of ex-communist countries has supported the notion of higher reliance on the government in countries with a communist heritage. For example, using the German Socioeconomic Panel (GSOEP) private household survey data set from 1990–2002 covering both the regions of East and West Germany, researchers point that 45 years of heavy state intervention and indoctrination instilled a view in people living in the former East Germany that the state was essential for individual well-being (Alesina & Fuchs-Schuendeln, 2005). One of Alesina and Fuchs-Schuendeln's (2005) main explanations for why former East Germans are still today more likely to favor state intervention is that East Germans believe much more than West Germans that social conditions determine individual fortunes, a belief that the authors argued is a basic tenet of communist ideology. This implies higher reliance and greater expectations from the government by citizens of ex-communist states.

As many communist countries transitioned to an open-market economy, they rolled out various elements of privatization, fiscal reforms, including iterative tax system reforms, and reductions in public services. The transition from a bureaucratic–redistributive order to an imperfect market order was mostly accompanied by a dramatic decline in GDP, a decline in state spending on health, education, and social security benefits both in absolute and real terms, an increase in unemployment and under-employment, the non- and late payment of wages, a decline in the influence of trade unions, an increase in inequalities, poverty, and malnutrition, and a growth in informal economic activity (Szczepanski & Sliz, 2010). These changes and the slow pace of reforms, as post-communist governments needed time to build foundational systems that did not exist during the communist regime, led to shocks for ordinary citizens and gave rise to further disappointment among citizens. This dynamic further reinforced the communist-era discontent (Pop-Eleches & Tucker, 2011) and political apathy (Klicperova et al., 1997).

### 2.2.2 The Lingering Effects of Communism's Shadow and the Impact of Its Duration

Trüdinger and Hildebrandt (2013) argued that personal beliefs are acquired through experiences early in life and that adaptation to the living conditions and the indoctrination by communist authorities will therefore have left greater marks in communist regimes that lasted longer. The authors also argued that a longer period of communist rule would have provided more opportunity for communist ideology to penetrate all parts of society, equipping agents of political

socialization (such as schools, the media, and mass organizations) with better means to convey this ideology and to influence people's ways of life (Trüdinger & Hildebrandt, 2013).

Meanwhile, in "Social Capital and Civil Society," Fukuyama (1999) asserted that social capital reduces the transaction costs associated with formal coordination mechanisms like contracts, making coordination much simpler and easier, which probably extended to the payment of taxes. Research indicates that communist regimes had a significant long-term negative effect on social capital and on the different measures of trust, and that this effect was independent and stronger than the effect of simply having an experience with other types of regimes. The negative impact on social capital tended to persist post-transition even after controlling for other variables measuring commonalities between countries (Bjørnskov, 2007; Traps, 2009). Indeed, many post-communist states saw significant levels of apathy and a lack of political participation several years after the transition (Letki, 2004). Furthermore, Pop-Eleches and Tucker (2011) pointed to a lingering effect of the communist heritage on citizens of the Soviet bloc with a stubborn post-communist deficit in public confidence toward political parties. Alesina and Fuchs-Schündeln (2005) asserted in their analysis of East versus West German attitudes that the effects of Communism were indeed significant and long-lasting. They also suggested that it would take one to two generations for former East and West Germans to look alike in terms of preferences and attitudes about fundamental questions regarding the role of the government in society (Alesina & Fuchs-Schuendeln, 2005).

### 2.2.3 The Communist Heritage and Paying Taxes

Tax revenues in former communist countries came mostly from profit, turnover, and payroll taxes levied on state-owned enterprises. The *profit tax* had high rates, applied to only a few entities that had semi-private operations, and was used to regulate enterprise income. Under communist regimes, people were largely unaware, save for narrow groups of so-called *private entrepreneurs*, of the existence of taxes (Hayoz & Hug, 2007). Turnover taxes applied mainly to consumer goods and to some services. Compared with this, individual income taxation was negligible. As a result, following the transition, citizens were unfamiliar with the idea of a tax burden and were not used to paying taxes (Martinez-Vazquez & McNab, 2000; Trüdinger & Hildebrandt, 2013). Hence, citizens did not automatically accept the concept of paying taxes after the transition from Communism. This was in sharp contrast to welfare states with a strong democratic socialist agenda (e.g., Nordic countries), where citizens were typically keenly aware that expecting more from the government also implied that citizens would need to contribute more, including in the form of taxation.

### 2.2.4 Literature on Tax Evasion/Tax Morale

The existing literature on tax morale considering behavioral factors has supported the association between trust in government and tax morale (Frey & Torgler, 2007; Kirchler, 2007; Kirchler et al., 2008; Kirchler et al., 2010; Slemrod, 2007). *Trust* in this context refers to taxpayers' trust in authorities and results from taxpayers' general opinion that the tax law and regulations are clear and easy to follow and that the tax authorities operate fairly and benevolently in the interest of the community (Gangl et al., 2015). Kouame (2019), Slemrod (2003), and Torgler (2003, 2005a) corroborated these findings, showing that the decline in trust in government had a negative effect on tax evasion in Africa, the United States, West Germany, and Switzerland. Moreover, research points to a strong connection between level of trust in government and political participation, and tax morale (Alm & Torgler, 2004; Casal et al., 2016; Gangl et al., 2015; Hayoz & Hug, 2007; Lisi, 2014; Slemrod, 2009). That said, Abbott and Sapsford (2006) argued that new regime type is not to blame for lower levels of trust in post-communist states but that it instead stems from a return to traditional values where people put their trust solely in those closest to them, such as family and friends. If this is the explanation for lower trust in post-communist governments, then lower tax morale may not necessarily follow.

Regarding the role of political apathy on tax morale, Torgler (2005) noted that the more taxpayers participate in political decisions, the more the tax contract is based on trust and, therefore, the higher the tax morale. This argument was supported by empirical evidence provided by Pommerehne and Weck-Hannemann (1996), who showed that tax evasion was lower in those Swiss cantons in which citizens enjoyed direct rights concerning budgetary decisions. Meanwhile, research on the potential effect of citizens' expectations of government responsibility on tax morale is scarce and has shown mixed results. For example, Streiff (2013) looked at the effects of German unification on tax morale and reported that the relationship between tax morale and attitudes regarding government responsibility was statistically modest and substantively negligible.

## 2.3 Theoretical Framework

The theoretical framework shown in Figure 2.1 builds on literature covered earlier related to the psychology of individuals living in countries with a heritage of Communism and on tax compliance. It considers various specific dynamics at play for citizens of ex-communist countries and how these dynamics may influence their tax morale. The following section provides a detailed analysis of these dynamics, building on existing literature as a foundation.

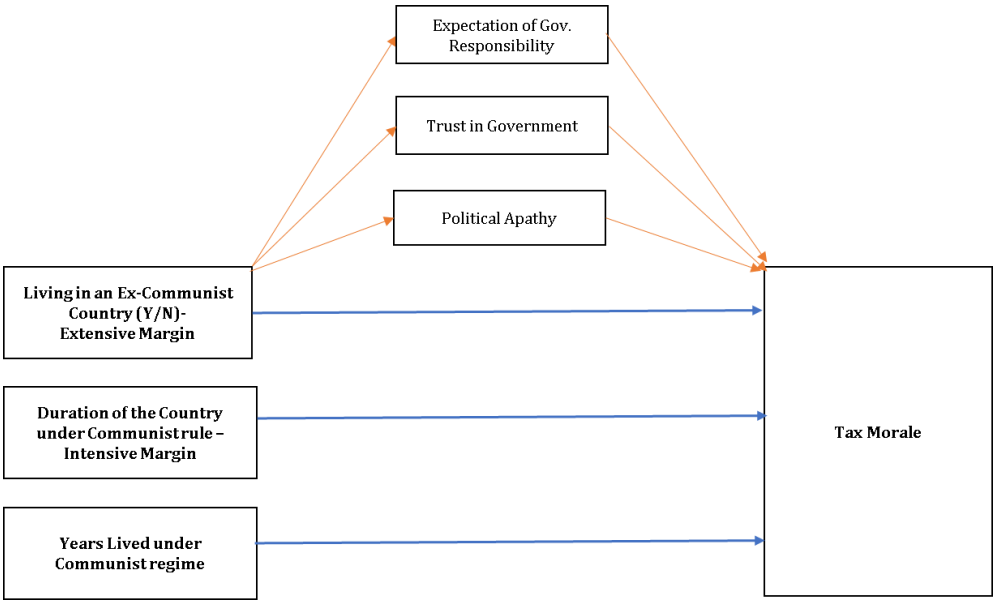



**Figure 2.1**: Theoretical Framework

**Source**: Author's Own

### 2.3.1 Heritage of Communism and Tax Morale

As discussed in the literature review, there are several factors supporting the hypothesis that both the heritage of Communism and the duration for which a country is under a communist regime are extensive margins influencing citizens' tax morale. There are arguments that a communist heritage influences tax morale in both negative and positive directions. On the positive end, citizens can show their appreciation of the government's services and of public services by reciprocating with a greater willingness to pay taxes than people from countries with no communist heritage. However, the literature reviewed earlier showed that citizens were generally frustrated with the slow reforms post-Communism, a dynamic further reinforcing communist-era disappointment (Goldfarb, 1992). This pointed to citizens of ex-communist

countries being more likely to have lower tax morale, and a likelihood that the longer a country was under a communist regime the more prevalent effect of the communist heritage on tax morale. This gave rise to the following hypotheses:

> *Hypothesis 1*: Individuals living in a country with a heritage of Communism will have on average lower tax morale than that of individuals from other countries.

> *Hypothesis 2*: The longer countries have been under a communist regime, the lower the tax morale of individuals living in those countries.

Considering that the timeframe included in the analysis was 1990–2016, the age of the respondents could be of special interest since the longer an individual had lived under a communist regime, the more exposure they had to this regime and to its related potential effects on their psychology. This resulted in the third hypothesis:

> *Hypothesis 3*: The duration an individual lived under a communist regime had a negative association with their tax morale.

### 2.3.2 Heightened Expectations, Lingering Distrust, and Political Apathy as Potential Mediating Variables

Building on the hypotheses regarding the relevance of living in an ex-communist country on tax morale, this section considers specific channels for this effect. Generally, the literature supports a lingering effect of attitudes held during the communist era even many decades after the transition of communism regimes; these include effects like political apathy and a lack of trust in government, with the effect being stronger the longer a society lived under a communist regime (Trüdinger & Hildebrandt, 2013). Furthermore, as discussed, under various forms of Communism, most services and products were supplied by the public sector, and the state assumed a patriarchal relationship to citizens. Therefore, citizens typically expect the government to be responsible for their well-being. The more an individual thinks that it is society's "fault" if someone is poor, unemployed, or sick, the more that person is in favor of public intervention and holds higher expectations of the government. This dynamic arguably impacts how such citizens perceive the government, and potentially also their willingness to pay taxes, compared to citizens from other countries.

The theoretical framework furthers this insight by considering the implications of citizens feeling let down by their government after the transition and their willingness to engage in dishonest behavior towards the government. As many communist countries transitioned to a more open-market economy, they rolled out various elements of privatization, fiscal reforms, including iterative tax system reforms, and reductions in public services. These changes and the slow pace of such reforms resulted in significant shocks to ordinary citizens and served as a source of further disappointment among citizens, reinforcing communist-era disappointments (Pop-Eleches & Tucker, 2011). Hence, the following hypotheses emerged, highlighting that lack of trust in government, political apathy, and higher expectations of government responsibility and related disappointment could be channels mediating the effect of the communist heritage on tax morale.

*Hypothesis 4*: Trust in government has a mediating effect on the association of citizens living in an ex-communist country and their taxes.

*Hypothesis 5*: Having higher expectations of a government's responsibility towards its citizens has a mediating effect on the association of citizens living in an ex-communist country and their tax morale.

*Hypothesis 6:* Having higher political apathy has a mediating effect on the association of citizens living in an ex-communist country and their tax morale.

## 2.4 Research Design

### 2.4.1 What is an Ex-Communist Country?

This study used the definition of Chen and Sil (2009) for an *ex-communist country*; the authors noted that a country is considered to have previously been *communist* if it has experienced a lengthy period (*at least two decades*) of rule by a single party that (i) restricts political leadership to those ideologically committed to promoting international communism and transforming preexisting class relations in one way or another, and (ii) pursues a program of economic development in which central planning overseen by communist party officials is privileged over market mechanisms and participation in the international capitalist economy (Chen & Sil, 2009). Furthermore, during Communism, in addition to the police and military appropriating a larger share of national wealth for themselves, as is typically the case in autocratic regimes, Winiecki (1986) asserted that communist states were unique in how they used the centralization of the economy and politics to exploit government resources. The political control of the economy, a fundamental communist principle,

allowed party apparatchiks and bureaucrats to benefit by interfering in the process of wealth creation itself, causing the central economy to lead to experience greater distortion than other economies (Traps, 2009).

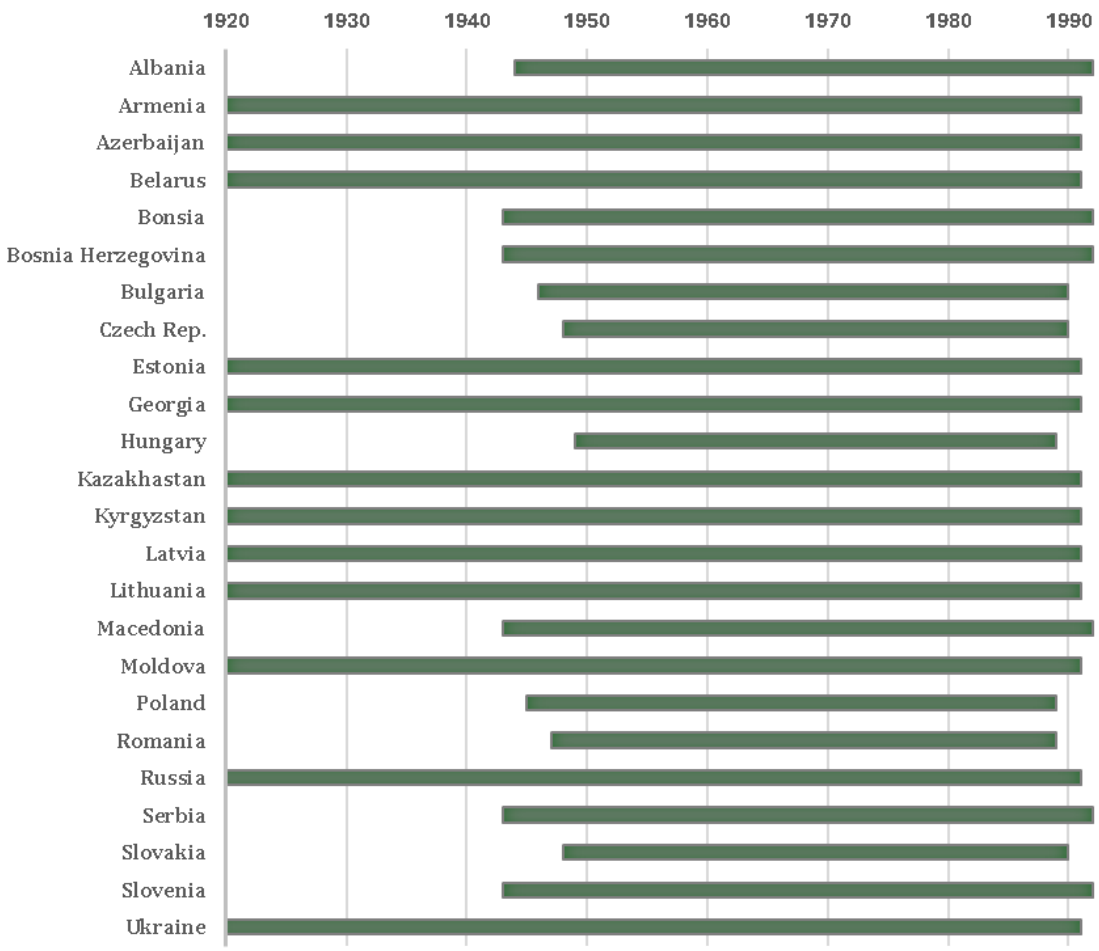



**Figure 2.2**: List of Ex-Communist Countries using definition by (Chen & Sil, 2009), the length of the green bar indicates the duration of the communist regime showing start and end dates

**Source**: Author's Own

## 2.4.2 Data

The main source of data for this chapter is the WVS for individual-level data (Inglehart et al., 2014). This study used the longitudinal data set covering WVS Waves 2 to 6 and spanning the period 1990–2014. The WVS data was complemented by country-level corruption and inequality indices, which were used as country-level control variables. In total, the data set used in the empirical analysis included 225,312 individual observations across 85 countries. Out of the

ex-communist countries listed in Figure 2.2, 25 countries included in the analysis had a history of Communism, applying the definition of Chen and Sil (2009), as listed in Table 1, and related regions and coverage in terms of the observations in the WVS. The core analysis did not consider countries that were still considered to be communist (e.g., China and Vietnam), since: (1) the hypotheses were centered on countries that had transitioned out of Communism, and (2) these countries were considered autocratic, which could bias the observations (the delineation between being democratic or autocratic while being having a communist heritage is addressed in a later section).

The dependent variable in this study was tax morale (TM), which was obtained from the WVS in response to the following survey question: "Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between: Cheating on taxes if you have a chance." Respondents were asked to evaluate this statement on an ordered scale from Never Justifiable (1) to Always Justifiable (10). This survey question was the best available source to measure tax morale since, compared to other survey questions, its formulation is quite general, and a reasonable number of respondents from a large set of countries over time is available (Halla, 2010). For this study, TM was a binary variable generated using the tax morale WVS question with (1) for those answering Never Justified and (0) for the rest of the answers. This seemed like a reasonable approach considering the distribution of responses; 35% of total responses in the WVS were mapped to (1) and the rest mapped to (0). Moreover, this approach provided a clear view of those who expressed no willingness to evade taxes at all (TM = 1) and those who had some degree of willingness to evade (TM = 0). A robustness check included in a later section used linear regression with tax morale as a continuous dependent variable (1–10).

The main independent variables were specified as follows:

(1) $Comm_c$: A country-level communist heritage binary variable, with (1) for a country that had a heritage of Communism and (0) otherwise.

(2) $Comm_Dr_c$: A country-level variable indicating the number of years a country had been under a communist regime in relation to the year of the WVS responses for accuracy.

The other independent variables assessed as potential channels for the influence of communist heritage on tax morale were the following:

(3) $Trust_{ic}$: A dummy variable indicating the level of trust in the government by each respondent in their respective country; (1) indicated high trust in government and (0) indicated low trust in government. This variable was generated from the categorical question from the WVS asking respondents to rank trust in government as the following: 1. A great deal, 2. Quite a lot, 3. Not very much, 4. None at all. By combining responses 1 and 2 from the WVS question, this mapped to (1) for the *trust* variable and (0) for the other two responses, considering the seemingly clear split of the four categories between positive and negative tones.

(4) $Pol_Apathy_{ic}$: A categorical variable of political apathy for each respondent in their respective country using responses on signing petitions from the WVS as a proxy for political action and engagement, with the following indicators: 1. Have done, 2. Might do, 3. Would never do.

(5) $GovResp_{ic}$: A variable indicating for each respondent in their respective country their expectation of the level of the government's responsibility towards its citizens. This was derived from a categorical question from the WVS asking respondents to rank government responsibility by asking if the people should take more responsibility, with answers scaling from (1) to (10) on whether the government should assume more responsibility.

Furthermore, the model also included other individual-level control variables from the WVS: age, income, and gender. Considering that the timeframe included for analysis was 1990–2014, the age of the respondents could be of special interest since the longer an individual had lived under a communist regime, i.e., the older they were during the timeframe considered, the more exposure they had had to the regime and to the related potential implications on their psychology. To assess this potential effect, we introduced the *AgeComm* variable for respondents who live in an ex-communist country. It was calculated using the following equation:

$$TsncComm = WVSyear - CommEnd \quad (2.1)$$

$$CommDr = CommEnd - CommStart \quad (2.2)$$

$$AgeComm = Age - TsncComm \quad (2.3)$$

$$If\ CommDr < (Age - TsncComm) \longrightarrow AgeComm = CommDr \quad (2.4)$$

*AgeComm = 0, if Comm=No*

- *AgeComm*: How long the respondent had lived under a communist regime.

- *Age*: Age of respondents in the WVS at the time the survey was conducted.
- *TsncComm*: Time since Communism had ended in the country where the respondent lived.
- *WVSyear*: Year the WVS was conducted.
- *CommEnd*: Year the communist regime ended for each country in scope.
- *CommStart*: Year the communist regime started for each country in scope.

The AgeComm variable was set to 0 for respondents in countries that did not have a heritage of communist regimes or for currently communist countries, since they were not the focus of the analysis. Furthermore, negative values for AgeComm were set to zero, since this meant that the respondent was born after Communism ended. As an illustration, we might consider someone from Albania aged 65, interviewed in 1998 as part of WVS2. The communist regime in Albania spanned 1944–1992. Hence, this person lived under Communism for 48 years, which was the duration of communism in Albania. The caveat for this variable was that it assumed that there were no immigrants included in the respondents' pool in the WVS for the countries in scope (i.e., all respondents were born in the country where they were responding to the survey), which was indeed a simplification.

For the definition and coding of countries as autocratic over the years, the Polity IV score (Marshall & Robert Gurr, 2013) was used. We included four variables:

- *DemNotComm* for democratic (i.e., countries with Polity IV score 10 to 1), not ex-communist, countries
- *DemComm* for democratic ex-communist regimes
- *AutocraticComm* for autocratic (i.e., countries with Polity IV score 0 to -10) and ex-communist countries
- *AutocrticNotComm* for autocratic not ex-communist countries.

The DemNotComm variable was the base variable in the analysis.

Both country-level inequality ($InEq_c$) and corruption ($Corrp_c$) indices were included as control variables. Corruption has been considered in tax evasion literature indicating that corruption and the misuse of government revenue often provide the moral justification for tax evasion (Litina & Palivos, 2016). Considering potential endogeneity issues between corruption and inequality in the context of this study, these were included progressively in the analysis, mainly

to assess if corruption and/or inequality were the main underlying factors for why citizens from countries with a communist heritage had lower tax morale. Finally, *Wave* was a categorical variable covering Waves 2–6 (1994–2014) to control for wave/time fixed effects. We also used the WVS weighting factor S018 to ensure that all samples contributed equally to a combined analysis, giving each country the same effective N. Table 2.1 provides the summary descriptive statistics table for the main variables.

**Table 2.1: Descriptive Analysis for main variables considered in the analysis:**

| Variable | Obs | Mean | Std. dev. | Min | Max |
|---|---|---|---|---|---|
| Tax Morale | 276,535 | 0.63 | 0.49 | 0.00 | 1.00 |
| History of Communism Heritage (ex-communist) | 67,806 | - | - | 0.00 | 1.00 |
| Duration of Communism Regime (for those with history of Communism) | | 56.75 | 17.24 | 2.00 | 74.00 |
| Trust in Government | 276,535 | 0.46 | 0.50 | 0.00 | 1.00 |
| Expectation of Government Responsibility | 276,535 | 0.221 | 0.42 | 1.00 | 10.00 |

*Notes:* This table reports descriptive statistics for the main variables used in the empirical analysis. The sample includes all individuals from WVS waves 2–6 in the countries in scope.

- **TM (Tax Morale)** is a binary variable generated using the tax morale WVS question with (1) for those answering, "never justified" and (0) for the rest of the answers.
- **Comm(History of Communism Heritage (ex-communist))**: A binary variable: (1) for a country that has a heritage of communism, and (0) otherwise.
- **Comm_Dr (Duration of Communism Regime):** The number of years a country has been under a communist regime and in relation to the year of the WVS responses for accuracy.
- **Trust (Trust in Government):** A binary variable indicating the level of trust in the government by each respondent in their respective country; (1) indicates high trust in government and (0) indicates low trust in government.
- **GovResp (Expectation of Government Responsibility):**This variable indicates for each respondent in their respective country, their expectation of level of government's responsibility towards its citizens.

## 2.4.3 Empirical Method

The empirical analysis used weighted probit; hence, the coefficients indicated direction of influence versus amount of influence. Marginal effect analysis was conducted to estimate the size of the effects. To manage the potential issue of having some countries over-sampled, a weighting variable (S018) in the WVS was used to correct the samples.

The data included in the analysis covered Waves 2–6 (1994–2014), controlling for wave/time fixed effects and clustering by country, which accounted for unobservable country-specific characteristics while also controlling for regional differences.

*Model 1.1*: Testing Hypothesis 1 on association of having a communist heritage on tax morale, including control variables:

$$TM_{ic} = \beta_0 + \beta_1 \boldsymbol{Comm_c} + \beta_2\, Age_{ic} + \beta_3\, Income_{ic} + \beta_4\, Gender_{ic} + \beta_5\, Corrp_c + \beta_6\, InEq_c + \beta_7\, Wave + \varepsilon_{ic} \quad (2.5)$$

To further test Hypothesis 1, an additional model was included to validate if the communist heritage's potential association with tax morale was not masking an association with authoritarian regimes broadly versus being specific to countries with a communist heritage. For this analysis, all countries that had autocratic regimes were coded to assess potential associations for citizens living in an autocratic country and tax morale.

*Model 1.2*: Testing broader political regime status (autocratic, democratic, communist regime, etc.) and tax morale:

$$TM_{ic} = \beta_0 + \beta_1\, \mathbf{DemComm}_c \quad (2.6)$$

*Model 2*: Testing Hypothesis 2 on association of duration of the communist regime on tax morale, including control variables:

$$TM_{ic} = \beta_0 + \beta_1 \boldsymbol{Comm_Dr_c} + \beta_2\, Age_{ic} + \beta_3\, Income_{ic} + \beta_4\, Gender_{ic} + \beta_5\, Corrp_c + \beta_6\, InEq_c + \beta_7\, Wave + \varepsilon_i \quad (2.7)$$

*Model 3*: Testing Hypothesis 3 on association of the association of how long an individual had lived under a communist regime on their tax morale, including control variables:

$$TM_{ic} = \beta_0 + \beta_1\, \boldsymbol{AgeComm_{ic}} + \beta_2\, Age_{ic} + \beta_3\, Income_{ic} + \beta_4\, Gender_{ic} + \beta_5\, Corrp_c + \beta_6\, InEq_c + \beta_7\, Wave + \varepsilon_i \quad (2.8)$$

## 2.4.4 Mediating Effect Analysis

The mediation analysis considered the association between trust in government, political apathy, and expectation of government responsibility and whether a country had a communist heritage to assess if these factors were viable channels for the influence of the communist heritage, if any, on tax morale. The approach to mediation analysis followed a causal inference framework that allowed for the realistic assumption that the mediator effects varied in ex-communist versus non-communist countries (Nguyen et al., 2021; Stata, 2023). The terms covered in the mediation analysis are defined below for clarity:

- *Natural direct effect (NDE):* Estimates the average direct effect of the treatment on the outcome when the mediator is held at its value associated with being untreated. It is the difference Y [1, M(0)] − Y [0, M(0)], where Y is the dependent variable and M is the mediating variable.
- *Natural indirect effect (NIE):* Estimates the average indirect effect through a mediator. It is the difference Y [1, M(1)] − Y [1, M(0)].
- *Total effect (TE):* Estimates the average difference in outcomes expected when everyone receives the treatment versus when no one receives the treatment. TE = NIE + NDE.
- *Variance account for (VAF)*: Calculated by dividing indirect effect through total effect.

## 2.4.5 Results

The analysis in Model 1.1 pointed to a negative effect of living in a country with a communist heritage on tax morale, in alignment with Hypothesis 1. Table 2.2 provides the related output, including marginal effects. This negative association applied even when controlling the demographic variables for each respondent and for country-level corruption and inequality variables. We also controlled for the wave fixed effects using S002 variable from the WVS.

**Table 2.2:** Empirical Analysis - Communism heritage and tax morale (Model 1.1), Probit estimates and marginal effects

| **Main regressors** | **(1) Probit coefficient** | **(2) Marginal effect** |
|---|---|---|
| **Ex-communist country (Y/N)** | -0.363*** | -0.135*** |
| | (0.100) | (0.036) |
| ***Individual controls*** | | |
| Age | 0.008*** | 0.003*** |
| | (0.001) | (0.0003) |
| Income | -0.019*** | -0.007*** |

| | | |
|---|---|---|
| | (0.006) | (0.002) |
| Female | 0.097*** | 0.036*** |
| | (0.014) | (0.005) |
| ***Country-level controls*** | | |
| Corruption index | -0.071* | -0.026* |
| | (0.039) | (0.014) |
| Inequality index | -0.006 | -0.002 |
| | (0.005) | (0.002) |
| ***Fixed effects & stats*** | | |
| Wave fixed effects | Yes | Yes |
| Observations | 225,312 | 225,312 |
| Pseudo $R^2$ | 0.0232 | — |

***Notes:*** The dependent variable is a binary indicator for high tax morale (1 = "never justifiable" to cheat on taxes; 0 = all other responses). Estimates are from weighted probit regressions; column (1) reports coefficients and column (2) reports average marginal effects. All specifications include individual controls (age, income, and gender) and country-level controls (corruption and inequality), as well as WVS wave fixed effects. Standard errors, reported in parentheses, are robust and clustered at the country level (85 clusters). Regressions use the WVS weighting factor S018 so that all samples contribute equally to the combined analysis, giving each country the same effective N. *** p<0.01, ** p<0.05, * p<0.10.

Meanwhile, Model 1.2 dug deeper into the countries' breakdown to consider both the heritages of autocracy and Communism. The empirical analysis of Model 1.2, as shown in Table 2.3, implied that, compared to those from democratic non-ex-communist countries, those from democratic ex-communist countries had lower tax morale. This supported the earlier argument that regimes with a communist heritage had unique aspects that showed an association with their citizens' tax morale. For autocratic ex-communist countries, there was no statistically significant association with tax morale. Autocratic non-ex-communist countries, however, showed a positive association that was statistically significant at the 5% level, indicating higher reported tax morale relative to democratic non-ex-communist countries. One interpretation is that citizens in autocratic countries were less willing to voice opinions that could be read as critical of the state, especially on sensitive topics such as tax morale; such social desirability pressures would tend to inflate reported tax morale in autocratic settings (Kuran, 1995). This reporting pressure was consistent with the positive association observed for autocratic non-ex-communist countries, whereas for autocratic ex-communist countries it may have been offset by the negative communist-heritage association documented above, potentially explaining the absence of a statistically significant association.

**Table 2.3: Empirical Analysis - Communism heritage, regime type, and tax morale (Model 1.2), Probit estimates and marginal effects**

| | (1) Probit coefficient | (2) Marginal effect |
|---|---|---|
| **Main regressors** | | |
| Democratic ex-communist | -0.328*** | -0.125*** |
| | (0.108) | (0.041) |
| Autocratic ex-communist | -0.283 | -0.107 |
| | (0.196) | (0.075) |
| Autocratic non-ex-communist | 0.243** | 0.084** |
| | (0.118) | (0.040) |
| ***Individual controls*** | | |
| Age | 0.008*** | 0.003*** |
| | (0.001) | (0.0003) |
| Income | -0.021*** | -0.008*** |
| | (0.005) | (0.002) |
| Female | 0.097*** | 0.036*** |
| | (0.014) | (0.005) |
| ***Country-level controls*** | | |
| Corruption index | -0.052 | -0.019 |
| | (0.043) | (0.016) |
| Inequality index | -0.005 | -0.002 |
| | (0.005) | (0.002) |
| ***Fixed effects & stats*** | | |
| Wave fixed effects | Yes | Yes |
| Observations | 225,312 | 225,312 |
| Pseudo $R^2$ | 0.0245 | — |

***Notes:*** The dependent variable is a binary indicator for high tax morale (1 = "never justifiable" to cheat on taxes; 0 = all other responses). Estimates are from weighted probit regressions; column (1) reports coefficients and column (2) reports average marginal effects. The key regressors are regime–communism categories (Democratic ex-communist, Autocratic ex-communist, Autocratic non-ex-communist), with **Democratic non-ex-communist countries as the omitted reference category**. All specifications include individual controls (age, income, and gender) and country-level controls (corruption and inequality), as well as WVS wave fixed effects. Standard errors, reported in parentheses, are cluster-robust at the country level (85 clusters). Regressions use the WVS weighting factor S018. *** p<0.01, ** p<0.05, * p<0.10.

In assessing the effect of the duration of the communist regime in an ex-communist country, Model 2 pointed to the statistically significant negative effects of the duration for which a country was under a communist regime on its citizens' tax morale, in alignment with Hypothesis 2. This had a small marginal effect, as shown in Table 2.4, since in Model 2 we compared the effects of having one additional year under communist rule (an intrinsic margin), whereas Models 1.1 and 1.2 assessed the effect of living in a country with a communist heritage of any duration versus those with no communist heritage (as an extrinsic margin).

**Table 2.4: Empirical Analysis - Communism duration and tax morale (Model 2), Probit estimates and marginal effects**

| | (1) Probit coefficient | (2) Marginal effect |
|---|---|---|
| **Main regressor** | | |
| **Comm_Dr: Communism duration (years)** | -0.007** | -0.003** |
| | (0.003) | (0.001) |
| ***Individual controls*** | | |
| Age | 0.008*** | 0.003*** |
| | (0.001) | (0.0005) |
| Income | -0.021** | -0.008** |
| | (0.009) | (0.003) |
| Female | 0.056*** | 0.022*** |
| | (0.016) | (0.006) |
| ***Country-level controls*** | | |
| Corruption index | -0.024 | -0.009 |
| | (0.069) | (0.026) |
| Inequality index | 0 | 0 |
| | (0.008) | (0.003) |
| ***Wave fixed effects & stats*** | | |
| Wave fixed effects | Yes | Yes |
| Observations | 67,806 | 67,806 |
| Pseudo $R^2$ | 0.0251 | -- |

*Notes:* The dependent variable is a binary indicator for high tax morale (1 = "never justifiable" to cheat on taxes; 0 = all other responses). Estimates are from weighted probit regressions; column (1) reports coefficients and column (2) reports average marginal effects. The key regressor is the duration of the communist regime (in years). All specifications include individual controls (age, income, and gender) and country-level controls (corruption and inequality), as well as WVS wave fixed effects. Standard errors, reported in parentheses, are cluster-robust at the country level (31 clusters). Regressions use the WVS weighting factor S018. *** p<0.01, ** p<0.05, * p<0.10.

Model 3 examined whether the number of years an individual lived under a communist regime (AgeComm) was associated with tax morale. As shown in Table 2.5, in the baseline specification (Model 3.1), AgeComm was negative and statistically significant. In Model 3.2, once communist heritage (Comm) was included, the estimated association for AgeComm essentially became zero and was no longer statistically significant, while (Comm) remained negative and statistically significant. In Model 3.3, when communist exposure was captured through the regime-type-by-heritage categories (i.DemComm), AgeComm was again negative but only marginally significant at the 10% level. Finally, Model 3.4 included both AgeComm and the duration of the communist regime at the country level (Comm_Dr) and was estimated on a smaller sample (N = 67,806; 31 country clusters). In this restricted sample, AgeComm turned positive but was not statistically significant ($p \approx 0.10$), while Comm_Dr was negative and statistically significant. Taken together, the results showed that the negative association between AgeComm and tax morale found in the baseline specification was not robust

once alternative country-level measures of communist exposure were included, and it also varied across samples and specifications.

**Table 2.5**: Empirical Analysis - Years lived under a communist regime duration and tax morale (Model 3), Probit estimates

| | Model 3.1 | Model 3.2 | Model 3.3 | Model 3.4 |
|---|---|---|---|---|
| **Main regressor** | | | | |
| Years under Communism | -0.007*** | 0 | -0.003* | 0.023 |
| | (0.002) | (0.002) | (0.002) | (0.014) |
| Communist Heritage | | -0.357*** | | |
| | | (0.110) | | |
| Communism Duration | | | | -0.008** |
| | | | | (0.004) |
| DemComm: Democratic ex-communist | | | -0.241* | |
| | | | (0.123) | |
| DemComm: Autocratic ex-communist | | | -0.201 | |
| | | | (0.206) | |
| DemComm: Autocratic non-ex-communist | | | 0.307** | |
| | | | (0.129) | |
| **Individual variables** | | | | |
| Age | 0.010*** | 0.008*** | 0.010*** | -0.015 |
| | (0.001) | (0.001) | (0.001) | (0.014) |
| Income | -0.019*** | -0.019*** | -0.021*** | -0.024*** |
| | (0.005) | (0.006) | (0.005) | (0.008) |
| Female | 0.093*** | 0.097*** | 0.098*** | 0.061*** |
| | (0.015) | (0.014) | (0.015) | (0.016) |
| **Country-level controls** | | | | |
| Corruption index | -0.049 | -0.071* | -0.056 | -0.020 |
| | (0.037) | (0.040) | (0.043) | (0.069) |
| Inequality index | -0.003 | -0.006 | -0.005 | -0.006 |
| | (0.004) | (0.005) | (0.005) | (0.011) |
| Wave fixed effects | Yes | Yes | Yes | Yes |
| Observations | 225,312 | 225,312 | 225,312 | 67,806 |
| Pseudo $R^2$ | 0.0185 | 0.0232 | 0.0249 | 0.0288 |

*Notes:* The dependent variable is a binary indicator for high tax morale (1 = "never justifiable" to cheat on taxes; 0 = all other responses). Panel A reports weighted probit coefficients and Panel B reports average marginal effects (AMEs). Models 3.1–3.3 are estimated on the full WVS sample used in Chapter 2 (N=225,312; 85 country clusters). Model 3.4 is estimated on the restricted sample for which Comm_Dr is observed (N=67,806; 31 country clusters). All models include individual controls (age, income, and gender), country-level controls (corruption and inequality), and WVS wave fixed effects. Standard errors (in parentheses) are cluster-robust at the country level. Regressions use the WVS weighting factor S018. For i.DemComm (Model 3.3), the omitted/reference category is Democratic non-ex-communist countries; marginal effects for factor levels are discrete changes from the base level. *** p<0.01, ** p<0.05, * p<0.10. Table 2.5 reports probit coefficients; the corresponding average marginal effects are reported in the Appendix.

### 2.4.6 Mediation Analysis Results

This section presents a mediation analysis to assess Hypotheses 4–6 on whether the association between living in an ex-communist country and tax morale operated through: (1) political apathy, (2) trust in government, or (3) expectations of government responsibility. The mediation results were interpreted cautiously as descriptive, given the observational nature of the data and the plausibility of two-way relationships between tax morale and the mediators. The results provide no evidence that any of the three channels meaningfully mediated the association. The indirect effect through political apathy was not statistically significant (NIE = −0.0134, p = 0.230). The indirect effect through trust in government was likewise small and not statistically significant (NIE = −0.0022, p = 0.142; VAF ≈ 1.5%). Finally, for expectations of government responsibility (E025), the indirect effect was essentially zero and not statistically significant (NIE = 0.0009, p = 0.667). In all three cases, the association between communist heritage and tax morale operated almost entirely through the direct effect. Table 2.6 summarises these results.

**Table 2.6: Mediation Analysis summary**

| Hypothesis | Mediation effect tested | NDE | NIE | TE | VAF (NIE/TE) | Mediation effect supported | Obs |
|---|---|---|---|---|---|---|---|
| **H4** | Ex-communist Country → Political apathy → Tax morale | −0.1372*** | −0.0134 | −0.1506*** | 8.9% | No | 225,312 |
| **H5** | Ex-communist Country→ Trust in government → Tax morale | −0.1416*** | −0.0022 | −0.1438*** | 1.5% | No (NIE n.s.) | 206,569 |
| **H6** | Ex-communist Country → Expectation of Gov. Responsibility → Tax morale | −0.1591*** | 0.0009 | −0.1582*** | −0.6% | No (NIE n.s.) | 225,312 |

*Notes:* Table reports the natural direct effect (NDE), natural indirect effect (NIE), and total effect (TE) from Stata mediate. Outcome model is probit; mediator model is linear; treatment is binary (Comm). All specifications include controls (Age, Income, Gender, corruption, inequality) and wave fixed effects (S002), apply sampling weights (S018), and report standard errors clustered at the country level. The outcome equation includes a treatment–mediator interaction (as indicated in the Stata output). VAF is computed as NIE/TE. Estimation samples differ across mediators due to missingness (see the Obs column). All models cluster at 85 country clusters.

## 2.5 Robustness Checks

In the main analysis, the dependent variable was a binary indicator for high tax morale, equal to 1 if respondents stated that it was "never justifiable" to cheat on taxes and 0 otherwise. As a first robustness check, I re-estimated Model 1.1 using the original 1–10 tax morale scale as the dependent variable. I estimated an ordinary least squares regression

with the same set of individual- and country-level controls and WVS wave fixed effects, and I continued to use the WVS sampling weight S018 and cluster standard errors at the country level. The results, reported in Table 2.7, confirmed the main findings. The coefficient of living in a country with a communist heritage was negative and statistically significant at the 1% level. This implied that, on the 1–10 tax morale scale, individuals in ex-communist countries had, on average, lower tax morale than individuals in non-ex-communist countries, even when using the continuous measure instead of the binary high tax-morale indicator. The sign and statistical significance of the main coefficient were fully consistent with the baseline probit results, suggesting that the core relationship between communist heritage and tax morale was not driven by the dichotomisation of the tax morale variable.

**Table 2.7: Empirical analysis – Robustness Check: Communism Heritage using Tax Morale as categorical variable (1-10)**

| **Main regressor** | |
|---|---|
| Ex-communist country | -0.584*** |
| | (0.173) |
| **Individual variables** | |
| Age | 0.013*** |
| | (0.001) |
| Income | -0.015 |
| | (0.011) |
| Gender (1 = female) | 0.190*** |
| | (0.022) |
| **Country-level variables** | |
| Corruption index | -0.053 |
| | (0.062) |
| Inequality index | -0.016* |
| | (0.008) |
| Wave fixed effects | Yes |
| Observations | 225,312 |
| R-squared | 0.0265 |

*Notes*: The dependent variable is the original 1–10 tax morale scale, coded so that higher values indicate higher tax morale. The table reports ordinary least squares (OLS) estimates. The main regressor is *Ex-communist country*, an indicator equal to 1 for individuals living in ex-communist countries. All specifications included individual controls (age, income, and gender), country-level controls (corruption and inequality), and WVS wave fixed effects. Regressions used the WVS weighting factor S018, so that country samples contributed proportionally to the combined analysis. Robust standard errors (in parentheses) are clustered at the country level (85 clusters). ***, **, and * denoted statistical significance at the 1%, 5%, and 10% levels, respectively.

As a second robustness check, I collapsed the data to the country–wave level and estimated OLS regressions using the country–wave mean of the 1–10 tax morale scale as the dependent variable. This robustness check assessed whether the main findings also held when focusing on average tax morale in each country–wave cell rather than individual

responses. Column (1) of Table 2.8 regressed the country–wave mean tax morale on the ex-communist country indicator (Comm), controlling for corruption, inequality, and WVS wave fixed effects. The coefficient for *living in a country with a communism heritage* was negative and statistically significant at the 1% level. Column (2) replaced the ex-communist dummy with the duration of the communist regime (Comm_Dr) and also yielded a negative and statistically significant estimate. These results implied that both the extensive and intensive measures of communist heritage were associated with lower average tax morale even when the analysis was carried out at the aggregated country–wave level.

**Table 2.8: Empirical analysis – Robustness Check: Communist heritage, duration, and country–wave mean tax morale, OLS estimates**

| | Comm, country–wave | Comm_Dr, country–wave |
|---|---|---|
| | **OLS** | **OLS** |
| **Main regressors** | | |
| Ex-communist country (Y/N) - Comm | -0.508*** | |
| | (0.169) | |
| Duration of communist regime (years) - Comm_Dr | | -0.017** |
| | | (0.006) |
| **Country-level controls** | | |
| Corruption index | 0.014 | 0.037 |
| | (0.061) | (0.111) |
| Inequality index | -0.016** | -0.015 |
| | (0.008) | (0.015) |
| Wave fixed effects | Yes | Yes |
| Observations (country–wave) | 181 | 58 |
| R-squared | 0.158 | 0.314 |

*Notes*: The data are collapsed to the country–wave level. The dependent variable is the country–wave mean of the 1–10 tax morale scale, coded so that higher values indicate higher tax morale. Column (1) uses Ex-communist country (Comm), an indicator equal to 1 for ex-communist countries, as the main regressor. Column (2) instead uses Duration of communist regime (Comm_Dr), measured in years. All specifications include country-level controls for corruption and inequality, and WVS wave fixed effects (S002). Robust standard errors (in parentheses) are clustered at the country level; there are 85 country clusters in column (1) and 31 country clusters in column (2). ***, **, and * denote statistical significance at the 1, 5, and 10 percent levels, respectively.

## 2.6 Limitations

In this study, we examined the relationship between communist heritage and tax morale and encountered several important challenges of endogeneity. Empirically, the analysis pools repeated cross-sections from five WVS waves (1989–1993 through 2010–2014) and included wave fixed effects (S002). For the main treatment variable, the primary endogeneity concern was omitted-variable bias. Communist heritage was historically predetermined, so it could not be caused by an individual's tax morale; however, it was not random and might still be correlated with persistent country characteristics that also influenced tax morale. Endogeneity concerns were more acute for the proposed mediators because

two-way relationships were plausible. For example, trust in government could influence willingness to pay taxes, but individuals with higher tax morale may also have been more likely to report higher institutional trust. Similarly, political apathy might reduce civic duty (including tax compliance), while low tax morale could be associated with broader disengagement and political attitudes that co-moved with apathy. s

The conventional view in the literature is that higher trust in government leads to higher tax morale. When citizens trust that their government uses tax revenues effectively, they are more likely to comply with tax obligations. Governments that are perceived as competent, transparent, and accountable tend to foster a positive relationship with their citizens, which is reflected in higher tax morale. A study by Torgler (2003) found that in countries with high levels of institutional trust, individuals were more likely to see tax compliance as a civic duty and were less likely to evade taxes (Torgler, 2003). This relationship is seen as causal because governments with high trust are typically viewed as more likely to invest in public services and maintain a fair system of taxation. However, a higher willingness to comply with taxes can be an indicator of broader civic engagement and a positive view of public institutions. Similarly, Cummings et al. (2005) found that citizens in countries with high levels of trust in government institutions are more likely to report higher tax morale. Some studies have concluded that trust and tax morale mutually reinforce each other in a feedback loop. For example, Levi (1998) and Slemrod (2009) both argued that when individuals believe that taxes contribute to the common good, they are more likely to trust government institutions, which in turn increases their willingness to comply with taxes. Thus, while the direction of causality may not always be clear, there is a growing recognition that trust and tax morale are interconnected and reinforce one another over time. Additionally, the timing of political events, such as democratic transitions, elections, or economic crises, can also influence both variables simultaneously (Pop-Eleches & Tucker, 2011). Future research using robust econometric designs—such as instrumental-variable strategies or plausibly exogenous shocks and reforms—could help isolate the effects of trust on tax morale while controlling for endogeneity and reverse causality.

We also had potential omitted variable bias based on variables not included in the analysis, such as the tax system characteristics in each county (e.g., tax rates and complexity, audit probability, and tax administration capacity). Other factors, such as the level of religiosity and rule of law traditions, could also influence tax morale. Because the main regressor (the ex-communist country indicator) was time-invariant at the country level, including country fixed effects in the baseline specifications would absorb the ex-communist indicator (i.e., it would be dropped) and was therefore not feasible. Instead, we mitigated omitted-variable concerns by including observable country-level controls (e.g., corruption

and inequality), wave fixed effects, country-clustered standard errors, and robustness checks using country–wave aggregation.

## 2.7 Conclusion

This paper considered the ex-communist heritage across the world and its potential effects on the tax morale of individuals living in ex-communist countries. While we could not confirm causality, this exploratory approach enabled us to carefully consider the tax-morale–ex-communist nexus. By exploiting cross-country variation in communist heritage (and alternative measures such as regime duration and regime-type categories) over multiple survey waves, some of the most immediate individual-level reverse-causality concerns were mitigated, although confounding by persistent country characteristics could remain. This was indeed an imperfect approach: the ex-communist heritage was historically predetermined (which limited concerns about individual-level reverse causality), but it was not random and could still be correlated with persistent country characteristics that also affected tax morale.

The analysis showed that living in an ex-communist country had a negative association with tax morale, after controlling for demographic factors, corruption, and inequality. Furthermore, the analysis showed that the duration of communist regimes had a negative association with tax morale, many years after the transition from Communism. Potential explanations included the long-standing habit in these countries of very few citizens paying taxes (ex., private entrepreneurs), combined with the prevailing abuse of civic virtues and higher willingness to engage in dishonest behavior towards the government. Further analysis implied that this negative association with tax morale applied specifically to ex-communist countries that were currently under democratic regimes, potentially enabling citizens to reveal their true preferences with regard to tax morale more than those in autocratic countries. The analysis showed that although the transition out of Communism took place for most of these countries more than three decades ago, the effects of Communism and the post-communist transition still linger in our time.

The mediation analysis provides no evidence of a statistically significant indirect effect through political apathy, trust in government, or expectations of government responsibility (E025). In all three cases, the estimated indirect effects were small, and the negative association operated almost entirely through the direct effect. Any very small estimated indirect effect through political apathy could be interpreted in light of fluctuations in post-communist participation, with communist-era apathy followed by a remarkable spike in political mobilization from 1988–1992 and again during the

"colored revolutions" of the mid-2000s. The first elections of the post-communist era routinely featured turnout rates of more than 70–80%, followed by a fall in political participation in later years (Pop-Eleches & Tucker, 2011; White & McAllister, 2004). Hence, political apathy may not itself have been as lingering or as reliable an explanatory variable in post-communist countries as initially hypothesized.

Meanwhile, one potential explanation of why trust in government was not an influential mediating factor for citizens of ex-communist countries on their tax morale is that political trust in post-communist countries was more strongly interpreted by citizens as a hierarchal relationship between the rulers above and the ruled below (Trudinger & Hilderbrandt, 2013). Regarding the expectations of government responsibility, the absence of a meaningful indirect effect could be rationalized if we considered the strict definition of the government responsibility variable in the WVS. This definition was focused on the government's role in maintaining order in society versus respect for the freedom of the individual. The WVS definition rests on a much narrower scope of expectations of government responsibility and how it interacts with tax morale than what was proposed in the theoretical framework. This specific definition did not seem to act as a meaningful proxy for the broader expectation of government responsibility that we considered in the theoretical framework in terms of the respondents' expectations of the government to provide services. Hence, it would be interesting to include a question in the next waves of WVS to consider broader expectations of the government in terms of providing public services and how citizens feel about their government effectiveness and the fairness of distribution of those services, how they map onto the fairness paradigm, and their related impact on tax morale. Future research should also consider using a survey that includes questions on the broader expectations of government responsibility to assess its relevance as a mediating variable on living in an ex-communist country and tax morale, and to assess if the effects of communist heritage on tax morale persist after the timeframe considered here.

On another note, tax morale as a dependent variable could have had some endogeneity issues as it could be affected, among other things, by tax policy, tax audits, and tax administration reforms (Alm & Martinez-Vazquez, 2007; Cummings et al., 2005). In the present paper, I endeavored to include in the analysis the most relevant control variables for the research question. Indeed, there are other variables typically considered in tax compliance research that were not included, such as the size of tax administration, the tax evasion penalty, and audit likelihood. Those variables were not included mainly due to the lack of consistent data on these variables covering all countries in the scope of the present paper, considering its global view and the timespan of analysis as I pooled repeated cross-sections from five WVS waves (1989–1993 to 2010–2014) and included wave fixed effects (S002). The robustness checks discussed provided additional

reassurance that the main findings were not driven by a single operationalisation of tax morale or by a single definition of communist heritage.

This paper aimed to leverage existing data to test hypotheses related to tax morale in ex-communist countries and in doing so offered three contributions to the field. First, by leveraging five waves of the WVS spanning 1990–2014 and 25 countries that had transitioned from Communism, out of 85 countries included in analysis from around the world, we could produce higher accuracy in the estimates and assess the potential lingering effect of the communist heritage. Second, the paper built on existing literature on post-Communism and tax compliance to propose a theoretical framework that covered factors rarely addressed in depth in existing tax morale literature, such as the potential effect of the duration of the communist regime and the inclusion of mediation analysis on the potential effects of trust in government, political apathy, and expectations of government responsibility as channels for the association of communist heritage with tax morale. Finally, the analysis included several robustness checks, including, among others listed earlier, performing the analysis using two different definitions of Communism. Future research in this area should consider identifying and including control variables for the tax capacity, tax policies, and tax audit rates for the countries in scope to enable better accuracy of the estimates, in addition to identifying other potential channels for the effect of the communist heritage on tax morale to potentially inform tax policies in countries with such a heritage.

# 3. Another Shock Considered: The Great Recession and Tax Morale Across 14 Countries[1]

## 3.1 Introduction

Increasing government revenue in the form of increasing tax revenues and reducing tax evasion continues to be a priority in most countries. This is especially true when a country is recovering from a recession. Since empirical research points to tax morale as an important lever in reducing tax evasion and increasing compliance, it is useful to understand potential factors that influence tax morale during a recession. Existing research on tax morale (i.e., willingness to pay taxes) during periods of recession is rare, with a few exceptions such as Bitzenis and Vlachos (2018), who assessed tax morale during the Great Recession in Greece. Another example is Heinemann (2009), who used WVS data to show that high unemployment rates, common in economic crises, are associated with lower tax morale. Other researchers, such as Schneider et al. (2010) and Sancak et al. (2010) touched on the impact of an economic downturn on tax evasion and on the size of the shadow economy. Meanwhile. understanding potential influences on tax morale during recessions is especially important, as after recessions governments aim to rebalance their budgets, with increases in tax revenue being a related key measure (Boyd, 2011; Chernick et al., 2014; Thornton, 2012). That makes this a worthwhile analysis.

This paper aimed to fill this research gap by considering 14 countries hit by the Great Recession**,** assessing the political and economic landscape of each, how their governments responded, and potential impacts on their citizens' tax morale. This research paper considered the Great Recession as a global shock and examined related governments' actions, either leading up to the recession or in response to it, and their effect on citizens' morale. The study relied on a cross-country qualitative comparative analysis using WVS data from 2005–2012, along with data from the OECD, IMF, ILO and more covering the 14 countries. The goal of this comparison was to consider what we can learn best practices from these countries' policies and how they may have influenced their citizens' tax morale. The countries in scope represented different parts of the world where the recession had varying causes and prompted a variety of economic impacts and government policy responses. It also allowed for a meaningful contrast and comparison, all while managing the data limitations, as described in the research design section.

[1] *This chapter was written in collaboration with Serdar Turkeli (serdar.turkeli@maastrichtuniversity.nl)*

This study contributes to the existing literature through the curation of the data used in the analysis, which included various indicators of the recession's economic impact, triggers for the recession, and indicators of each government's response. Furthermore, in considering government response, the data set included factors that have not been considered in depth in earlier research. For example, I considered whether introducing stimulus packages had an impact on tax morale. This question was of interest because some countries adopted more demand-focused stimulus policies (e.g., transfers to private households and tax reductions), while others adopted more supply-focused stimulus policies, which were geared towards increasing public investment. These included transfers to businesses, tax reductions for businesses, and increased funding for public infrastructure.

The study leverages Qualitative Comparative Analysis (QCA) (Ragin, 1987, 2000, 2008), which combines quantitative and qualitative methodologies with the benefit of enabling a more rigorous analysis using small samples and systematic comparisons. QCA is beneficial to study a more complex notion of causality, as it can identify the configurations that constitute sufficient and/or necessary conditions for the outcome of interest (Greckhamer et al., 2018). This was especially useful in the cross-country analysis presented here as it allowed for the study of complex relationships between the various conditions (e.g., how the recession started in each country or the trigger, the economic impact of the recession, and the nature of the government response), and the change in tax morale as an outcome variable.

The analysis pointed to an association of positive change in average tax morale per country and change in the ruling party when the trigger of the recession was considered to be internal (i.e., the source of the recession was due to internal factors, such as poor government policies). Meanwhile, a positive change in tax morale was associated with countries that had no change in ruling party when the trigger of the recession was considered to be due to external factors (i.e., countries that entered a recession due to external factors, such as a severe impact on their exports and trade flows). Economic conditions and size of stimulus packages did not seem to have a clear association with change in tax morale across the countries considered.

In the next section I will consider different aspects of the Great Recession and related literature. This informed the theoretical framework and related hypotheses.

## 3.2 Literature Review

### 3.2.1 The Economic Impact of the Great Recession

The Great Recession, also known as the global financial crisis, started in late 2007 and lasted until mid-2009. The Great Recession had a significant impact on many world economies, resulting in a sharp decline in global trade, a reduction in GDP growth, and the collapse of the global stock market. According to the World Bank, during the Great Recession the world economy experienced the most severe recession since World War II, and it was only recently eclipsed by the COVID-19 recession (Kose & Sugaware, 2020). In 2009, global output contracted by 1.8%, global trade collapsed by 9.9%, and investment declined by 9.0%, after robust expansions in output, trade, and investment in 2007 (of 4.3%, 7.3%, and 5.0%, respectively).

The size of the impact on various countries and how their respective governments responded differed, and despite unprecedented stimulus in most countries, the post-crisis recovery in advanced economies was anemic, and citizens' sentiments towards their countries' responses also varied (Chen et al., 2018; Koh & Yu, 2019). The possible role of economic downturns was briefly covered by Lindbeck (1995), who pointed to the role of crises as potential catalysts of the erosion of work ethics and benefit morale. Both changes in GDP growth and unemployment rates were considered in the present paper when assessing economic impact and its potential association with tax morale. This approach built on the work of Heinemann (2009), who used WVS data to show that a sharp hike in unemployment, typically associated with economic crises, is associated with a reduction in tax morale.

### 3.2.2 The Source of the Recession in Each Country: The "Trigger"

The Great Recession is argued to have divided most countries in the world into two groups: those that caused the recession, and those that were bystanders but that were impacted to various degrees. Understanding the "trigger," i.e., the source of the recession in a country, was helpful for the analysis as it informed the level of "blame" citizens assigned to their government depending on their perception of their government's role in triggering the recession. In the first group, there were many countries that had experienced housing booms in the years before the crisis and that suffered from the Great Recession due to a mixture of relaxed regulatory environments, loose mortgage conditions, the wide availability of sub-prime mortgages, and other internal factors. Hence, we categorized the trigger for the recession for this group of

countries as *internal* (i.e., mostly self-inflicted by poor policies). Examples of these countries included the United States, the United Kingdom, Spain, and Ireland.

Meanwhile, many countries were spectators hit by the seizing-up of the U.S. dollar-based international banking system and the subsequent downward spiral of world trade. Countries in this group included Canada, Sweden, Japan, the Netherlands, Turkey, and South Korea. I consider these countries as having an *external* trigger for their recession. It is worth noting that there was a gray area when it came to assessing whether a country had an external or internal trigger. For example, countries like Russia and Ukraine faced serious economic challenges because their economies over-relied on commodities, which became problematic when the hit to the broader world economy reduced demand for such commodities; this pointed to an internal trigger of the recession. That said, the extreme volatility of the price of oil and the political uncertainty caused by the war with the former Soviet republic of Georgia were also important contributing factors. A World Bank study concluded that the large role of oil in the economy and a 70% drop in the price of oil made the crisis more acute than it would have been otherwise (Chang, 2011). Hence, we could consider the trigger for the financial crisis in Russia during this period to be external, considering the external impact of the global trade slowdown on its economy. On the other hand, when the trigger or cause of the recession was attributed to internal factors, it could serve as a potential channel for citizens to blame their government for the recession. It is typical of human nature to look for someone to blame when things go bad, and in economic downturns the government, large firms, and financial institutions are usually the ones to blame. Countries that fell into this gray area were examined as part of the robustness checks.

The tax morale literature signaled that in terms of the culpability of a government, what seems to matter in terms of influence on tax morale and broader citizens' attitudes towards the government is citizens' perception more than the government's actual culpability. Levi (1998) argued that when citizens believe that their government has acted in their interests, they are more likely to become "contingent consenters" who cooperate in paying taxes even when their short-term material interest would make free riding their best option (Slemrod, 2009; Torgler, 2003).

### 3.2.3 Government Responses

The Great Recession spurred most countries into some form of response to mitigate a further downward economic spiral. Most developed countries that were severely impacted by the Great Recession introduced some type of fiscal stimulus package with discretionary government action. These stimulus packages varied greatly in size: as a share of GDP

in 2008, the size of the packages ranged from 0.1% to over 5%. Five countries (Australia, Canada, Korea, New Zealand, and the United States) introduced fiscal packages amounting to 4% of the 2008 GDP or more, with the U.S. package being the largest, at about 5.5% of the 2008 GDP (Organization for Economic Co-operation and Development [OECD], 2009).

The allocation of the fiscal stimulus packages varied between countries not only in size but also in terms of the percentage of the total amount allocated to supply-focused versus demand-focused measures. Supply-focused measures include public investment and infrastructure spending to boost employment and prop up the struggling private sector; examples were transfers to businesses, tax reduction to businesses, and increased funding for public infrastructure (Wirtschaft, 2013). Meanwhile, demand-focused fiscal stimulus policies refer to those focused on spending to spur public consumption and include measures such as transfer to private households and tax reductions. Sweden, the Netherlands, and other coordinated market economies (CMEs) tend to emphasize a strong social protection framework (Hall & Soskice, 2001; Heyes et al., 2012). Hence, in the financial crisis, these countries enacted fiscal stimulus biased towards demand-based needs and high social-protection measures, with Sweden allocating 64% and the Netherlands allocating 93% of their total fiscal stimulus packages to demand-focused measures.

The United States and other liberal market economies also witnessed a revival of Keynesianism (i.e., demand-focused stimuli), which was biased towards tax cuts and household transfers to spur demand in the economy. For example, in the United States in 2008 the stimulus was entirely focused on tax cuts, whereas in 2009 about two-thirds shifted to spending measures, "i.e. supply measures" (OECD, 2009). In contrast, in Mediterranean market economies (MMEs), like in Portugal and Spain, substantial cuts were made in public expenditure and involved public sector wage cuts and reductions in the value of social benefits and employment protections.

Meanwhile, Vasileva-Dienes and Schmidt (2018) viewed Russia as a mix of state capitalism and patrimonialism, given the reassertion of state authority by an increasingly authoritarian president. For clarity, patrimonial capitalism is based on informal clientelist relations between the state and business actors, as state officials extensively use public resources for private enrichment, while many companies deploy informal provisions, some of them illicit, to further their business interests (Drahokoupil & Myant, 2010; Vasileva-Dienes & Schmidt, 2018). Lastly, countries like Korea and Japan are characterized by a strong state-business network with weak labor unions. Hence, they tend to have limited redistributive capacity and low government spending on social protection. And, unlike in the United States, where a revival of Keynesianism (i.e., demand-focused stimuli) was observed, most East Asian governments implemented large fiscal stimulus packages with strong elements of industrial policies and supply side-oriented policies.

The fairness paradigm in tax morale literature defines fairness as both an aversion to inequality and a concern for reciprocity, and states that how people feel about others depends on how they expect to be treated (Hofmann et al., 2008; Jimenez & Iyer, 2016; Kirchler et al., 2008). This paradigm offers two angles to assess the potential association between stimulus payments and tax morale. First, when considering the overall stimulus packages, there might be a perceived sense of unfairness associated with a negative perception of how the overall stimulus packages were spent (i.e., saving large corporates versus regular citizens), leading to a drop in tax morale. On the other hand, from the perspective of demand-based stimulus payments, which tend to be more salient to regular citizens than other stimulus policies, the fairness paradigm can point to a positive association between having higher demand stimulus payments and tax morale, with citizens appreciating governments intervention to help with their economic challenges during a recession, offering what is termed *distributive fairness* (Jimenez & Iyer, 2016). It is worth noting that the behavioral economics literature points to the potential for citizens to under-recognize the benefits of a demand stimulus. For example, Mettler (2011) used survey data to show that among Americans who claimed that they had never used a government social service, 53% had in fact taken out student loans, and 40% had benefited from Medicare. Furthermore, building on the mental accounting concept from Thaler (1999) and transaction decoupling from Dilip and Gourville (2001), Lamberton et al. (2014) argued that perceptions of benefits are low at the time of payment and that tax aversion is created through the decoupling of tax payments and the public goods obtained in return.

### 3.2.4 Changes in the Ruling Party

Monin et al. (2008) found that when a person's group is blamed, they can become morally defensive, which activates hot cognitions. Malhotra and Margalit (2010) used this insight in their analysis on the role of ideology, and indirectly the role of a change in ruling party, during the Great Recession. The Great Recession started near the end of the Republican president George W. Bush's term and the start of the term of the Democrat president Barack Obama. As part of recession response policies, Democrats were generally willing to support a policy if they believed that it would correct a crisis blamed on Republican politicians. Meanwhile, Republican citizens exhibited an ingroup bias and became defensive and were potentially more averse to the proposal, as shown in Figure 3.1.

**Figure 3.1:** The Financial Crisis Blame Attribution, Ideology, and Support for Stimulus in the United States
**Source:** Malhotra and Margalit 2010

Furthermore, Bartels (2013) showed that while dozens of incumbent governments around the world lost the confidence of voters during the period of the Great Recession, the most consistent pattern in these election results was that voters simply punished incumbents of every stripe for the economic hard times, and there was no evidence of a shift in favor of either left-wing or right-wing parties in response to the Great Recession.

## 3.3 Theoretical Framework

Building on the literature review, the theoretical framework for this study, depicted in Figure 3.2, pointed to various channels by which to assess the impact of the Great Recession on tax morale. These channels or factors included: (1) the source or trigger for the financial crisis in each country, (2) how bad the economic impact was, and (3) how the government responded to the recession. It is worth noting that these channels were not mutually exclusive since, for example, the size of the economic impact of the recession was influenced by the nature and size of the government response (and potentially vice versa). Having this potentially combined effect supported the use of QCA as the chosen methodology, as discussed in the research design section.

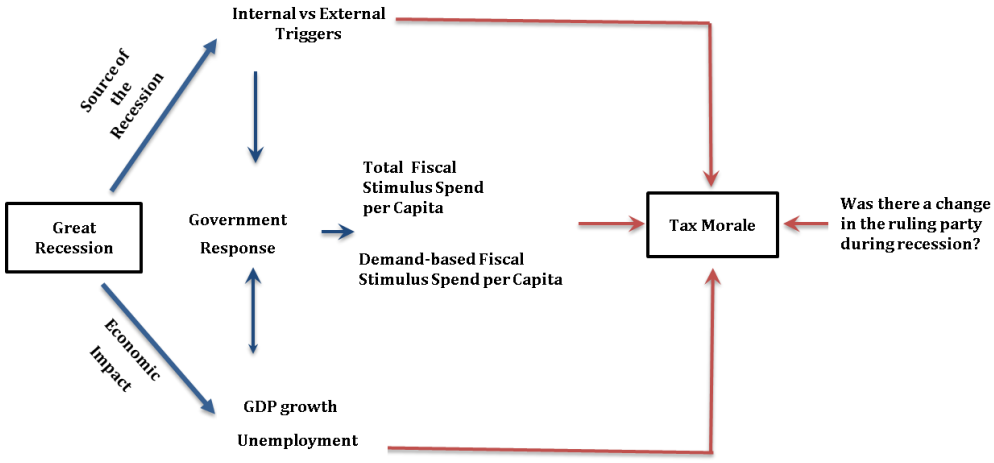



**Figure 3.2:** Theoretical framework. Channels Linking the Great Recession to Changes in Tax Morale (Trigger, Economic Impact, and Government Response).
**Source:** Author's illustration, based on the literature reviewed in Chapter 3.

### 3.3.1 Economic Impact

As discussed in the literature review, the size of the impact on various countries and how their respective governments responded differed, and despite unprecedented stimulus in most countries, the post-crisis recovery in advanced economies was anemic, and citizens' sentiment towards each country's response also varied (Chen et al., 2018; Koh & Yu, 2019). Schneider et al. (2010) and Sancak et al. (2010) argued that economic recessions increase the incentive for citizens to evade taxes to compensate for income losses and credit constraints. Furthermore, Heinemann (2009) and Lesnik et al. (2014) argued that a sharp hike in unemployment is associated with a reduction in tax morale. Accordingly, I posited the following hypothesis:

> *Hypothesis 1*: The negative economic impact of the great recession, reflected in either impact on GDP growth or increase in unemployment rate, is associated with a negative change in tax morale.

### 3.3.2 The Trigger of the Recession and Party Change

As discussed above, the trigger of the Great Recession in some countries arguably stemmed from internal factors, which could be blamed on the government's policies, such as in the case of the United States and Spain. Other countries had a primarily external trigger of the Great Recession due to the broader impacts on global trade and the financial markets; this was the case in South Korea, Mexico, and Japan. The literature has pointed to an association between negative tax morale and citizens' perception of governmental culpability. Meanwhile, Levi (1998), among others, argued that when citizens believe that their government has acted in their interests, they are more likely to become "contingent consenters" who cooperate in paying taxes even when their short-term material interest would make free riding their best option (Slemrod, 2009; Torgler, 2003). Extending this argument to the Great Recession, Heinemann (2010) proposed that a deep economic crisis may be perceived as the failure of politicians and accordingly shatters trust in governmental institutions.

It is worth noting that if the ruling party changed during the Great Recession, the blame was likely assigned to the departing government. Bartels (2013) showed that dozens of incumbent governments around the world lost the confidence of voters during the Great Recession, and that the most consistent pattern in election results was that voters simply punished incumbents. Hence, the change of the ruling party was probably associated with positive changes in tax morale with citizens' growing sense of optimism toward the new ruling party. These dynamics led to the second hypothesis:

*Hypothesis 2:* Ruling party change during the Great Recession was associated with positive changes in tax morale, with citizens showing optimism towards the new ruling government.

The size of the stimulus also may have had a combined effect with these factors, as posited in Hypotheses 3a and 3b in the following section.

### 3.3.3 Government Stimulus

Depending on their variety of capitalism, countries around the world made different allocations of the fiscal stimulus packages, not only in size but also in terms of the percentage of the total amount allocated to supply-focused versus demand-focused measures. Supply-focused measures include public investment and infrastructure spending to boost employment and prop up the struggling private sector, while demand-focused fiscal stimulus policies refer to those focused on spending to spur public consumption; the latter include measures such as transfers to private households and tax reductions. In this paper I argued that the total size of the fiscal stimulus packages spent did not have a clear effect on tax morale due to citizens potentially having underestimated their value or benefit. On the other hand, since demand-specific fiscal stimulus measures tend to be more salient to taxpayers, as they include measures such as receiving a check in the mail from the government, there is a potential for these measures to have a positive association with tax morale, especially in countries that had external origins for the recession. This was hypothesized because citizens might have a greater appreciation for a government's actions when the government is not deemed the main culprit for the recession. Considering variations in population size across countries, the analysis of the stimulus packages was conducted per capita, using the 2008 population statistics. The relevant hypotheses for this portion of the study were the following:

*Hypothesis 3a: T*here is no clear association between the size of the total fiscal package and change in tax morale.

*Hypothesis 3b:* There is a positive association between the size of a demand-focused stimulus in each country and the change in tax morale.

*Hypothesis 3c:* Specifically for countries with an external trigger (i.e., external source of the recession) and large fiscal stimulus (especially demand-biased ones), tax morale likely increased.

## 3.4 Research Design

### 3.4.1 Methodology

QCA (Ragin, 1987, 2000, 2008) is an analytical technique that combines quantitative and qualitative methodologies, with the benefit of enabling a more rigorous analysis using small samples through systematic comparisons. As Ragin (1987) noted, this is, "[t]he best features of the case-oriented approach with the best features of the variable-oriented approach". One of the attributes of QCA is that instead of being a net effects approach, which typically distinguishes between independent variables and assesses which independent variables individually have the strongest effect, QCA claims to study a more complex notion of causality as it can identify the different configurations that constitute sufficient and/or necessary conditions for the outcome of interest (Greckhamer et al., 2018). This was especially useful in the cross-country analysis in this paper as it allowed for the study of complex relationships between various conditions (e.g., why the recession started in each country or the trigger, changes in unemployment rates, size of the total fiscal stimulus packages, etc.) and changes in tax morale as an outcome variable. QCA allowed for the assessment of the combined presence, or lack, of specific conditions that have been associated with tax morale, and it is significantly easier with QCA to conduct quantitative analysis using interaction effects. Figure 3.3 provides an overview of the QCA methodology, and Table 3.1 provides a summary of definitions.

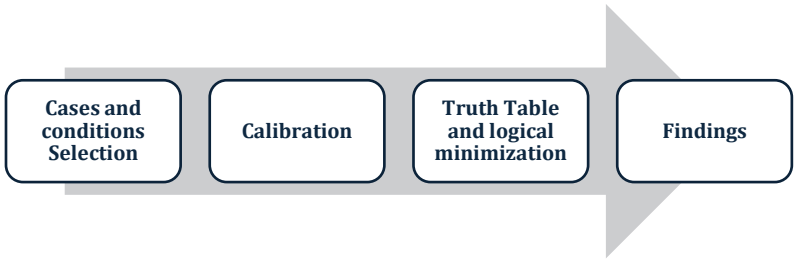



**Figure 3.3:** QCA Methodology
**Source:** Author's illustration (QCA approach following Ragin's framework).

**Table 3.1:** QCA Terms Defined

| Term | Definition |
|---|---|
| **Case** | A country under study. |
| **Outcome** | The result of one or more conditions/Output variable |

| | |
|---|---|
| **Condition** | A factor that is associated with an outcome of interest (i.e., variable in quantitative analysis method). |
| **Crisp set** | A type of QCA in which conditions are either "present" or "not present" for each case; conditions are coded as 1 or 0, respectively, for each case. |
| **Necessity** | A condition is necessary if the condition is present every time the outcome is present. |
| **Sufficiency** | A condition (or combination of conditions) is considered sufficient if the outcome is present each time the condition (or combination of conditions) is present. |
| **Calibration** | The process of assigning membership (0 or 1) for the various cases is based on whether the case belongs to a certain set (the set is a combination of conditions meeting the outcome) |
| **Consistency** | Consistency (with sufficiency) measures the degree to which solution terms (made up of one or many conditions) and the solution as a whole are subsets of the outcome.<br>Consistency expresses how often condition X=1 is leading to Outcome Y =1 for all cases of X=1. |
| **Coverage** | Coverage measures how much of the outcome is covered (or explained) by each solution term and by the solution as a whole.<br>Coverage expresses how much of outcome Y is covered by condition X, thus expressing the empirical importance of X for explaining Y. |

## 3.4.2 Data and Case Selection

This study entailed a cross-country qualitative comparative analysis covering 14 countries (i.e., cases). To inform the analysis, we used data from the World Bank,[2] OECD (2009), WVS,[3] and a number of secondary sources. The countries in scope included Australia, India, Japan, Malaysia, Mexico, Netherlands, Poland, Russia, South Korea, Spain, Sweden, Turkey, Ukraine, and the United States. The selection of countries was meant to enable the consideration of countries from different parts of the world with different drivers of the recession and variety in the economic impact and government response to the Great Recession. This would allow meaningful contrast and comparison. The selection was also informed by the availability of WVS data (Inglehart, 2014). Hence, only countries that had WVS done within 2 years before AND after the financial crisis (i.e., spanning 2005–2012 with the financial crisis being 2007–2009) were considered for analysis. This timeframe enabled the analysis of changes in tax morale for citizens within a reasonable period before and after the recession as an outcome variable. Furthermore, including 14 cases (i.e., countries) in the analysis and four or five conditions (i.e., variables) at a time supported the validity of the models produced through QCA, as suggested by Marx (2005). Building on the theoretical framework and related hypotheses, several conditions (i.e., variables) were considered in the comparative analysis, as shown in Table 3.2.

**Table 3.2**: Factors/Condition Considered and Sources of Related Data

| Category | Factors/Conditions considered | Description | Sources |
|---|---|---|---|

[2] Our World in Data. (n.d.). *Home page*. https://ourworldindata.org/
[3] World Values Survey Association. (n.d.). *World Values Survey*. https://www.worldvaluessurvey.org/wvs.jsp

| | | | |
|---|---|---|---|
| **Source of the Recession** | **Trigger**<br>(External/Internal) | Was the recession in this country triggered by internal factors (e.g., housing bubble, lax regulatory environment) or external factors (e.g., impacted by other countries' recession through trade impact) | Analysis of the OECD Economic outlook reports (2008-2010)<br>(Shelburne, 2010)<br>(Ali et al., 2009)<br>(van der Heijden, Dol et al., 2011)<br>(Verick & Islam, 2010) |
| **Government Response** | **TsFStim:**<br>Total Fiscal Stimulus per Country | The size of the fiscal stimulus package in this country as % of its 2008 GDP | IMF2009 interim report - economic outlook |
| | **DsFStim:**<br>Demand-Based Stimulus per Country | The size of the "demand" fiscal stimulus package in this country as % of its 2008 GDP<br>Demand stimulus is defined as: stimulus measures with direct impact on citizens (i.e., most salient/visible such as social protection measures such as tax credits and transfers to households). Meanwhile, indirect stimuli include measures such as investment in the infrastructure. | (Zhang et al., 2012)- Tables 1 and 2.<br>(Fischer & Justo, 2010)- Tables 3 and 5. |
| **Economic Impact** | **Unemp:**<br>2007-2009 Unemployment rate Change | Change in the unemployment rate between 2008 and 2009 | World Bank Data (Our Word in Data, n.d.) |
| | **GDP:**<br>2007-2009 GDP Growth | Change in GDP growth between 2008 and 2009 | |
| | **Econ:**<br>2007-2009 Economic Impact | Combined economic impact metric considering both change in GDP growth (2008-2009) and change in Unemployment (2007-2009) | Author's calculation, detailed in the calibration section. |
| **Change in ruling Party** | **PartyChange:**<br>Change in governing political party (Y/N) | Did the governing political party change before and after the recession | The Pargo project Data[4], checking parliamentary results for the party with the highest number of votes in the duration before and after the Great Recession. |

**Outcome assessed:**

| | | | |
|---|---|---|---|
| **Tax Morale** | **TMd:**<br>**Change in Tax morale** | % change in Tax morale before and after the Great Recession | World Values Survey (WVS), waves 5 and 6 |

Table 3.3 lists the raw data used for the analysis. The economic data (i.e., GDP and unemployment rate) were from the World Bank (Our World in Data, n.d.). For clarity, the table reports *the change* of the unemployment rate (% of total labor force) and the change in GDP growth (annual %) between 2007 and 2009. For example, the unemployment rate in Australia was 4.38% in 2007 and then increased to 5.56% in 2009. Hence, we recorded the unemployment rate change for Australia (2007–2009) to be 1.18%. Also, the GDP growth in Australia in 2007 was 3.8% and then dropped to 1.9% in 2007. Hence, we recorded the GDP change for Australia (2007–2009) to be -1.9%, as reported in Table 3.3.

[4] ParlGov. (n.d.). *Parliaments and governments database home page.* https://parlgov.fly.dev/

The size of the total stimulus package was determined from IMF data.[5] With regards to the demand-based component of the total stimulus package, we referred to stimulus measures with a direct impact on citizens (i.e., those most salient/visible, such as social protection measures like tax credits and transfers to households). This is aligned with the definition given by Zhang et al. (2012), who investigated the social protection components of fiscal stimulus packages across 48 countries. We used their analysis and that of Fischer and Justo (2010) to capture the size of the demand stimulus package for each country in scope.

The change of ruling party was determined from The Pargo Project data (Parlgov, n.d.), which used election results for the countries in scope before and after the Great Recession. For example, in Japan the Democratic Party of Japan (DPJ) defeated the conservative Liberal Democratic Party (LDP) in the August 2009 general election; hence, we noted the change of ruling party as "Yes" for Japan. Table 3.4 then offers a brief description and code of the trigger of the recession for each country. For example, Sweden's economy was very open, with extensive foreign trade and a financial market that was well integrated with international markets, making it susceptible to turbulence in the global banking sector, as described by Öberg (2009) and Raja Mannar (2017). Hence, we coded the trigger of the financial crisis in Sweden as "external." On the other hand, the housing bubble, relaxed financial regulations, and huge exposure by large banks to high-risk securities in the United States have been well-documented as the trigger for the Great Recession in the United States, as detailed, for example, by Congleton (2009) and Verick and Islam (2010). Hence, it is fair to say that the trigger of the recession was "internal" in the United States.

**Table 3.3:** Raw Data for all Countries in Scope

| | Source of Recession | Economic Impact | | Government Response | | Change in Ruling Party | Change in TM |
|---|---|---|---|---|---|---|---|
| **Country** | **Trigger** | **Unemployment Rate %, Change (07/09)** | **GDP Growth %, change (07/09)** | **Size of Fiscal Stimulus Packages - 2008-2010 (% 2008 GDP)** | **% of Demand-focused Stimulus of total Fiscal Stimulus Package** | **Change in Ruling Party** | **TM Delta %** |
| **Country** | **Trigger** | **Unemp** | **GDP** | **TsFStim** | **DsFStim** | **PartyChange** | **TMd** |
| **Australia** | Ext | 1.18 | -1.9 | 4.6 | 28% | N | 0.02 |
| **India** | Ext | 0.24 | 0.2 | 1.8 | 0% | N | 0.19 |
| **Japan** | Ext | 1.20 | -7.1 | 2 | 25% | Y | 0.05 |

[5] OECD (2009) and Guellec, D., & Wunsch-Vincent, S. (2009). *Policy responses to the economic crisis: Investing in innovation for long-term growth* (OECD Digital Economy Papers No. 159). OECD Publishing. https://doi.org/10.1787/222138024482

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Malaysia** | Ext | 0.46 | -7.8 | 10 | 23% | N | 0.12 |
| **Mexico** | Ext | 1.73 | -7.6 | -1.3 | -80% | Y | 0.05 |
| **Netherlands** | Int | 0.19 | -7.4 | 1.5 | 93% | Y | 0.04 |
| **Poland** | Ext | -1.44 | -4.2 | -1 | -40% | N | 0.02 |
| **Russia** | Int | 2.30 | -16.3 | 3.78 | 32% | N | -0.13 |
| **South Korea** | Ext | 0.40 | -5.0 | 4.9 | 65% | Y | -0.07 |
| **Spain** | Int | 9.62 | -7.4 | 3.5 | 46% | Y | 0.06 |
| **Sweden** | Ext | 2.19 | -7.8 | 2.8 | 64% | N | 0.18 |
| **Turkey** | Ext | 3.68 | -9.7 | 0 | 0% | N | 0.01 |
| **U.S.** | Int | 4.63 | -4.4 | 5.6 | 57% | Y | 0.05 |
| **Ukraine** | Int | 7.17 | -22.4 | 0 | 0% | Y | 0.09 |

**Table 3.4:** Countries in scope and rationale for proposed trigger coding

| Country | Trigger/Source of the Recession | Description |
|---|---|---|
| **Australia** | **External** | Transmission of the crisis to Australian shores happened quite rapidly through equity market adjustments. That said, the Australian banks had only limited direct exposure to high-risk securities such as CDOs (Brown & Davis, 2010) |
| **India** | **External** | Even though India, like other developing countries, was not directly exposed to the crisis, the effects were felt through credit, exports, and exchange rate channels (Kumar & Soumya, 2010). |
| **Japan** | **External** | Delayed yet severe impact. The stock market in Japan began a gradual but substantial decline through the fall of 2008 with the outbreak of the US subprime loan crisis. The decline in stock prices placed a strain on the balance sheet and capital adequacy ratios of commercial banks and, as a result on the Japanese economy.(Kawai & Takagi, 2009, Vollmer & Bebenroth, 2012) |
| **Malaysia** | **External** | As with most East and Southeast Asian economies, the impact on Malaysia was felt largely through a contraction in aggregate demand caused by a collapse in exports, either directly or indirectly, to the United States. (Rasiah & Abidin, 2009) |
| **Mexico** | **External** | The global financial crisis that began in 2008 and the U.S. economic downturn had strong adverse effects on the Mexican economy, largely due to its economic ties and dependence on the U.S. market, with largest impact on manufacturing sector (Villarreal, 2010). |
| **Netherlands** | **Internal** | The Dutch economy was highly exposed to the effects of the financial crisis through the considerable export sector and its internationally oriented financial sector (Masselink & van den Noord, 2009, OECD, 2010). Trigger is considered internal due to concentration risk in the Dutch financial sector caused by regulatory weaknesses. |
| **Poland** | **External** | While Poland's economy was the least impacted in the EU, its mild recession was due to the drop of exports due to the appreciation of the zloty and turbulences on financial markets becoming more visible, which also resulted in deep investment aversion on all the world's financial markets (Drozdowicz-Bieć, 2011) |
| **Russia** | **Internal** | The crisis in Russia was mainly related to the Russian financial markets, the extreme volatility of the price of oil and the political uncertainty caused by the war with the former Soviet republic of Georgia (Kudrin, 2009, Barannik, 2010). |
| **South Korea** | **External** | Following the collapse of Lehman Brothers in September 2008, the financial and foreign exchange markets in South Korea were thrown into turmoil. The real economy also shrank rapidly under the impact of the international financial market unrest and worldwide recession(Moon, 2009, Sharma, 2013, Lee, 2017). |

| | | |
|---|---|---|
| **Spain** | **Internal** | The economic crisis that started in Spain 2008 was largely a problem of its ever-growing private sector debt, aggravated by competitiveness and current account imbalances, and compounded by reckless bank investments and loans (Salmon, 2017, Royo, 2020). |
| **Sweden** | **External** | Sweden is a small and open economy with extensive foreign trade and a financial market that is well integrated with the international markets; hence its banks and broader economy were impacted by the global recession(Öberg, 2009, Raja Mannar, 2017). |
| **Turkey** | **External** | The impact of the financial crisis on the Turkish economy came mainly through two channels: 1) the collapse in external demand affected Turkey's key exports. 2) subdued domestic lending and capital inflows depressed domestic demand (Macovei, 2009) |
| **Ukraine** | **Internal** | The crisis in Ukraine was related to the drop in steel prices and problems with local financial institutions and was exacerbated by the gas dispute with Russia in January 2009 (Andersen, 2008). In 2008, Ukraine's access to international capital markets was curtailed sharply, in addition to the currency markets selling off the hryvnia, and the credit rating agencies downgrading the country's debt. |
| **The United States** | **Internal** | Housing bubbles fueled by sub-prime mortgages, lax regulatory environment, and huge exposure by large banks to high-risk securities (Congleton, 2009, Verick & Islam, 2010) |

### 3.4.3 Calibration

All conditions in the QCA were calibrated as crisp sets. The Trigger condition distinguished countries where the crisis was primarily driven by domestic financial and housing market developments (Trigger = 1, Spain and the United States) from those where the shock originated mainly externally through trade and financial transmission (Trigger = 0, for all other cases), based on OECD and IMF assessments. The PartyChange condition was coded 1 if there was a change in governing party during the crisis window and 0 otherwise, using electoral records. For the quantitative conditions, I followed QCA best practice (Dusa, 2019; Ragin, 2008; Schneider & Wagemann, 2012) and used substantively grounded thresholds rather than purely sample-based medians. The economic impact condition (Econ) captured whether the country was relatively mildly affected by the Great Recession in terms of growth and unemployment. Drawing on OECD evidence that GDP in member countries typically fell by around 6 percentage points, and unemployment rose by about 2.5 percentage points between 2008 and 2009. Countries whose GDP contraction was less than the OECD average 6 percentage points or whose unemployment increase was below the OCED average 2.5 percentage points were coded as Econ = 1. Other cases were coded as Econ = 0.

The TsFStim condition measured the size of the discretionary fiscal stimulus. The OECD reports described packages of around 2% of GDP as standard recommendations, with the average total stimulus package to be approximately 3.5% of GDP (OCED, 2009). I therefore coded countries with a discretionary stimulus of at least 3.5% of the GDP as members of the set of large stimulus packages (TsFStim = 1), and countries below this level as TsFStim = 0. To capture the composition of the stimulus, the DsFStim condition indicated whether at least half of the discretionary package consisted of demand-side measures (DsFStim = 1 if so; DsFStim $\geq$ 0.5 = 0 otherwise). For the change in Tax Morale

(TMd), values less than or equal to 0 were coded as "0," and positive values were coded as "1," indicating a positive change in tax morale after the Great Recession. Using this threshold for the changes in tax morale led to little variation in the cases, with 12 out of 14 countries considered to have a TMd outcome coded as "1." This is addressed in the robustness checks section. Table 3.5 lists the variables and related calibration thresholds used. Table 3.6 lists the score for each condition per country after calibrating the raw data, based on the thresholds discussed earlier, as "1" and "0" scores.

**Table 3.5:** Variables and related calibration thresholds – Main Analysis

| Variable | Desc. | Comments |
|---|---|---|
| **Country** | Country in scope | |
| **TMd1** | Change in tax morale (1: positive change, 0: negative change) | |
| **PartyChange** | Change in Ruling Party during the Recession period ( 0: no change, 1: change in ruling party) | |
| **Trigger** | Trigger for recession (1: Internal factors, 0 External factors) | As per Table 3.4 |
| **GD** | GDP Growth change (07/09) (0: less than threshold, 1 for higher than threshold) | Using the OECD average as a threshold ( -6.1%)[6] |
| **Unemp** | Unemployment Rate Change (07/09) (0: less than threshold, 1 for higher than threshold) | Using the OECD average as a threshold (2.5%) |
| **Econ** | Combining Unemployment and GDP variables as an Economic impact variable : 1 for Unemployment 0 OR GDP 1, 0 otherwise. The Economic Impact variable is coded as 1 (favorable) when at least one macroeconomic indicator signals positive conditions — either low unemployment or high GDP growth — and 0 only when both indicators simultaneously reflect economic deterioration | |
| **DsFStim** | Size of Demand-based Fiscal Stimulus Packages during 2008-2010 as % 2008 GDP: (0: less than threshold, 1 for higher than threshold) | Using 0.5 as Threshold (> 0.5 of total stimulus indicates a higher demand-based stimulus package : 1, <0.5 indicated lower demand-based stimulus package: 0) |
| **TsFSti** | Size of Fiscal Stimulus Packages during 2008-2010 as % 2008 GDP: (0: less than threshold, 1 for higher than threshold) | Using the OECD average as a threshold (3.5%)[7] |

**Table 3.6:** Calibrated Data for Each Country

| Country | TMd | Trigger | PartyChange | Unemp | GDP | Econ | TsFStim | DsFStim |
|---|---|---|---|---|---|---|---|---|
| **Australia** | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 |
| **India** | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| **Japan** | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |
| **Malaysia** | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 |
| **Mexico** | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 |

[6] OECD (2009), *OECD Economic Outlook, Interim Report March 2009*, OECD Publishing, Paris, https://doi.org/10.1787/eco_outlook-v2008-sup2-en.

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Netherlands** | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 |
| **Poland** | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 |
| **Russia** | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 |
| **South Korea** | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 |
| **Spain** | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 |
| **Sweden** | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| **Turkey** | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| **U.S.** | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| **Ukraine** | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 |

### 3.4.4 Truth Table and Logical Minimization

To automate elements of the analysis, I used a QCA software tool called fsQCA (Ragin, 2018) to generate the truth table and to conduct logic minimization. The truth table provides all combinations of conditions that meet the outcome. Each logical combination of values of the causal conditions is represented as one row on the truth table. Once this part of the truth table is constructed, each row is assigned an output value (a score of 1 or 0 on the outcome) based on the scores of the cases which share that combination of input values. Thus, both the different combinations of input values (causal conditions) and their associated output values (the outcome) are summarized in a truth table. The combinations of conditions are systematically compared in a logical minimization process (Ragin, 2018).

Building on the theoretical framework, the empirical model in this study considered the following conditions (i.e., independent variables) for assessment:

- *Econ:* Economic impact
- *Trigger:* Source of the recession (external or internal)
- *TsFStim:* Size of the fiscal stimulus package in this country as percent of its 2008 GDP.
- *DsFStim:* Size of the demand-based fiscal stimulus package in this country as percent of its 2008 GDP.
- *PartyChange:* Change in the ruling party during the recession period.

The truth table included all combinations of these conditions, including cases that did not exist in the cases/countries in scope. Table 3.7 shows the rows with matching cases (countries) in scope. Thus, it includes the trimmed

truth table for the model, updated to include only rows that had 1 or more cases with consistency larger than 0.8, as recommended by the QCA literature (Ragin, 2002, 2008; Roig-Tierno et al., 2017).

**Table 3.7: Trimmed truth table of calibrated conditions and the outcome (TMd)**

| Number of matching cases | TMd | Econ | Trigger | PartyChange | TsFStim | DsFStim |
|---|---|---|---|---|---|---|
| 2 | 1 | 1 | 0 | 0 | 0 | 0 |
| 2 | 1 | 1 | 0 | 1 | 0 | 0 |
| 2 | 1 | 1 | 0 | 0 | 1 | 0 |
| 1 | 1 | 0 | 0 | 0 | 0 | 0 |
| 1 | 1 | 0 | 1 | 1 | 0 | 0 |
| 1 | 1 | 0 | 1 | 1 | 1 | 0 |
| 1 | 1 | 1 | 0 | 0 | 0 | 1 |
| 1 | 1 | 1 | 1 | 1 | 0 | 1 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 1 | 0 | 1 | 1 | 0 | 1 | 0 |
| 1 | 0 | 1 | 0 | 1 | 1 | 1 |

*Notes:* **TMd** is the outcome (change in tax morale; 1 = positive change, 0 = negative). **Trigger** indicates whether the recession was triggered by internal vs. external factors; **PartyChange** indicates a change in the ruling party during the recession period; **TsFStim** is the size of the total fiscal stimulus package (coded high/low); **DsFStim** is the size/share of demand-based stimulus (coded high/low); **Econ** captures economic impact based on unemployment and GDP indicators (coded high/low). The table is **trimmed**, meaning it reports only configurations that occur in the data (≥1 matching case) and meet the chosen **consistency threshold (≥0.8)**.

As part of the standard analysis using fsQCA tool, the following Prime Implicants were identified:

| | **~Trigger PartyChange Econ ~TsFStim ~DsFStim** | **~Trigger ~PartyChange Econ TsFStim ~DsFStim** | **~Trigger ~PartyChange Econ ~TsFStim DsFStim** |
|---|---|---|---|
| **~TsFStim** | ■ | | ■ |
| **~Trigger ~DsFStim** | ■ | ■ | |
| **~Trigger ~PartyChange** | | ■ | ■ |

All the prime implicants identified were selected as part of the analysis, with the intermediate solution considering both presence and absence of the factors in the analysis in terms of contribution to Tax Morale change (TMd).

In QCA software (fsQCA), results are often reported as a *complex*, *intermediate*, or *parsimonious* solution. The complex solution makes no simplifying assumptions whatsoever. The complex solution takes the rows from the truth table coded as one on the outcome, and then applies some Boolean simplification to combine rows, but that is it[8]. The complex solution fully excludes counterfactuals from the analysis— meaning all remainder rows (combinations of conditions lacking sufficient empirical cases) are treated as not leading to the outcome. This produces the most detailed but often hardest-to-interpret results, particularly when many causal conditions are involved (Cangialosi, 2023) .The parsimonious solution takes the opposite approach, incorporating all possible simplifying assumptions. The parsimonious solution allows for any counterfactuals that can help provide a logically simpler solution — including both "easy" and "difficult" counterfactual. The parsimonious solution allows for any counterfactuals that can help provide a logically simpler solution The parsimonious solution presents the "core conditions" which are important as they are present in all three types of solution (Cangialosi, 2023). It treats all remainder rows as "don't cares". Meaning any unobserved configuration can be used if it helps simplify the solution. However, this maximum simplification comes at a cost: this reduction in complexity requires the incorporation of assumptions that can be unrealistic (Ragin and Sonnett, 2004). The intermediate solution sits between the other two, both in complexity and in its treatment of assumptions. The intermediate solution makes use of "easy counterfactuals" — those that are theoretically plausible (Liu et al., 2017, Ragin and Sonnett, 2005).

## 3.5 QCA Results

As discussed earlier, in the QCA software (fsQCA), results are often reported as a *complex*, *intermediate*, or *parsimonious* solution. The parsimonious solution is the most reduced expression; it minimizes the truth table using all available logical remainders (simplifying assumptions) to obtain the shortest set of sufficient configurations. Because it relies on these simplifying assumptions, it is useful for identifying a core pattern. Meanwhile, the intermediate solution is in the middle between the conservative and the parsimonious solutions, both in terms of complexity and also in terms of set relations (Ragin and Sonnett, 2005). We therefore report both the intermediate and parsimonious solutions as the main results below. The intermediate solution is summarized in Table 3.8 and parsimonious solution for the model is summarized in Table 3.9, which shows the different paths (i.e., configurations of conditions) associated with the outcome of interest (a positive change in tax morale, TMd = 1). As covered briefly earlier, in QCA, *consistency* and *coverage* are

[8] https://thomaselliott.me/pdfs/fsqca2.pdf

key metrics used to evaluate the relationship between conditions and outcomes. Consistency measures the extent to which a configuration of conditions is associated with a given outcome, while coverage measures the proportion of outcome cases explained by a solution. How much of the outcome is covered by each solution term is referred to as *raw coverage*, while the share covered by the overall solution is referred to as *solution coverage*. Schneider (2012) recommended an overall consistency threshold above 0.75 and a solution coverage above 0.5; both criteria were met in the solution reported below.

**Table 3.8: QCA results (Intermediate solution): solution paths associated with a positive change in tax morale (TMd = 1)**

| # | Solution Path | Raw Coverage | Consistency | Countries matching the Conditions/Solution Path |
|---|---|---|---|---|
| 1 | ~Trigger*~PartyChange*~TsFStim*~DsFStim | 0.25 | 1 | India, Poland, Turkey |
| 2 | ~Trigger*Econ*~TsFStim*~DsFStim | 0.33 | 1 | India, Japan, Mexico, Poland |
| 3 | ~Trigger*~PartyChange*Econ*~DsFStim | 0.33 | 1 | Australia, India, Malaysia , Poland |
| 4 | ~Trigger*~PartyChange*Econ*~TsFStim | 0.25 | 1 | India, Poland, Sweden |
| 5 | Trigger*PartyChange*~Econ*~DsFStim | 0.17 | 1 | Spain, Ukraine |
| 6 | Trigger*PartyChange*Econ*DsFStim | 0.17 | 1 | Netherlands, US |

**Solution coverage: 1, Solution Consistency: 1**
**Cases:** Countries in scope**, Outcome variable: TMd -** Change in Tax morale (1: positive, 0: negative)
**Conditions:**

- **Econ:** Economic impact, combining Unemployment and GDP variables as an Economic impact variable: 1 (for change in Unemployment lower than OCED average of 2.5% and change in GDP growth higher than OECD average of -6.1%) and 0 otherwise.
- **PartyChange:** Change in the Ruling Party during the Recession period (0: no change, 1: change in ruling party).
- **Trigger:** Trigger for recession in the country (1: Internal factors, 0 External factors).
- **TsFStim**: Size of Total Fiscal Stimulus Packages during 2008-2010 as % 2008 GDP: (0: less than OECD average of 3.5%, 1 for higher than OECD average).
- **DsFStim**: Size of Demand-based Fiscal Stimulus Packages during 2008-2010 as % 2008 GDP: (0: less 50%, 1 for higher than 50%)

***Notes**:* * denotes logical AND; ~ denotes negation (NOT). *Raw coverage* is the share of positive-outcome cases (TMd=1) covered by a given solution path; *consistency* indicates how reliably that configuration is associated with the outcome. Outcome is TMd (change in tax morale; 1 = positive change, 0 = negative).

**Table 3.9: QCA results (parsimonious solution): solution paths associated with a positive change in tax morale (TMd = 1)**

| # | Solution Path | Raw Coverage | Consistency | Countries matching the Conditions/Solution Path |
|---|---|---|---|---|
| 1 | Trigger*PartyChange | 0.33 | 1 | Netherlands, Spain, U.S., Ukraine |
| 2 | ~Trigger*~PartyChange | 0.5 | 1 | Australia , India, Malaysia, Poland, Sweden, Turkey |
| 3 | ~TsFStim | 0.67 | 1 | India, Japan, Mexico, Netherlands, Poland, Sweden, Turkey, Ukraine |
| 4 | ~Trigger*~DsFStim | 0.58 | 1 | Australia , India, Japan, Malaysia , Mexico , Poland, Turkey |

**Solution coverage: 1, Solution Consistency: 1**
**Cases:** Countries in scope**, Outcome variable: TMd -** Change in Tax morale (1: positive, 0: negative)
**Conditions:**

- **Econ:** Economic impact, combining Unemployment and GDP variables as an Economic impact variable: 1 (for change in Unemployment lower than OCED average of 2.5% and change in GDP growth higher than OECD average of -6.1%) and 0 otherwise.
- **PartyChange:** Change in the Ruling Party during the Recession period (0: no change, 1: change in ruling party).
- **Trigger:** Trigger for recession in the country (1: Internal factors, 0 External factors).
- **TsFStim**: Size of Total Fiscal Stimulus Packages during 2008-2010 as % 2008 GDP: (0: less than OECD average of 3.5%, 1 for higher than OECD average).
- **DsFStim**: Size of Demand-based Fiscal Stimulus Packages during 2008-2010 as % 2008 GDP: (0: less 50%, 1 for higher than 50%)

***Notes**:* * denotes logical AND; ~ denotes negation (NOT). *Raw coverage* is the share of positive-outcome cases (TMd=1) covered by a given solution path; *consistency* indicates how reliably that configuration is associated with the outcome. Outcome is TMd (change in tax morale; 1 = positive change, 0 = negative).

As shown in Table 3.9, across the 14 countries there were four sufficient configurations that were associated with a positive change in tax morale (TMd = 1). Solution consistency and coverage were both 1.00, indicating that the listed configurations captured all positive-change cases in the sample. The solution terms (i.e., paths) identified in Table 3.9 did not align neatly with the hypotheses formulated at the start of the chapter and provided a more nuanced picture. The first path (Trigger*PartyChange) pointed to an internal trigger of the recession, associated with change in the ruling party. This path supported the second hypothesis, which stated that the ruling party change during the Great Recession was associated with a positive change in tax morale, with citizens showing optimism toward the new ruling government. This is especially potent when the trigger of a financial crisis in a country is deemed internal, and hence the heightened blame for the crisis falls on the incumbent government. This configuration was observed in the Netherlands, Spain, Ukraine, and the United States, suggesting that when governments are perceived as responsible for a crisis, a change in political leadership can be associated with stable or rising tax morale. On the other hand, the second path (~Trigger*~PartyChange) pointed to an external trigger for recession accompanied by no change in ruling party, and was observed in Australia, India, Malaysia, Poland, Sweden, and Turkey. The third path (~TsFStim) pointed to a smaller-sized total stimulus package in a given country as being associated with an increase in tax morale. This configuration was observed in India, Japan, Mexico, Netherlands, Poland, Sweden, Turkey, and Ukraine. Finally, the fourth path (~Trigger*~DsFStim) pointed to an external trigger of the financial crisis and a smaller-sized demand-based stimulus package as being associated with an increase in tax morale. This condition was observed in Australia, India, Japan, Malaysia, Mexico, Poland, and Turkey.

The two solution paths involving fiscal stimulus contradicted the expectations in Hypotheses 3a–3c. The single-condition path ~TsFStim indicated that not having a very large total stimulus package was sufficient for a positive change in tax morale, which went against Hypothesis 3a (no clear association) and Hypothesis 3c (external trigger combined with large stimulus leading to higher tax morale). Likewise, the path ~Trigger*~DsFStim showed that, among countries with an external trigger, a low share of demand-focused measures could still be part of a sufficient configuration for increased tax morale, which was contrary to the positive association posited in Hypothesis 3. Furthermore, it is worth noting that the economic impact condition (Econ) did not appear in any of the parsimonious solution paths. This result did not support Hypothesis 1.

The intermediate solution (Table 3.8) provided additional insight into the role of conditions that were simplified out of the parsimonious solution. Notably, the economic impact condition (Econ) appeared in four of the six intermediate solution paths (Paths 2, 3, 4, and 6), consistently in its positive form — indicating that favorable economic conditions

(low unemployment growth combined with relatively higher GDP growth) contributed to sufficient configurations for increased tax morale. Following the framework proposed by Fiss (2011), conditions that appear in the intermediate solution but are eliminated in the parsimonious solution are classified as peripheral rather than core. The absence of Econ from the parsimonious solution (Table 3.9) therefore does not mean that economic conditions were irrelevant, but rather that they played a contributing role alongside more central conditions. The core conditions — the political variables (Trigger and PartyChange) and the fiscal stimulus variables (~TsFStim and ~DsFStim) — remained present across both solution types, confirming their centrality to the configurations associated with increased tax morale. The intermediate solution also revealed that for the two internally triggered paths, the configurations diverged: Path 5 (Trigger*PartyChange*~Econ*~DsFStim), covering Spain and Ukraine, combined party change with unfavorable economic conditions and low demand-focused stimulus, while Path 6 (Trigger*PartyChange*Econ*DsFStim), covering the Netherlands and the United States, combined party change with favorable economic conditions and demand-focused stimulus. This within-group variation suggested that while the political mechanism of party change was consistently central to internally triggered cases, the economic and fiscal context in which that change occurred differed meaningfully across countries.

Taken together, the QCA thus suggested that the combinations of conditions associated with increasing tax morale during the Great Recession differed from those anticipated in the initial hypotheses, particularly with respect to the expected roles of economic impact and the size and composition of the fiscal stimulus. In the case studies section, we provide a deeper dive into a subset of the countries/cases considered against each solution path as a case study using causal process tracing, to allow for a more detailed analysis of how the solution path was reflected within the unique context of each country assessed.

## 3.6 Robustness Checks

This section covers robustness checks, considering different thresholds for the calibration of the conditions. We run three different robustness checks. The first robustness check is meant to address the calibration of the economic impact and total stimulus package by identifying a breaking point in the cases in scope using a QCA tool called Tosmana, as an alternative to using the OECD averages applied as a threshold in the main analysis. The second robustness check is to conduct a causal asymmetry analysis. Asymmetric causality describes the fact that insights on the causal role of a condition

may not inform the nature of the causality of the condition in the case of non-occurrence of an outcome. Hence, the explanation of the occurrence of an outcome by a condition does not necessarily explain its non-occurrence (Schneider, 2012).

## Robustness Check 1:

The first robustness check is meant to address the calibration of the economic impact and total stimulus package by identifying a breaking point in the cases in scope using a QCA tool called Tosmana, as an alternative to using the OECD averages applied as a threshold in the main analysis In this robustness check, Full variables included in this analysis are listed in table 3.10

**Table 3.10:** Variables and related calibration thresholds – Robustness Check 1

| Variable | Desc. | Comments |
|---|---|---|
| **Country** | Country in scope | |
| **TMd** | Change in tax morale (1: >= 0.03, 0: otherwise) | Using threshold identified by Tosmana tool for binary variable (0.03) To capture a more meaningful increase in tax morale versus just positive change, regardless of how small. |
| **PartyChange** | Change in Ruling Party during the Recession period ( 0: no change, 1: change in ruling party) | |
| **Trigger** | Trigger for recession (1: Internal factors, 0 External factors) | |
| **GDP** | GDP Growth change (07/09) (0: less than threshold, 1 for higher than threshold) | Using threshold identified by Tosmana tool for binary variable (-11.1%) |
| **Unemp** | Unemployment Rate Change (07/09) (0: less than threshold, 1 for higher than threshold) | Using threshold identified by Tosmana tool for binary variable (4.1%) |
| **Econ** | Combining Unemployment and GDP variables as an Economic impact variable : 1 for Unemployment 0 OR GDP 1, 0 otherwise. The Economic Impact variable is coded as 1 (favorable) when at least one macroeconomic indicator signals positive conditions — either low unemployment or high GDP growth — and 0 only when both indicators simultaneously reflect economic deterioration | |
| **DsFStim** | Size of Demand-based Fiscal Stimulus Packages during 2008-2010 as % 2008 GDP: (0: less than threshold, 1 for higher than threshold) | Using threshold identified by Tosmana tool for binary variable (0.06) |
| **TsFStim** | Size of Fiscal Stimulus Packages during 2008-2010 as % 2008 GDP: (0: less than threshold, 1 for higher than threshold) | Using threshold identified by Tosmana tool for binary variable (4.35%) |

As shown in Tables 3.11 and 3.12, the robustness check using Tosmana-identified breakpoints confirmed the centrality of political conditions while revealing important nuances in the role of fiscal stimulus variables. In the

parsimonious solution (Table 3.11), PartyChange emerged as a core condition, appearing in two of the three paths (Paths 1 and 2), while the internal trigger combined with party change (Trigger*PartyChange) reproduced the key political configuration identified in the main analysis, covering the Netherlands, Spain, the U.S., and Ukraine. This confirmed that internal crisis origins paired with a change in governing party were robustly associated with increases in tax morale.

However, the external trigger paths did not reproduce a simple "external + continuity" pattern. Instead, the parsimonious solution showed that among externally triggered cases, the relevant configuration was the absence of large fiscal stimulus combined with a demand-focused composition (~Trigger*~TsFStim*DsFStim), covering Japan and Sweden. This suggests that for externally triggered recessions, it was not political continuity per se but rather a restrained yet demand-oriented fiscal response that formed part of a sufficient configuration for stable or increasing tax morale.

The intermediate solution (Table 3.12) added further nuance by introducing favorable economic conditions (Econ) as a contributing condition in three of the four paths. Notably, DsFStim appeared as a *present* (non-negated) condition in two intermediate paths —Path 2 (~Trigger*Econ*~TsFStim*DsFStim) and Path 3 (Trigger*PartyChange*Econ*DsFStim) — indicating that demand-focused stimulus composition, when combined with favorable economic conditions and restrained overall stimulus size, could be part of sufficient configurations for increased tax morale. This partially conflicted with the negation of Hypotheses 3b and 3c observed in the main analysis: while large stimulus size (~TsFStim appearing in Paths 1, 2, and 4) remained consistently absent from successful configurations, demand-focused composition played a more constructive peripheral role than the main analysis suggested.

The Ukrainian case (Path 4: Trigger*PartyChange*~Econ*~TsFStim*~DsFStim) stood apart as the only configuration combining internal trigger and party change with unfavorable economic conditions and the absence of both large and demand-focused stimulus — suggesting a uniquely politics-driven path to increased tax morale under adverse economic circumstances. Overall, this robustness check demonstrated that the core political configurations — particularly the role of PartyChange — were robust even when using Tosmana-based thresholds, while the intermediate solution revealed that economic conditions and stimulus composition played meaningful peripheral roles in shaping sufficient configurations for tax morale increases. Both solutions achieved perfect consistency (1.0) and identical overall coverage (0.78). Consistency of 1 means that every single case (country) that matched a given configuration also exhibited the outcome — an increase in tax morale. In set-theoretic terms, the solution is a perfect subset of the outcome. There were no contradictory cases where a country matched the conditions but failed to show the expected result. This is the highest

possible consistency score and indicates that the identified configurations are fully sufficient for the outcome (Ragin, 2008). Solution coverage of 0.78 means that the configurations collectively account for 78% of the outcome's empirical occurrence. In other words, roughly four out of five instances of increased tax morale across the sample are "covered" or explained by at least one of the solution paths. The remaining 22% of cases exhibiting increased tax morale followed paths not captured by these specific configurations. Coverage is the QCA analogue to explanatory power — it tells you how much of the outcome the solution accounts for, not whether the solution is correct (that's consistency's job) (Ragin, 2005, 2008).

**Table 3.11: Robustness Check: Parsimonious Solution- QCA Results when using Tosmana-identified breaking-points for calibration.**

| # | Solution Path | Raw Coverage | Consistency | Countries matching the Conditions/Solution Path |
|---|---|---|---|---|
| 1 | **PartyChange*~TsFStim** | 0.55 | 1 | Japan, Mexico, Netherlands, Spain, Ukraine |
| 2 | **Trigger*PartyChange** | 0.44 | 1 | Netherlands, Spain, U.S., Ukraine |
| 3 | **~Trigger*~TsFStim*DsFStim** | 0.22 | 1 | Japan, Sweden |

**Solution coverage: 0.78, Solution consistency: 1**

***Notes:*** This table reports a robustness check in which the calibration thresholds for Economic impact (Econ), Demand Stimulus (DsFStim), change in Tax morale, and total fiscal stimulus (TsFStim) are set using Tosmana-identified breakpoints rather than the OECD-average thresholds used in the main analysis (Table 3.10). The QCA solution is reported in parsimonious form. * denotes logical AND and ~ denotes negation (NOT). Coverage and consistency are interpreted as in Table 3.7. Solution coverage and solution consistency are reported below the table.

**Table 3.12: Robustness Check: Intermediate Solution- QCA Results when using Tosmana-identified breaking-points for calibration.**

| # | Solution Path | Raw Coverage | Consistency | Countries matching the Conditions/Solution Path |
|---|---|---|---|---|
| 1 | **~Trigger*PartyChange*Econ*~TsFStim** | 0.22 | 1 | Japan, Mexico |
| 2 | **~Trigger*Econ*~TsFStim*DsFStim** | 0.22 | 1 | Japan, Sweden |
| 3 | **Trigger*PartyChange*Econ*DsFStim** | 0.33 | 1 | Netherlands, Spain, U.S. |
| 4 | **Trigger*PartyChange*~Econ*~TsFStim*~DsFStim** | 0.11 | 1 | Ukraine |

**Solution coverage: 0.78, Solution consistency: 1**

***Notes:*** This table reports a robustness check in which the calibration thresholds for Economic impact (Econ), Demand Stimulus (DsFStim), change in Tax morale, and total fiscal stimulus (TsFStim) are set using Tosmana-identified breakpoints rather than the OECD-average thresholds used in the main analysis (Table 3.10). The QCA solution is reported in intermediate form. * denotes logical (AND), and ~ denotes negation (NOT). Coverage and consistency are interpreted as in Table 3.7. Solution coverage and solution consistency are reported below the table.

## Robustness Check 2:

Another element of the robustness checks was conducting causal asymmetry analysis. Asymmetric causality describes the fact that insights on the causal role of a condition may not inform the nature of the causality of the condition in the case of non-occurrence of an outcome. Hence, the explanation of the occurrence of an outcome by a condition does not necessarily explain its non-occurrence (Schneider, 2012). Here, I estimated a separate model with the negation of the outcome (~TMd) as the dependent set. Comparing the solution terms for TMd and ~TMd revealed a clear causal asymmetry. The combination of conditions that were sufficient for the presence of high tax morale were not simply the inverse of those leading to low tax morale.

**Table 3.13: Causal Asymmetry Analysis: QCA Results when outcome variable is ~TMd**

| # | Solution Path | Raw Coverage | Consistency | Countries matching the Conditions/Solution Path |
|---|---|---|---|---|
| 1 | **Trigger*~PartyChange** | 0.5 | 1 | Russia |
| 2 | **Econ*Trigger*~DsFStim** | 0.5 | 1 | Russia |
| 3 | **~Trigger*TsFStim*DsFStim** | 0.5 | 1 | South Korea |
| 4 | **~Trigger*TsFStim*PartyChange** | 0.5 | 1 | South Korea |
| 5 | **~Trigger*DsFStim*PartyChange** | 0.5 | 1 | South Korea |

**Solution coverage: 1, Solution Consistency: 1.**

***Notes:*** Outcome is ~TMd (negative change in tax morale). Because the negative-change outcome (~TMd) is observed for only two countries in the sample, multiple sufficient configurations appear with identical coverage and consistency; these should be interpreted as alternative conjunctural descriptions of the same cases rather than distinct empirical patterns.
* denotes logical (AND) , and ~ denotes negation (NOT). Variable definitions and calibration follow Table 3.7; coverage and consistency are interpreted as in Table 3.8.

The analysis pointed to causal asymmetry, where the conditions that were associated with higher tax morale were not simply the reverse of those under which it declined. In other words, from a policy perspective, the lack of paths that were associated with higher tax morale was not necessarily associated with lower tax morale. That said, since we only had two cases for ~TMd, these results are only illustrative.

## 3.7 Case Studies

This study combined QCA with case studies. While QCA allow researchers to analyze patterns of variation in the scores of dependent variables with variations in the scores of independent variables across cases (Blatter & Haverland, 2014), case studies enable a within-case method of analysis that concentrates on the processes and/or mechanisms that link the effects within specific cases. Accordingly, the conditions identified in the QCA analysis as associated with the outcome (positive change in tax morale) were assessed in terms of necessity and sufficiency for the cases (i.e., countries) where these conditions were met. Based on the results listed in Table 3.10, the case studies were selected as follows:

*Sweden* was used as a case study for process tracing as it had an external trigger and no ruling party change on tax morale.

*Spain* was used as a case study for process tracing for the effect of having an internal trigger and ruling party change on tax morale.

*Japan* and *South Korea* were assessed as outlier cases. Japan had an external trigger and ruling party change that was associated with positive change tax morale. Meanwhile, South Korea had an external trigger and a ruling party change associated with negative change in tax morale.

### 3.7.1 Case Study 1: The Financial Crisis in Sweden

Sweden had a 10% increase in average tax morale of its citizens when comparing WVS responses for waves conducted before and after the recession (2006 and 2011, respectively). This was the largest increase in tax morale among countries considered in this paper. This case study and related processing tracing test considered the effect of having an external trigger for the recession and a lack of change in ruling party on the change in tax morale in Sweden during the Great Recession.

#### 3.7.1.1 The Trigger of Sweden's Economic Woes

Sweden's open economy and reliance to a large degree on trade pointed to an external trigger of the 2007–2008 recession. Sweden has a small and open economy, with extensive foreign trade and a financial market that is well-integrated with international markets, which means that the global financial crisis combined with a severe international economic downturn had a substantial impact on the Swedish economy (Öberg, 2009). Sweden's GDP is approximately

80% reliant on trade. Furthermore, the Swedish banks were dependent on the outside world, with market funding acquired on international markets that is not in the form of deposits accounting for around 60% of many Swedish banks' total balance sheets (Öberg, 2009).

That said, Swedish banks did not take the same level of financial risks that many U.S. and European banks did leading up to the financial crisis. Hence, Swedish banks had a reduced level of exposure to the meltdown than many global financial institutions. However, since Sweden is a major export economy, the drop in global trade with the recession in countries such as the United States and the rest of Europe impacted Sweden's economy, with its GDP moving to negative territories: one of the largest drops in OECD countries. Indeed, the Swedish economy started to deteriorate rapidly in the second half of 2008, and in 2009 Sweden's real GDP decreased by 5%. With this severe drop in aggregate demand and output, the unemployment rate increased by 2.2% (Anxo & Ericson, 2016), slightly less than the European Union's average change in unemployment rate.

#### 3.7.1.2 The Political Climate and Government Response in Sweden

In response to the recession, Sweden's central bank, Riksbank, implemented a large number of measures to safeguard financial stability and mitigate the negative effects of the financial crisis (Öberg, 2009). With these swift measures, an OCED report in early 2011 noted that while Sweden was hard hit by the crisis, in contrast to many other OECD countries it rebounded vigorously with its economy growing back to 6% in 2010. The OECD (2011) report further noted that this swift recovery is in large part thanks to the sound macroeconomic and structural policies the Swedish government had pursued over the couple of decades prior to the crisis. And there was no major change in government during the financial crisis, with the Social Democrat Party maintaining a majority of the seats in Parliament despite losing almost 20 seats, many to the second party (the Moderate Party).

Meanwhile, as a CME Sweden maintains employment and social protections as an ongoing social protection structure and welfare entitlements (Heyes et al., 2012). This likely points to a crisis response with a strong social protection element. In reality, the Swedish government initiated significant cuts in welfare benefits before the crisis, but these were moderated, and in some instances reversed, in response to the crisis (Kiess et al., 2017), with extended unemployment benefits and short-term work schemes. While the fiscal stimulus package the Swedish government rolled out was approximately 3% of its GDP, less than the OECD average of 3.5%, when considering the size of stimulus per

capita, with Sweden's smaller nine million population, it had one of the highest total and demand-based stimuli per capita.

With this context in mind, we can see that Swedish citizens had no strong rationale to "blame" the government and its ruling party for the recession. If anything, considering the strong rebound of the economy in 2010 with what the OECD noted to be due to sound macroeconomic and structural policies, in addition to ongoing generous social protections coupled with large per capita stimulus packages, the support for the higher tax morale hypothesis was affirmed.

### 3.7.2 Case Study 2: The Financial Crisis in Spain

The average tax morale in Spain increased slightly (6%) when comparing WVS responses for waves conducted before and after the recession (2006 and 2011 respectively). The process tracing test attempted to test the causality of the conditions identified in the QCA and changes in tax morale in Spain. This case study and related processing tracing test considered the effect of having an internal trigger of the recession coupled with a change in ruling party on the change in tax morale in Spain during the Great Recession.

#### 3.7.2.1 The Trigger of Spain's Economic Woes

Before the global crisis hit Spain in the spring of 2008, the country had become one of Europe's most successful economies. Propped up by low interest rates and immigration, Spain was in 2008 in its fourteenth year of uninterrupted growth, and it was benefiting from the longest cycle of continued expansion of the Spanish economy in modern history (in the Eurozone, only Ireland had a better record), which contributed to the narrowing of per capita GDP with the European Union. The country had grown on average 1.4 percentage points more than the European Union since 1996. Unemployment fell from 20% in the mid-1990s to 7.95% in the first half of 2007 (the lowest level since 1978), as Spain became the second country in the European Union (after Germany, with a much larger economy) to create the most jobs (an average of 600,000 per year over that decade). In 2006, the Spanish economy grew a spectacular 3.9%, and 3.8% in 2007. The year 2006 was a banner year for Spanish firms: 72% increased their production, 75.1% increased their profits, 55.4% hired new employees, and 77.6% increased their investments (Royo, 2020).

However, this economic growth was driven by various weak internal foundations that contributed to the significant economic impact during the financial crisis; hence, we deemed the trigger of the recession in Spain to be internal. First, the surge in economic growth was largely based on massive growth in the construction and services sectors. In 2006, most of the new jobs were created in low-productivity sectors, such as construction (33%), in services associated with housing, such as sales and rentals (15%), and in tourism and domestic service (30%). These sectors represented 75% of all the new jobs created in Spain in 2006 (Royo, 2020). The rapid deterioration of the international macroeconomic context highlighted the structural weaknesses of the Spanish economy, especially after 2008. Betting on a growth model that was heavily dependent on domestic demand, and more specifically on construction and property development activities, proved to be an absolute failure. The disproportionate growth in the real estate sector, coupled with the expansion of credit needed to finance it, was at the basis of the economic imbalances. With the burst of the real estate bubble and related fall in demand, these low productivity and low intensity sectors fell off a cliff, contributing to a significant surge in unemployment.

Second, much of the economic activity in the early 2000s was fueled by growing private sector debt, compounded by reckless bank investments and loans, which, by over-lending freely to property developers and mortgages, contributed to the real estate property bubble. The massive credit granting to construction and property development activities caused an excessive exposure of the banking industry to those sectors. This exposure was the means of transmission of the housing crisis to the banking sector, whose business was still very constrained by the inadequate risk policy and the deficits of supervision of the pre-crisis period (Carballo-Cruz, 2011).

#### 3.7.2.2 The Political Climate and Government Response in Spain

Spain is defined as a state-led mixed market economy (MME), meaning that its welfare systems show both social democratic (relatively high level of pensions) and liberal (low level of social housing) traits. But these welfare systems are generally very fragmented, and subject to clientelism (Bulbarelli, 2016). Re-elected in March 2008 at a time when concern was already mounting, as in Ireland, over the sustainability of the housing boom, Spain's Socialist Party (PSOE) Prime Minister Zapatero initially preferred to characterize the situation as an economic slowdown, suggesting that the hoped-for "soft landing" would resolve the asset price bubble painlessly. Moreover, spending commitments in the run-up to the election (including an annual income tax rebate and a grant for newborn children), following a series of expansionary budgets, were predicated on continued economic buoyancy. The Spanish government implemented its early fiscal

stimulus, mostly in the form of tax cuts and extra welfare entitlements, as a countermeasure to what was depicted as a temporary weakening in domestic demand (Dellepiane & Hardiman, 2012). The fiscal stimulus package was 3.5% of the GDP, almost exactly equal to the average total stimulus packages across the OECD countries. The demand stimulus packages were slightly less than half of the total stimulus packages and below the OECD average on a per capita basis.

In early 2010, though, the socialist government announced a budget intended to phase out the extraordinary stimulus that had been in effect during 2009, not by cutting spending but through a revenue-based consolidation strategy (Dellepiane & Hardiman, 2012). Then later, in May 2010, the government's stance underwent a radical change in the wake of rising market uncertainty triggered by the financial rescue plan for Greece. A new emergency budget intensified the pace and impact of the deficit reduction program announced in the 2010 budget, aiming to secure €15 billion in spending cuts for the second half of 2010 and into 2011, or 1.5% of the GDP. The measures included direct cuts to civil service salaries of an average of 5% in 2010 and an ongoing freeze in 2011, cuts of 15% to politicians' pay, changes to pension entitlements, the elimination of the headline-grabbing grants to infants, the elimination of dependency benefits, and cuts to the public capital program (Mulas-Granados, 2010). In 2011, the Spanish Socialist Workers Party lost its majority in parliament that it had held since 2004, to the conservative People's Alliance Party (Döring & Manow, 2021).

In summary, although the trigger for the financial crisis in Spain was internal, while unemployment continued to rise and both income per capita and GDP growth were in the negative, there was a government change in 2011. This could imply that the respondents were not attaching blame to the new government and were potentially more optimistic about the government they had just elected, hence explaining the mild increase in average tax morale. This supported the QCA result and the second hypothesis in the theoretical framework, which stipulated that a change in ruling party when the trigger of the recession was internal is associated with a positive change in tax morale. Meanwhile, Spain also matched the fourth solution path of change of ruling party and lower demand-based stimulus package being associated with a positive change in tax morale. While it can be argued the combination of change of ruling party and lower demand stimulus payments can be viewed by citizens to reflect that the new government is fiscally responsible and taking the "tough" steps to course correct, it is not clear if the change of ruling party and lower demand stimulus payments combination is sufficient and necessary for the positive change in tax morale. It is worth noting that this result was counter to Hypothesis 3 in the theoretical framework, which proposed that there *is a* positive association between the size of demand-focused stimulus in each country and change in tax morale.

### 3.7.3 Case Study 3: The Financial Crisis in Japan

The change in tax morale in Japan increased by 5% between the WVS surveys (2005–2010). This case study considered conditions with an association with change in tax morale, and how they differed from the solution paths provided by the QCA.

#### 3.7.3.1 The Trigger of Japan's Economic Woes

Japan's economy continued to enjoy a moderate economic expansion from the beginning of 2002, but since the middle of 2007 the economy had been hit by a series of negative shocks and became increasingly sluggish. This was the second major financial crisis that Japan had faced within two decades, with the first crisis in the 1990s being entirely home-made and its effects largely confined to Japan (Lipscy & Takinami, 2013). When the U.S. subprime loan problem came to the surface in the summer of 2007, many observers thought that Japan was immune to the subsequent global deleveraging, given its limited exposure to "toxic" assets in its banking sector (Kawai & Takagi, 2009). It is recognized that the Great Recession originated outside of Japan (Vollmer & Bebenroth, 2012). It was then transmitted to Japan with a slow decline in growth in corporate profits and wages due to the deterioration in the terms of trade associated with the sharp increase in energy and other commodity prices. Furthermore, the intensified slowdown in overseas economies following strains in global finance were reflected in the growth in Japan's exports turning negative (Shirakawa, 2008). This all pointed to an external trigger of the Great Recession in Japan, leading to a 36.8% fall in GDP growth in the first quarter of 2009. Similarly, industrial production also contracted sharply; it declined by 15.0%, 34.0%, and 27.6% (year-on-year) in the fourth quarter of 2008 and the first and second quarters of 2009, respectively. This decline was one of the worst among the major developed countries in Europe and North America and among Asian economies (Kawai & Takagi, 2009).

#### 3.7.3.2 The Political Climate and Government Response in Japan

While like Sweden, where the trigger of the recession was external, and hence there was hypothetically no strong rationale to blame the Japanese government, the Great Recession coincided with a historic regime shift in Tokyo. The Democratic Party of Japan (DPJ) decidedly defeated the conservative Liberal Democratic Party (LDP) in the August 2009 general elections. The LDP had been in power continuously since 1955, save for 10 months in 1993 and 1994. There

could be no doubt that the economic crisis played a role in citizens losing confidence in the LDP government, and this election outcome reflected less a commitment to the DPJ than a great dissatisfaction with poor LDP performance and a strong desire for change (Patrick, 2009; Tiberghien, 2012). Hence, having an external trigger for the recession did not guarantee that citizens would not blame the government for it.

Meanwhile, Japan and South Korea are both considered development states, in terms of their form of capitalism. Development states are characterized by a strong state-business network, with weak labor unions. This means that, unlike in welfare CME states like Sweden, the redistributive capacity of developmental states is limited, and government spending is low (Wirtschaft, 2013). Wirtschaft (2013) observed that East Asian countries like Japan, with non-liberal/development economies, have a low level of public welfare spending, and large companies provide comprehensive welfare benefits privately to their regular employees. As long as growth rates were high during the early stages of development and the government had a fair amount of control over the economy, job growth allowed for upward mobility. In the case of the Great Recession, the Japanese government had to step in forcefully to stimulate the economy with more of a focus on supply-side stimuli, with strong elements of business subsidies and infrastructure spending compared to Western countries in the same scope.

The size of Japan's stimulus package was around $100 billion USD, which was approximately 4.7% of its 2008 GDP, on the higher end compared to the United States, which had the highest fiscal stimulus package in the western hemisphere (5.5%). Approximately 35% of this package was demand-focused, with a per capita demand-focused package of only $199, quite smaller than the OCED average, which was $634. It is worth noting, however, that when the DPJ assumed power, it pursued an economic policy that included switching government expenditures from public infrastructure to household consumption. The centerpieces of this were providing annual payments of ¥312,000 ($3,284 at 95 yen per dollar) for each child through middle school (age 15), educational payments to reduce senior high school education fees and costs, and income transfers to farmers. Furthermore, the DPJ promised not to raise the consumption tax in the next 4 years (Patrick, 2009). The DPJ's shift to a more demand-focused stimulus policy potentially made these stimulus activities much more salient than the earlier stimulus activities by the LDP. Furthermore, since the prevailing form of capitalism in Japan is that of a development state, as in many East Asian countries, the citizens typically expect lower public welfare spending and accordingly likely lower demand-based stimuli.

### 3.7.4 Case Study 4: The Financial Crisis in South Korea

During the Great Recession, average tax morale in South Korea dropped by 7%. This occurred even though the trigger of the recession was external, and the economic impact of the recession was milder than in the other countries considered.

#### 3.7.4.1 The Triggers of South Korea's Economic Woes

The Great Recession crisis spilled over from the U.S. subprime mortgage crisis, which was external to South Korea, rather than from the Southeast Asian currency and banking crises that began in 1997 (Jeon, 2010). The Korean economy was more exposed to foreign shocks in 2008 due to the implementation of liberalization measures during the post-crisis period, leading foreign investors to play a more important role in setting prices and leading market trends in the Korean financial markets and bringing foreign firms to increased shares of ownership in Korean businesses. This led to the high spillover effects of the financial crisis as it hit the United States and other markets in the domestic economy. This pointed to the trigger of the recession in Korea in 2008–2009 to likely be external.

Despite its robust fundamentals, including holding the sixth largest foreign exchange reserves in the world as of September 2008, and its low debt-to-equity ratios in its corporations, Korea was one of the economies hit hardest by the Great Recession (Ahn, 2012). Ahn (2012) traced the impact to the South Korean won as it went into a downward spiral, leading Koreans to grow fearful as their financial assets evaporated into thin air. This was accompanied by a serious credit crunch that spread to Korea's real economy, which had seen a chain of company bankruptcies between 2007 and 2008. Between 2007 and 2009 GDP growth dropped 4.5% while the unemployment rate increased by only 0.5%, as shown in Figures 3.10 and 3.11. On a daily basis, Koreans suffered the worst exchange rate volatility in years. Inevitably, Koreans also grew fearful as their financial assets evaporated, reminding them of the financial crisis in the 1990s. A serious credit crunch spread to Korea's real economy, and a chain of company bankruptcies started in the construction sector and among some smaller shipbuilders (Ahn, 2012).

#### 3.7.4.2 The Political Climate and Government Response in South Korea

South Korea has a relatively unique economic model in terms of government engagement with the private sector. Hence, a deep understanding of this business culture is essential for an accurate appreciation of its economic and social changes, including crisis and reform. Some of the most distinctive and unique characteristics of the "Korean model" of

economic development during the last four decades are the *chaebols* (family-owned conglomerates), the curb of corporate bond markets (informal and high interest private loans), the chaebol firms' and suppliers' relationship with the promissory note market, localism, and the importance of blood and alumni relationships (Jeon, 2010). Indeed, South Korea, like Japan, is considered a development states in terms of its form of capitalism; development states are characterized by a strong state-business network, with weak labor unions (Wirtschaft, 2013). This pointed to a likely supply-focused fiscal stimulus package as part of the response to the financial crisis of 2007–2009.

Despite experiencing a deep and wrenching economic contraction in the fourth quarter of 2008, perhaps learning from the late 1990s financial crisis and anticipating the downturn that would follow the episode of extreme financial stress, a combination of expansionary fiscal and monetary policies was taken. For example, the Bank of Korea (BOK) let the exchange rate depreciate as capital flowed out and pre-emptively cut the policy rate by 325 basis points in an effort to stimulate the economy (Lall et al., 2012). Furthermore, in response to the Asian financial crisis of 1997–1998, South Korea was forced to adopt wide-ranging structural and financial sector reforms, some under IMF tutelage. These reforms included enhancing the financial regulatory structure and introducing better management of foreign exchange reserves. These reforms probably enhanced the Korean banking and financial sector's ability to absorb economic shocks and recover quickly, including in the Great Recession (Sharma, 2013).

The fiscal stimulus package was approximately 5% of the country's GDP, one of the largest in the world, but only 35% of it was demand-focused; however, the ~$680 demand-stimulus per capita was still considered to be on the higher side. Moreover, the Korean government responded to the liquidity crisis quickly by providing financial institutions with foreign exchange and domestic liquidity, helping restore foreign investors' confidence (Lee, 2017). Indeed, the Korean economy made a remarkable V-shaped recovery by the second half of 2010, notching an impressive 6.2% growth in 2010, which prompted the ever-cautious IMF to announce that Korea's rapid recovery from the global downturn has transitioned into a full-fledged expansion (IMF, 2011b; Sharma, 2013).

Meanwhile, in late 2007 the conservative Grand National Party (GNP), led by Lee Myung-Bak, won the majority in the presidential elections with Lee's campaign slogan "economy president," upsetting the liberal Millennium Democratic party that had been in power since 2002. However, the GNP triumph did not last long, as Lee's popularity dropped significantly in 2008 with a series of crises that eroded the foundation of President Lee's governance. Lee had won the presidential election despite scandals that implicated him in tax fraud, illicit real estate deals, and connections with the BBK, a bankrupt investment firm charged with fraud. Korean voters looked beyond these issues to the larger

mandate of renewing the nation's economy. Lee's campaign pledge to "revitalize the economy" greatly appealed to voters, and his success as CEO of Hyundai Construction and the entrepreneurial leadership exhibited during his tenure as mayor of Seoul served as strong examples of his ability to fulfill that promise (Moon, 2009).

Trouble ensued from the start, as the formation of Lee's cabinet was riddled with scandal. Of the 15 ministerial candidates nominated by the president for legislative approval, 13 were accused of real estate speculation, seven of tax evasion, and one of plagiarism. Furthermore, Lee's governmental decision to lift a ban on American beef led to large-scale protests for three months (the candlelight protests), and nine out of 10 presidential aides tendered their resignations, causing another blow to Lee's government (Lee, 2017). Other policy inconsistency and confusing signals accelerated the public's and market's loss of confidence in the Lee government, as in the example of the government handling of the currency policy (Moon, 2009). Hence, negative changes in tax morale in South Korea during this period could be attributed to the disappointment of South Korean citizens with the new GNP government, as outlined earlier. This is in line with existing literature showing that reduced trust and disappointment with government is associated with reduced tax morale (Gangl et al., 2015; Halla, 2010; Torgler, 2003, 2005b).

## 3.8 Considerations and Limitations

The methodology and data used in this chapter posed several considerations and limitations for future research. A first consideration concerned the usefulness of applying QCA to the research question and whether 14 countries provided sufficient cases for the analysis, especially since we are using 5 variables/factors for the analysis. QCA is increasingly used in the social sciences because it combines elements of quantitative and qualitative methodologies and enables systematic comparison with small samples (Legewie, 2013; Roig-Tierno et al., 2017). Existing research has applied QCA with samples ranging from as few as 5–9 cases to 48–60 cases (Boswell & Brown, 1999; Brueggemann & Boswell, 1998; Kitchener et al., 2002; Melinder & Andersson, 2001; Stokke, 2004). Based on the benchmark tables developed by Marx (2006), with 14 cases and 5 conditions, there is a 1–10% probability that the analysis would generate contradictions from random data alone. This suggests a low but non-trivial risk of spurious non-contradictions, which should be considered when interpreting the results. Including 14 countries in the cross-country analysis was designed to support an interpretive understanding. As Falleti and Lynch (2009) argued, the use of selective cases to test hypotheses

can be valuable for theory-testing because it highlights the role of context. The countries included here provided, for the most part, variation in policies and conditions, enabling meaningful contrasts to inform the analysis.

A second consideration related to the observational survey data. Tax morale was measured using WVS Wave 5 (2005–2006, pre-crisis) and Wave 6 (2010–2011, post-crisis). While these two snapshots were close to the Great Recession period in most countries, other political or social events may have occurred concurrently and influenced survey outcomes. This could be addressed by considering the country-specific political and economic landscape when interpreting results. For example, South Korea experienced strong negative sentiment against the government elected during the recession due to corruption allegations (Moon, 2009), which may have contributed to the observed decline in tax morale. This context may also help explain why South Korea did not fit neatly with the hypothesis that a ruling party change during the recession and lower economic impact would be associated with a positive change in tax morale.

A further limitation stemmed from the causal interpretation and temporal ordering, which is particularly relevant for QCA. While QCA is designed to identify configurational (conjunctural) patterns and can highlight multiple pathways associated with an outcome, it does not by itself establish causal effects. Interpretation therefore relies on the assumption that the calibrated conditions precede the outcome and represent plausible components of a causal process. In this setting, some conditions—particularly policy responses, such as the size and composition of fiscal stimulus—may be jointly shaped by crisis dynamics, political pressures, and pre-existing public attitudes that may also relate to tax morale. Accordingly, the solution paths are best interpreted as empirically observed combinations associated with changes in tax morale rather than as definitive causal mechanisms.

Relatedly, the analysis was abstracted from additional country-specific factors that could have shaped both government responses and tax morale (e.g., political ideology, social trust, historical compliance culture, institutional capacity, or media narratives). Such omitted conditions could have contributed to the observed configurational patterns. The chapter partially addressed this limitation by including conditions that captured major crisis and political features (e.g., the recession triggers and party change) and by complementing the QCA results with case-study discussion to contextualize the findings. Nevertheless, unobserved factors may still have played a role, and future research could triangulate these configurational findings using complementary designs (e.g., richer time-series or panel data where available) to better separate persistent country characteristics from crisis-period dynamics.

Finally, political change itself should be interpreted cautiously. A change in the ruling party may reflect broader political dynamics—such as shifts in voter preferences, political instability, or changing policy priorities—that may also relate to tax morale. While the chapter distinguished between internal and external recession triggers to capture differences in perceived government culpability, this did not fully resolve the possibility that political change and public sentiment evolved together.

## 3.9 Conclusion

As countries slowly recover from a recession, a top priority is increasing tax revenue. This signals the importance of understanding the contributing factors to citizens' tax morale during a recession and informing governments on potential policy levers that can be taken to sustain, or increase, tax morale. This paper contributed to the scarce literature on the impact of the various unique elements during a major recession such as the global financial crisis (2007–2009) on tax morale and identified, using QCA, four configurational paths associated with changes in tax morale during a recession.

The QCA analysis pointed to four parsimonious paths associated with an increase in tax morale during the Great Recession. The first path (Trigger*PartyChange) combined an internal trigger for the recession with a change in the ruling party, while the second path (~Trigger*~PartyChange) combined an external trigger with no change in the ruling party. These solution paths aligned with the second hypothesis in this thesis. They were also consistent with Levi (1998), among others, who argued that when citizens believe that their government has acted in their interests, they are more likely to become "contingent consenters" who cooperate in paying taxes even when their short-term material interest would make free riding their best option (Slemrod, 2009; Torgler, 2003). This was demonstrated in the case of Spain, which had an internal trigger of the recession and a change in ruling party, and it contrasted with the case study of Sweden, which had an external trigger of the recession and no change in ruling party. These examples demonstrated that perceived government responsibility for the recession, together with political change, could be associated with stable or rising tax morale in the countries considered. The results were also consistent with citizens holding governments accountable when the incumbent government was perceived to be shouldering most of the blame of the recession, with party change appearing to be part of a sufficient configuration in the internally triggered cases in this sample.

The third path (~TsFStim) pointed to a smaller sized total stimulus package in a given country forming part of a sufficient configuration for an increase in tax morale. This configuration was observed in India, Japan, Mexico, the

Netherlands, Poland, Sweden, Turkey, and Ukraine. Finally, the fourth path (~Trigger*~DsFStim) pointed to an external trigger of the financial crisis and a smaller sized demand-based stimulus package forming part of a sufficient configuration for an increase in tax morale. This condition was observed in Australia, India, Japan, Malaysia, Mexico, Poland, and Turkey. The two solution paths involving fiscal stimuli contradicted the expectations in Hypotheses 3a–3c. The single-condition path ~TsFStim indicated that not having a very large total stimulus package could be part of a sufficient configuration for a positive change in tax morale, which went against Hypothesis 3a (no clear association) and Hypothesis 3c (external trigger combined with large stimulus leading to higher tax morale). Likewise, the path ~Trigger*~DsFStim showed that, among the countries with an external trigger, a low share of demand-focused measures could still be part of a sufficient configuration for increased tax morale, which was contrary to the positive association posited in Hypothesis 3. Furthermore, the economic impact condition (Econ) did not appear in any of the four parsimonious solution paths, which did not support Hypothesis 1. However, the intermediate solution (Table 3.8) revealed that Econ appeared as a condition in four of the six intermediate paths, consistently in its positive form. Following Fiss (2011), this indicated that favorable economic conditions functioned as a peripheral rather than core condition — contributing to sufficient configurations but not essential to them. In this sample, the results suggested that the perceived source of the recession (internal versus external trigger), together with political and fiscal-response conditions, played a more prominent core role in the identified solution paths than the economic impact condition.

Taken together, the QCA suggested that the combinations of conditions associated with increasing tax morale during the Great Recession differed from those anticipated in the initial hypotheses, particularly with respect to the expected roles of economic impact and the size and composition of fiscal stimuli. The paper also considered two outlier case studies: Japan and South Korea. In Japan's case, the trigger of the recession was external AND there was a change in the ruling party, and this combination of factors was associated with a positive change in tax morale. Further consideration pointed out that the ruling party when the recession began in Japan, the incumbent leading party LDP, had been in power continuously since 1955, save for 10 months in 1993 and 1994, and the literature pointed to the economic crisis playing a role in Japanese citizens losing confidence in the LDP government. Hence, this election outcome was less a reflection of commitment to the newly elected DPJ and more a marker of the great dissatisfaction with poor LDP performance and a strong desire for change (Patrick, 2009; Tiberghien, 2012). Conversely, South Korea had an external trigger for the recession and a change in ruling party associated with a drop in tax morale. In South Korea's case, the new ruling party

got mired quickly in several corruption scandals, eroding any sense of optimism citizens may have had in the new government.

The chapter showed the benefit of using QCA as a technique to study a more complex notion of causality as this method can identify different factors that constitute sufficient configurations for an outcome of interest (Greckhamer et al., 2018). This was especially useful in the cross-country analysis in this study as it allowed for the study of complex relationships between various conditions, such as why the recession began in each country (i.e., the trigger), the size of the economic impact, if there was a change in ruling party, and the size of the total fiscal stimulus package, alongside the change in tax morale as an outcome variable. Applying QCA here allowed for the identification of a combined presence, or lack, of specific conditions that were associated with tax morale, as in the case of the trigger of the recession in a given country and the change in ruling party conditions. Future research would benefit from considering additional countries in the analysis to test the solution paths (i.e., combination of conditions/variables) identified to have a positive association with change in tax morale. Considering the unique circumstances in each country is an important complement in QCA analysis, as shown in the countries included in the case studies section, and especially for outlier countries.

While the QCA findings identify associations rather than causal relationships, the configurations identified offer several considerations that may be relevant for policy discussion. These should be interpreted as patterns observed in this sample that could inform further inquiry rather than as prescriptive policy recommendations. First, the prominence of political conditions across the solution paths suggests that citizens' perceptions of government accountability may be as relevant to tax morale as the economic tools deployed. In countries where the recession was internally triggered, a change in ruling party was consistently part of sufficient configurations associated with increased tax morale, pointing to the potential importance of democratic accountability mechanisms during crises. For policymakers, this pattern implies that the credibility and legitimacy of political leadership — not merely the scale of the fiscal response — may be a relevant factor in sustaining voluntary tax compliance during downturns. Governments navigating internally triggered crises may wish to be attentive to the erosion of public trust in incumbent institutions, recognizing that political renewal could serve as a signal of responsiveness that reinforces the fiscal contract between citizens and the state.

Second, the observation that political continuity was part of a sufficient configuration associated with stable tax morale in externally triggered cases (~Trigger*~PartyChange) carries a distinct consideration: when citizens do not attribute the crisis to their own government, stability in political leadership may reinforce a sense of institutional competence and steady stewardship. Policymakers in countries facing external economic shocks may consider that

maintaining consistent governance — rather than undertaking disruptive political change — could help preserve citizens' willingness to comply with tax obligations. This pattern is consistent with the broader literature on institutional trust and quasi-voluntary compliance (Levi, 1998; Torgler, 2003).

Third, the observation that smaller fiscal stimulus packages (~TsFStim) were part of sufficient configurations associated with increased tax morale challenges the assumption that larger government spending during recessions necessarily strengthens the social contract. One possible interpretation is that citizens may perceive very large stimulus packages as signals of fiscal recklessness or unsustainable debt accumulation, which could undermine confidence in government and, by extension, willingness to pay taxes. Alternatively, countries that deployed smaller packages may have had stronger pre-existing institutional frameworks or social safety nets, reducing the perceived need for large-scale intervention. For policymakers, this pattern suggests that the perceived fiscal prudence of the government response — not just its size — may be worth considering when designing crisis responses. It is important to note, however, that this finding does not imply that smaller stimulus packages cause higher tax morale; rather, in this sample, restrained fiscal responses were observed as part of configurations associated with stable or rising tax morale, and the underlying mechanisms warrant further investigation.

Fourth, the peripheral role of economic conditions revealed by the intermediate solution suggests that while favorable macroeconomic outcomes may contribute to tax morale, they do not appear to be sufficient on their own within the configurations identified. If this pattern holds in broader samples, it would reinforce the argument that tax morale is as much a governance phenomenon as an economic one, and that efforts to strengthen tax compliance may need to extend beyond macroeconomic management to encompass transparency, accountability, and the perceived legitimacy of government action.

Finally, the divergent outlier cases of Japan and South Korea illustrate that the quality of governance following political change may matter as much as the fact of change itself. Japan's case suggested that accumulated dissatisfaction with long-standing incumbents could translate a crisis into an opportunity for renewed citizen engagement, while South Korea's experience indicated that corruption scandals could rapidly erode any goodwill generated by a change in leadership. For policymakers, these contrasting cases highlight that political transitions during crises may present both an opportunity and a risk for tax morale, and that the conduct of the incoming government — particularly its perceived integrity and competence — could be relevant to realizing any potential benefits of political renewal.

# 4. The Great Recession and Tax Morale in the United States

## 4.1 Introduction

Collecting taxes is a fundamental way for countries to generate public revenues that make it possible to finance investments in human capital, infrastructure, and the provision of services for citizens and businesses. This signals the importance of understanding factors that may influence citizens' decisions to evade, or not evade, paying taxes, among other levers governments should consider, to increase tax compliance. This is especially important after a recession, when governments are typically scrambling to increase revenue as part of the economic recovery process. The aim of the present paper was to study the effect of the economic impact and stimulus packages on the tax morale of citizens across 29 U.S. states in the period surrounding the Great Recession (i.e., 2006–2011).

This paper builds on existing tax morale literature, especially regarding the sense of fairness and citizens' attitudes during economic downturns and toward the provisioning of public services (Alm et al., 1992; Cummings et al. 2009; Heinemann, 2009; Lamberton et al., 2014; Lesnik et al., 2014; Sancak et al., 2010; Schneider et al., 2010; Torgler, 2002). Existing research on tax morale (i.e., willingness to pay taxes) during periods of a recession is rare, with a few exceptions like Bitzenis and Vlachos (2018), who assessed tax morale during the Great Recession in Greece, and Heinemann (2009), who used WVS data (Inglehart et al., 2014) to show that high unemployment rates, common in economic crises, are associated with lower tax morale. Other researchers, such as Schneider, Buehn et al. (2010) and Sancak et al. (2010) explored the impact of economic downturns on tax evasion and the size of the shadow economy.

Meanwhile, despite the extensive coverage of the U.S. government's policies' potential role in the Great Recession, and on how the U.S. government handled the response to the events (Baily et al., 2008; Helleiner, 2011; Jaffee, 2008; Lewis et al., 2010), there is almost no research focused on the impact of the Great Recession or the government's response to the recession on tax morale in the United States. Hence, this paper contributes to this scarce literature, aiming to shed light on potential factors that influenced U.S. citizens' tax morale in the context of the Great Recession. Furthermore, in addition to the economic impact and other demographic control variables typically covered in the tax morale literature, the theoretical framework used here considered the potential effect of the size and nature of the stimulus packages as part of the U.S. government's response to the recession.

Moreover, in addition to using WVS data, this paper used a rich data set collected from a variety of government sources. This data set included amounts and areas of allocation of stimulus packages per U.S. state during the recession,

in addition to tax policy changes and average welfare spending per state during the same period. For clarity, the individual observations are from WVS Wave 6, from 2011, across 29 U.S. states. The rest of the data includes mainly state-level data points, capturing the change in state level economic impact indicators and tax policies during the Great Recession, and the one-time allocation of stimulus packages for each state. It is worth noting that since we did not have a time series of tax morale before and after the recession, we could not accurately estimate the effect of the Great Recession on tax morale. Instead, this paper aimed to use the variation of economic impact and stimulus packages associated with the Great Recession across states to consider the potential associations of the various factors surrounding the Great Recession with tax morale.

The result of the analysis points to state-level changes in unemployment rates, as well as to GDP growth and foreclosures as not having an influence on individual tax morale. The analysis of the effect of citizens' employment status on tax morale implied that while there was no statistical difference in the tax morale of the employed versus the unemployed, tax morale among retirees, housewives, and students seemed to be higher than among the unemployed. Furthermore, the total size of the stimulus packages in each state did not seem to have a statistically significant association with tax morale, when controlling for the change in individual states' tax policies, while direct stimulus payments, i.e., household transfers, had a small negative effect on tax morale.

## 4.2 Literature Review

### 4.2.1 Tax Compliance and Tax Morale

Tax morale is a proxy for attitudes towards tax evasion and describes the moral principles or values that individuals hold about paying their tax (Alm & Torgler, 2006). Tax evasion (the opposite of tax compliance) is difficult to observe in the field since it is illegal and hence hidden; activity and direct observations are available only for the small fraction of taxpayers audited (Cummings et al., 2009). For this reason, tax morale has been used in the literature as a proxy for attitudes towards tax evasion (Alm & Torgler, 2006). Several studies have shown that tax morale has a significant positive effect on tax compliance decisions (Cummings et al., 2009; Halla, 2012).

### 4.2.2 Sense of Fairness and Public Goods Provisioning

Fairness is defined as both an aversion to inequality and a concern for reciprocity; how people feel about others depends on how they expect to be treated (Jimenez & Iyer, 2016; Kirchler et al., 2008). From a tax compliance perspective, fairness and justice are related to the perceived balance of taxes paid and public goods received, and to the perceived justice of procedures and the consequences of norm-breaking (Hofmann et al., 2008). Additionally, Cummings et al. (2009) combined experimental and survey data from the United States, Botswana, and South Africa to investigate whether cross-cultural differences could explain tax compliance behavior across these countries. Their results indicated that the observed differences in tax compliance behavior could be explained by differences in the fairness of tax administration, in the perceived equity of the fiscal exchange, and in the overall attitude towards the respective governments across countries (Alm & Torgler, 2006).

The literature has indicated that tax evasion is also related to taxpayers' dissatisfaction with the provision of public goods by a government (Spicer & Lundstedt, 1976). Alm et al. (1993) stressed the relevance of personal benefit derived from public expenditure. The degree of taxpayers' satisfaction with government seemed to play a key role. Alm et al. (1992) analyzed the recognition of government services. The authors concluded that there appeared to be limits to how much governments could affect compliance by increasing the individual payoff to tax payments, and pointed out that the results suggested that government can increase compliance by providing goods that their citizens prefer more, by providing these goods in a more efficient manner, or by more effectively emphasizing that taxes are necessary for receipt of government services (Alm et al., 1992). Torgler (2002) and Lamberton et al. (2014) argued that tax aversion is created through the decoupling of tax payments and the public goods obtained in return and that this disconnect places distance between payment and benefit, therefore decreasing taxpayers' perceptions of the tax-funded benefits they receive. Data suggest that the under-recognition of benefits is widespread: in one survey among Americans who claimed never to have used a government social service, 53% had in fact taken out student loans, and 40% had benefited from Medicare (Mettler, 2011). Because perceptions of such benefits are low at the time of payment, decoupling may undermine tax compliance (Dilip & Gourville, 2001; Thaler, 1999).

### 4.2.3 Economic Impact of the Great Recession

The Great Recession of 2007–2009 was a serious economic shock that affected the United States and was quite reminiscent of the Great Depression of the 1930s (Chang, 2011; Titila, 2010). Although the subprime mortgage crisis in

the United States triggered the Great Recession globally, the United States was not among the most impacted countries in terms of effect on GDP growth. This relatively good performance was potentially due to the magnitude, nature, and swiftness of the U.S. government's response to the financial crisis. This observation was supported by analysis done by the St. Louis Fed, showing that aggregate consumption in the United States would have fallen by almost twice as much in the absence of fiscal policy during the 2009 year (Faria-e-Castro, 2018). That is, instead of falling to 6% below trend, it would have fallen to over 8%. The hypothetical cumulative loss for the period (2007Q1–2013Q4) of no fiscal policy response was 7.18%, or $604.4 billion of aggregate consumption (Faria-e-Castro, 2018). However, the United States did have one of the greatest increases in unemployment rates among the top 20 economies.

The literature on the potential role of economic downturns on tax morale argues that tax compliance declines in periods of economic crises. For example, Schneider (2010) stated that in a booming economy, people have a lot of opportunities to earn a good salary alongside "extra money" in the official economy. This is not the case in an economy facing a recession, as more people try to compensate their income losses from the official economy through additional shadow economy activities (i.e., evading taxation). Sancak et al. (2010) also indicated that firms and households are more likely to evade taxes when they are, for instance, credit constrained and financially distressed. Overall, the argument is that the costs of compliance increase in hard times, so one can expect tax compliance to fall. In terms of the role of specific economic indicators on tax morale, Heinemann (2009) and Lesnik et al. (2014) argued that a sharp hike in unemployment is associated with a reduction in tax morale.

### 4.2.4 The U.S. Government's Response to the Great Recession

In response to the Great Recession, the U.S. government took broad and multifaceted measures that evolved over time, starting with financing programs (i.e., bailouts) to large financial institutions, with the U.S. government approving the Troubled Asset Relief Program (TARP) bailout of $700 billion, purchasing subprime mortgage assets from troubled financial institutions. Furthermore, the U.S. government introduced the Economic Stimulus Act of 2008 and the American Recovery and Reinvestment Act (ARRP) of 2009, which contained multiple provisions to boost the economy in the wake of the Great Recession, including a large fiscal stimulus package with discretionary government action. This fiscal stimulus package was approximately 5.5% of the United States's 2008 GDP (OECD, 2009).

While the U.S. government took what many economists deemed the appropriate steps to mitigate further damage to the economy, many politicians were not keen on supporting some of these measures (Congleton, 2009). Furthermore,

the public's sense that government officials operated through ad-hoc responses that favored powerful interests helped bring the legitimacy of American governmental institutions to historic lows at the time (Wallach, 2015). Hence, despite the large size of the stimulus package, surveys done in 2010 and 2011 revealed that the majority of Americans were either "frustrated" or "angry" with the federal government (Pew, 2010, 2011).

### 4.2.5 Fiscal Stimulus Supporting States' Budgets

Unlike the federal government, state and local governments are generally expected to balance their budgets. Indeed, many states are constitutionally prohibited from carrying a deficit forward into the next fiscal year, forcing them to engage in a combination of expenditure reductions, revenue increases, and borrowing (Chernick et al., 2020; López-Santana & Rocco, 2021). Hence, during the Great Recession, states relied heavily on federal support to help balance their budgets. The ARRP of 2009 appropriated $145 billion of federal fiscal stimulus packages to help boost employment and the economy and help states address their budget gaps during the Great Recession. The state fiscal relief aimed to lessen the degree to which states would have to enact very painful budget cuts and tax increases, both of which would have a negative effect on the economy (Center on Budget and Policy Priorities [CBPP], 2009). The stimulus package also provided additional payments for highways and other infrastructure projects, in addition to funding for education and transfers to individuals affected by the recession (Gordon, 2012).

The present paper used the categorization of the U.S. government fiscal policy intervention (i.e., stimulus package) proposed by Faria-e-Castro (2018), which broke the fiscal stimulus package in the AARP into the following four discretionary spending areas: (1) government consumption and investment, (2) transfers to households, (3) support to nonfinancial corporations, and (4) support to the financial sector. Government consumption and investment consisted of direct purchases of goods and services by the government and also included goods that corresponded to transfers in kind. Transfers to households covered policies that involved: monetary transfers to households; tax rebates, cuts, and/or incentives; incentive payments and program funding directed at homeowners; and creditor relief and support. Support to non-financial corporations covered equity injections and transfers. Support to the financial sector included credit and/or asset guarantees and emergency lending facilities aimed at the financial sector (Faria-e-Castro, 2018). Government consumption and investment were a relatively small fraction of the total spending, while transfers to households were a relatively large fraction. While these household transfers came in many different forms, most of the programs were

targeted at lower-income households. The rationale was mainly that low-income households tend to have a higher propensity to spend income, thus making these transfer programs more likely to stimulate immediate private consumption.

Transfers to households were of special interest in the present research, considering their potential higher salience to citizens than other stimulus channels, especially for those in lower-income brackets, as were the typical recipients of the transfers. The U.S. Bureau of Economic Analysis (BEA) defined transfer payments from the government as including Social Security benefits, medical benefits, veterans' benefits, and unemployment insurance benefits. For clarity, the ARRP included the following allocations in its allotments of transfers to households: The temporary increase in States' Federal Medical Assistance Program (FMAP), the state fiscal stabilization fund to help state and local governments avert budget cuts especially education, unemployment insurance, child care, child support, training and employment services, food stamp (or Supplemental Nutrition Assistance) program, homelessness prevention fund, child tax credits and the Making Work Pay tax credit for low-income families (Brass et al, 2009, P2).

Details and the breakdown of the AARP budget allocation for household transfers per state are addressed in the data section.

## 4.3 Theoretical Framework

Building on the literature above, this paper introduced a theoretical framework, depicted in Figure 4.1, to assess the potential impact of the Great Recession on tax morale in the United States.

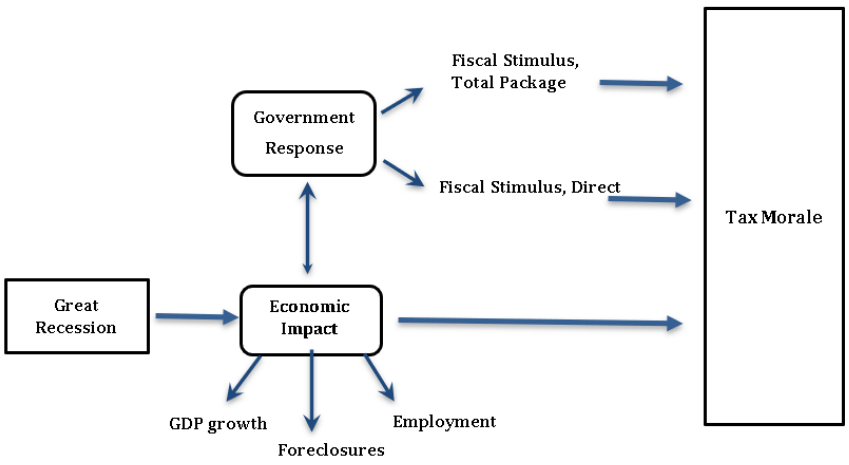



**Figure 4.1:** Theoretical Framework*, channels linking the Great Recession in the US to changes in tax morale (economic impact, and government response).*
**Source:** Author's illustration, based on the literature reviewed in Chapter 4.

Since we did not have a time series that captured individuals' tax morale before and after the recession, we could not estimate the potential causality of the Great Recession on tax morale. Instead, this paper aimed to use the cross-state variation of economic impact and stimulus packages associated with the Great Recession as a proxy for the effect of the Great Recession on tax morale. The tax morale dependent variable was from the 2011 WVS observations, while the independent state-level variables captured the changes in economic conditions and government stimulus during the recession, The analysis was done using linear regression with standard error clustering at the state level.

The theoretical framework considered two main channels as proxies for the Great Recession, seeing them as either individually or collectively influencing the tax morale of citizens across various U.S. states at that time. The first channel was the economic impact of the Great Recession; we argued that a negative economic impact would have an association with a drop in tax morale. The second channel was the government's response. The U.S. federal government released broad national measures, such as quantitative, large bailout packages for corporates and fiscal stimulus packages for each state. This research focused on fiscal stimulus measures allocated per state, either in totality or as stimuli focused on household transfers (i.e., direct stimulus), to allow for comparison across states; the other measures were mostly not state-specific.

### 4.3.1 Economic Impact and Tax Morale

This paper considered the economic impact of the Great Recession on tax morale on two levels: the state level and the individual level.

#### 4.3.1.1 State-Level Economic Impact

The indicators of the state-level economic impact of the Great Recession in this study were the changes in GDP growth, changes in the unemployment rate, and changes in foreclosures per state. Schneider et al. (2010) and Sancak et al. (2010) argued that economic recessions increase the incentives for citizens to evade taxes to compensate for income losses and credit constraints. Furthermore, Heinemann (2009) and Lesnik et al. (2014) argued that a sharp hike in unemployment is associated with a reduction in tax morale. These observations led to the first hypothesis explored here:

> *Hypothesis 1:* Negative macro (state-level) economic impact during the Great Recession, in the form of drops in the U.S. state-level GDP growth, increased in the state-level unemployment rate or foreclosures and was

associated with a drop in tax morale for citizens in the impacted states.

#### 4.3.1.2 Individual-Level Economic Impact

The literature on the association of citizens' employment status with tax morale during an economic crisis argues that a sharp hike in unemployment is associated with a reduction in tax morale (Heinemann, 2009; Lesnik et al., 2014). This resulted in the following hypothesis:

*Hypothesis 2:* Being unemployed has a negative association with tax morale.

### 4.3.2 Government Response and Tax Morale

The fairness paradigm defines fairness as both an aversion to inequality and a concern for reciprocity; how people feel about others depends on how they expect to be treated (Jimenez & Iyer, 2016; Kirchler et al., 2008). The fairness paradigm in tax compliance literature (Hofmann et al., 2008) offers two angles to assess the potential association between stimulus payments and tax morale. First, when considering overall stimulus packages, there might be a perceived sense of unfairness associated with a negative perception of how the stimulus packages are spent (i.e., saving large corporates versus regular citizens), leading to a drop in tax morale. This influenced the third hypothesis:

*Hypothesis 3:* The size of the <u>total</u> stimulus package per capita in a state will have a weak association with the tax morale of citizens in this state.

On the other hand, direct stimulus payments in the form of household transfers are probably more salient to regular citizens than other stimulus policies such as those geared towards increasing broader public investment. We could thus leverage the fairness paradigm to propose a positive association between having higher direct stimulus payments and tax morale, with citizens appreciating governments intervention to help with their economic challenges during a recession, offering distributive fairness (Jimenez & Iyer, 2016).

Meanwhile, the literature suggests that the under-recognition of benefits is widespread. For example, Mettler (2011) used survey data to show that among Americans who claimed never to have used a government social service, 53% had in fact taken out student loans, and 40% had benefited from Medicare. Furthermore, building on the mental accounting concept from Thaler (1999) and transaction decoupling from Dilip and Gourville (2001), Lamberton et al. (2014) argued that perceptions of benefits are low at the time of payment and that tax aversion is created through the

decoupling of tax payments and the public goods obtained in return. Using these lenses, the following hypothesis was posited:

> *Hypothesis 4:* The size of the direct stimulus package per capita in a state will have a weak association with the tax morale of citizens in this state.

## 4.4 Research Design

### 4.4.1 Data

This paper aimed to use the variation of economic impact and stimulus packages associated with the Great Recession across 29 U.S. states as a proxy for the effect of the Great Recession on tax morale in these states. Hence, the research presented here was centered on the empirical analysis of 1,766 observations from the 2011 WVS in the United States across 29 states and complemented by stimulus data collected from many sources in the internet archives, as covered later in the section, in addition to state-level economic indicators and other state-level policies. It is worth noting that the 29 states in scope were generally the most populous and should have provided appropriate coverage in terms of number of observations to support the analysis. The states included were those with more than 20 observations in WVS Wave 6, conducted in 2011, to allow for representative responses per state and hence a reasonably meaningful analysis. Zoning the analysis of the Unites States enabled a different degree of analysis of the hypotheses, compared to cross-country study, as it enabled testing of hypotheses that were only possible on a sub-country level.

#### 4.4.1.1 Tax Morale Before the Recession

Tax morale is typically captured in the literature using question such as, “Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between: Cheating on taxes if you have a chance.” Respondents are asked to evaluate the statement on an ordered scale from Never Justifiable (1) to Always Justifiable (10). This survey question was the best available source to measure tax morale since, compared to other survey questions, its formulation is quite general, and a reasonable number of responses from a large set of countries over time is available (Halla, 2010). The 29 states included in the analysis were grouped by the U.S. Census Bureau regions and divisions. The states included covered the most populous states across the United States and were those with more than 20 observations in the WVS, to allow for representative responses and a meaningful analysis. It is worth noting

that the WVS responses in the United States for Wave 5 (2006) were coded by U.S. Census Bureau divisions, whereas the responses in the United States for Wave 6 (2011) were coded by both the U.S. Census Bureau Divisions and respective states. To streamline the analysis, the average tax morale per division in WVS Wave 5 was used as one of the control variables in the analysis of U.S. citizens' 2011 tax morale, clustered at the state level.

#### 4.4.1.2 Tax Morale After the Recession

The dependent variable in this paper was tax morale (TM) in 2011, which I obtained from the WVS in response to the following survey question: "Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between: Cheating on taxes if you have a chance." TM was based on responses to this statement on a 10-level ordered scale from Never Justifiable, coded as 10, to Always Justifiable, coded as 1. It is worth noting that 70.5% of the total responses in the WVS were mapped to 10, i.e., Never Justified. The figure below shows the average tax morale in 2011 per state, indicating that there was a little variation in tax morale across states, despite how different each state was in terms of demographics, prevailing ideology, state-level policies, etc. The analysis examines these variations more closely in later sections.

#### 4.4.1.3 Economic Impact Data

I considered economic impact data at both the state and individual level. At the state level, changes in GDP growth (2006–2011), unemployment rate (2006–2011), and foreclosure rates (2005–2008) were included in the analysis. For clarity, the economic impact data were listed as one data point for each U.S. state in scope, taken as the average value of the change across the duration 2006–2011 for GDP growth and unemployment and from 2005–2008 for foreclosures. Meanwhile, economic impact at the individual level was considered using the declared employment status by individuals surveyed as part of the 2011 WVS and was categorized as Unemployed, Retired, Employed (full-time, part-time, or self-employed), and Other (housewife or student).

#### 4.4.1.4 Government Response Data

##### 4.4.1.4.1 Stimulus Packages

In response to the Great Recession, the United States, like many other nations, enacted fiscal stimulus programs that used different combinations of government spending and tax cuts. These programs included the Economic Stimulus Act of 2008 and the ARRA of 2009. The Economic Stimulus Act of 2008 offered tax credits for individuals, with tax filers receiving a basic credit of $600, and incentives for businesses regarding business assets and properties were depreciated. The ARRA reduced federal taxes by an estimated $287 billion over 10 years. Over 80% of the tax cuts—$232 billion—were for individuals; smaller cuts subsidized investment in renewable energy and a handful of provisions for businesses. Table 4.1 provides the list of total fiscal stimulus allocated per state per capita in nominal (current) USD as reported by www.Recovery.org,[9] a website made available by the U.S. government during the Great Recession to provide visibility into stimulus allocation per state and by government department. As Table 4.1 shows, the total stimulus per capita per state varied between $1,880 and $934. This was not a big variation across states, considering that it was a one-time allocation. This lack of strong variation across states may have led to a lack of clear association with change in tax morale, which was assessed in the empirical analysis.

[9] Currently only available through the internet archive – snapshot taken on 20 April 2011: Recovery.gov. (2011). *State totals by agency* [Archived webpage]. Archived from the original on April 20, 2011. Retrieved January 14, 2026, from https://web.archive.org/web/20110420034427/http:/www.recovery.gov/Transparency/agency/Pages/StateTotalsByAgency.aspx

**Table 4.1:** Total Stimulus Allocated per State per Capita (USD)

| State | Total Stimulus Allocated per Capita (USD) | State | Total Stimulus Allocated per Capita (USD) |
|---|---|---|---|
| **Alabama** | $ 1,149 | **Mississippi** | $ 1,270 |
| **Arizona** | $ 1,359 | **Missouri** | $ 1,239 |
| **Arkansas** | $ 1,256 | **Nebraska** | $ 1,051 |
| **California** | $ 1,367 | **Nevada** | $ 1,251 |
| **Colorado** | $ 1,187 | **New Jersey** | $ 1,312 |
| **Connecticut** | $ 1,412 | **New Mexico** | $ 1,441 |
| **Florida** | $ 1,160 | **New York** | $ 1,786 |
| **Georgia** | $ 1,159 | **North Carolina** | $ 1,324 |
| **Illinois** | $ 1,490 | **Ohio** | $ 1,304 |
| **Indiana** | $ 1,290 | **Oklahoma** | $ 1,280 |
| **Iowa** | $ 1,308 | **Pennsylvania** | $ 1,374 |
| **Kansas** | $ 1,074 | **South Carolina** | $ 1,138 |
| **Kentucky** | $ 1,220 | **Tennessee** | $ 1,295 |
| **Louisiana** | $ 1,242 | **Texas** | $ 1,111 |
| **Maryland** | $ 1,287 | **Utah** | $ 1,137 |
| **Massachusetts** | $ 1,880 | **Virginia** | $ 934 |
| **Michigan** | $ 1,544 | **Wisconsin** | $ 1,268 |
| **Minnesota** | $ 1,318 | **Wyoming** | $ 1,359 |

*Notes*: Dollar amounts are taken from Recovery.gov "National Totals by State/Territory" and reflect agency-reported Recovery Act totals (funds announced/available/paid out). Values are **nominal (current) USD as reported at the time**, extracted from the **20 April 2011** archived snapshot; **not inflation-adjusted**

In addition to considering the potential impact of the total stimulus packages on citizens' tax morale in each state, this analysis further considered the specific direct stimulus packages (i.e., household transfers). Household transfers were broken into the categories summarized in Table 4.2 (CBPP, 2009), and the breakdown of related budget allocation per state is in the table in Appendix 2[10].

[10] U.S. Department of Education. (2010). State tables: FY 2011 state allocations and estimates [Excel file]. Archived from the original on May 30, 2010. http://web.archive.org/web/20100530210223/http://www2.ed.gov/about/overview/budget/statetables/11stbystate.xls
Lav, I. J., Park, E., Levitis, J., & Broaddus, M. (2009). Recovery Act provides much-needed, targeted Medicaid assistance to states [Archived webpage]. Center on Budget and Policy Priorities.
http://web.archive.org/web/20090925045920/http:/www.cbpp.org/cms/index.cfm?fa=view&id=2647
Sherman, A. (2009, February 12). Recovery agreement temporarily expands child tax credit for large numbers of children in every state. Center on Budget and Policy Priorities (CBBP). https://www.cbpp.org/research/recovery-agreement-temporarily-expands-child-tax-credit-for-large-numbers-of-children-in.
https://www.nelp.org/app/uploads/2015/03/RecoveryPlanEstimates.pdf

**Table 4.2: Programs in the American Recovery and Reinvestment Act of 2009 – Direct Stimulus**

| | |
|---|---|
| **Temporary Increase in State FMAP** | The Federal Medical Assistance Percentage or "FMAP" is an economic recovery bill providing a temporary increase in the share of the Medicaid program paid by the federal government |
| **Education** | "State Fiscal Stabilization Fund" to help state and local governments avert budget cuts amid the growing state fiscal crisis, especially around education. The "Hope Credit" provides tax subsidies for higher education for low-income students |
| **Unemployment Insurance** | Includes provisions for financial incentives to states to adopt reforms to their Unemployment. The economic recovery package includes federal funding for a $25 per week increase in unemployment benefits. |
| **Childcare** | The economic recovery package will provide an additional $2 billion in childcare funding under the Childcare and Development Block Grant (CCDBG) |
| **Child Support** | The American Recovery and Reinvestment Act includes $1 billion to temporarily suspend a provision in the Deficit Reduction Act of 2006 that reduced federal child support funding by 20 percent. |
| **Training and Employment Services** | The Workforce Investment Act (WIA) provides funds to localities for job training and employment services for dislocated workers, youth, and adults. The economic recovery package will provide $3.95 billion for WIA training and employment services. |
| **Food Stamp (or Supplemental Nutrition Assistance) Program** | The economic recovery package includes $20 billion for the Food Stamp Program (recently renamed the Supplemental Nutrition Assistance Program). Most of this amount (about $19 billion) would be used to fund a 13.6 percent increase to maximum food stamp benefits, |
| **Homelessness Prevention Fund** | The Homelessness Prevention Fund (HPF) will provide formula grants to states and localities that may be used for homelessness prevention. The economic recovery package provides $1.5 billion for HPF for homelessness prevention activities. |
| **Child Tax Credit** | The Child Tax Credit provides a partially refundable federal income tax credit of up to $1,000 per child (under 17) to help offset the costs of raising a child. |
| **Making Work Pay Tax Credit** | The centerpiece of the tax relief in the economic recovery bill is a new Making Work Pay Credit of up to $400 per worker. |

Considering variations in population size across states, the analysis of the stimulus packages included the per capita figures to allow for a meaningful comparison across states. Table 4.3 provides the breakdown of direct stimulus (household transfers per state per capita). Refer to Appendix 2 for further details. The direct stimulus payments per capita per state varied between $1,433 and $829. This was not a big variation across states considering that this was a one-time payment. That said, low-income citizens were the recipients of most of the direct payments, so they probably received a larger payment.

**Table 4.3:** Direct Stimulus per State per Capita (USD)

| State | Direct Stimulus (Household Transfers) Allocated per Capita (USD) | State | Direct Stimulus (Household Transfers) Allocated per Capita (USD) |
|---|---|---|---|
| **Alabama** | $ 986 | **Mississippi** | $ 1,208 |
| **Arizona** | $ 1,058 | **Missouri** | $ 1,097 |
| **Arkansas** | $ 1,190 | **Nebraska** | $ 894 |
| **California** | $ 1,094 | **Nevada** | $ 920 |
| **Colorado** | $ 862 | **New Jersey** | $ 885 |
| **Connecticut** | $ 1,005 | **New Mexico** | $ 1,234 |
| **Florida** | $ 940 | **New York** | $ 1,433 |
| **Georgia** | $ 990 | **North Carolina** | $ 996 |
| **Illinois** | $ 1,014 | **Ohio** | $ 1,061 |
| **Indiana** | $ 987 | **Oklahoma** | $ 1,035 |
| **Iowa** | $ 938 | **Pennsylvania** | $ 1,048 |
| **Kansas** | $ 920 | **South Carolina** | $ 976 |
| **Kentucky** | $ 1,084 | **Tennessee** | $ 1,097 |
| **Louisiana** | $ 1,265 | **Texas** | $ 1,106 |
| **Maryland** | $ 909 | **Utah** | $ 886 |
| **Massachusetts** | $ 1,114 | **Virginia** | $ 829 |
| **Michigan** | $ 1,073 | **Wisconsin** | $ 971 |
| **Minnesota** | $ 1,034 | **Wyoming** | $ 902 |

*Notes*: Dollar amounts are taken from Recovery.gov "National Totals by State/Territory" and reflect agency and state-reported Recovery Act totals (funds announced/available/paid out). Values are **nominal (current) USD as reported at the time**, extracted from the **20 April 2011** archived snapshot; **not inflation-adjusted**

#### 4.4.1.4.2 Welfare Spending

To control for the effect of ongoing support payments to citizens in each state, the analysis controlled for existing welfare spending across the states, to control for variation in the provisioning of welfare spending across states and to remove bias from the analysis of household transfer payment provisions specific to the Great Recession stimulus payments.

#### 4.4.1.4.3 Tax Rate Changes

Some states introduced changes to their tax policies between 2009–2010 in personal income, sales, and business taxes. These changes are summarized in Appendix 2, table 5 and were coded as a categorical control variable in the analysis to control for these tax changes in the analysis. They were included as categorical variables since the intent of

the present paper was to control for tax policy changes as an increase, decrease, or no change, all of which could have influenced the tax morale of the citizens of states where these changes were made.

#### 4.4.1.5 Descriptive Statistics for Key Variables

**Table 4.4: Summary Statistics for key independent variables**

| Variable | Description | Mean | Std. Dev. | Min. | Max. | Obs. |
|---|---|---|---|---|---|---|
| **TM** | Tax Morale per individual (2011) | 9.20 | 1.65 | 1.00 | 10.00 | 1797 |
| **GDP** | Change in GDP growth per state[11] | 0.12 | 0.06 | 0.02 | 0.25 | 29 |
| **UnEmp** | Change in Unemployment rate per state[12] | 4.48 | 1.65 | 2.20 | 9.30 | 29 |
| **Forcs** | Change in Foreclosure rate per state[13] | 0.67 | 0.63 | 0.07 | 2.14 | 29 |
| **StimTpC** | The size of the fiscal stimulus funds per State per Capita (2008-2011), 1000USD in nominal (current) USD | 1,329 | 181 | 934 | 1880 | 29 |
| **StimDpC** | The size of direct fiscal stimulus funds (Household Transfers) per State per Capita (2008-2011), 1000USD in nominal (current) USD | 1,052 | 127 | 829 | 1433 | 29 |

## 4.5 Empirical Method

The empirical analysis uses cross-sectional linear regressions of individuals' tax morale, where standard errors were clustered at the state level. The dependent variable was TM, Tax Morale in 2011, which measured the declared tax morale (i.e., willingness to pay taxes) by respondents to the WVS (Inglehart, 2014), using Wave 6 (2011) across 29 states in the United States. To manage the potential issue of having some states over-sampled, the weighting variable (S018) in the WVS was used to correct the analysis. As covered in the theoretical framework section, due to data availability limitations, the Great Recession was proxied by the in-between state variables, specifically the economic impact variables and stimulus package variables, to assess the impact of the Great Recession on tax morale. To examine the hypotheses presented in the theoretical framework, the following estimation models were postulated, with the independent variables of interest highlighted in bold.

[11] Change over 2006-2011 period.
[12] Change over 2006-2011 period.
[13] Change over the 2005-2008 period.

### 4.5.1 Analysis of State-Level Variables

**Model 1** tested Hypothesis 1, estimating the association between state-level recession severity and individual tax morale using the following formula:

$$TM_{is} = \beta_0 + \beta_1 GDPs + \beta_2 Unemps + \beta_3 Foreclosure_s + \beta_4 TM_d^{2006} + \gamma' Z_i + \varepsilon_{is}, \quad (4.1)$$

where $TM_{is}$ was tax morale in 2011 for individual $i$ in state $s$ (WVS Wave 6). $GDPs$ was the change in GDP growth between 2006 and 2011 in state $s$ as per the BEA,[14] $Unemps$ was the change in the unemployment rate between 2006 and 2011 in state *s* as per U.S. Bureau of Labor Statistics,[15] and $Foreclosure_s$ was the foreclosure rate measure for state $s$ as per the Report to Congress on the Root Causes of the Foreclosure Crisis.[16] $TM_d^{2006}$ was baseline tax morale in 2006, measured as the division-level average in WVS Wave 5 for division $d$ (10 U.S. divisions covering the 29 states in the sample). $Z_i$ was a vector of individual controls (age category, income category, gender, ethnicity indicators, and ideology indicators). Standard errors were clustered at the state level.

**Model 2** tested Hypothesis 3 by relating total stimulus per capita (and policy controls) to tax morale:

$$TM_{is} = \beta_0 + \beta_1 \boldsymbol{StimTpCT_s} + \beta_2 WelfarepC_{Avg_s} + \beta_3 TaxPI_s + \beta_4 TaxSales_s + \beta_5 TaxBiz_s$$
$$+\beta_6 TM_d^{2006} + \gamma' Z_i + \varepsilon_{is}, \quad (4.2)$$

where $TM_{is}$ was individual tax morale in 2011 for respondent $i$ in state $s$. $StimTpCT_s$ was total stimulus per capita in state $s$ (Recovery.gov archived snapshot, April 20, 2011; nominal USD as reported). $WelfarepC_Avg_s$ was average welfare spending per capita at the state level (as defined in Appendix 2). $TaxPI_s$, $TaxSales_s$, and $TaxBiz_s$ were indicators for state tax changes (personal income, sales, and business taxes, respectively). $TM_d^{2006}$ was baseline tax morale in 2006, measured at the census-division level, and $Z_i$ was a vector of individual controls (age category, income category, gender, ethnicity indicators, and ideology indicators). Standard errors were clustered at the state level. Model 3.1 set $\beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$. Model 3.2 added $WelfarepC_Avg_s$. Model 3.3 added the tax-change indicators.

[14] U.S. Bureau of Economic Analysis (BEA)
[15] U.S. Bureau of Labor Statistics : U.S. Bureau of Labor Statistics
[16] https://www.huduser.gov/portal/publications/foreclosure_09.pdf

**Model 3** tested Hypothesis 4 by relating direct stimulus per capita (and the same policy controls) to tax morale:

$$TM_{is} = \beta_0 + \beta_1 StimDpCT_s + \beta_2 WelfarepC_{Avg_s} + \beta_3 TaxPI3_s + \beta_4 TaxSales3_s + \beta_5 TaxBiz3_s + \beta_6 TM_d^{2006} + \gamma' Z_i + \varepsilon_{is}. \quad (4.3)$$

The definitions followed Model 2, except that $StimDpCT_s$ captured the direct (household-transfer) stimulus component per capita. As above, $Z_i$ included age, income, gender, ethnicity, and ideology indicators. Standard errors were clustered at the state level.

### 4.5.2 Analysis of Individual-Level Variables

**Model 4** tested Hypothesis 2 regarding the effect of employment status on tax morale:

$$TM_{is} = \beta_0 + \theta' Emp1_i + \beta_1 TM_d^{2006} + \gamma' W_i + \varepsilon_{is}, \quad (4.4)$$

where $Emp1_i$ was a vector of employment-status indicators for individual $i$ (with the omitted category as the reference group, being the unemployed in the regression tables), and $W_i$ contained the standard demographic controls (age category, income category, gender, ethnicity indicators, and ideology indicators). $TM_d^{2006}$ was baseline division-level tax morale.

## 4.6 Results

### 4.6.1 Economic Impact and Tax Morale During the Great Recession

In considering the results of Model 1, which tested Hypothesis 1 on the effect of economic impact during the recession on tax morale, the state-level indicators of recession severity—the change in GDP growth (2006–2011), the change in unemployment (2006–2011), and foreclosure rates (2005–2008)—showed no statistically significant association with individuals' tax morale in 2011. Meanwhile, Model 4 added individual employment-status categories to test Hypothesis 2. As shown in Table 4.5, there was no statistically significant difference in tax morale between employed and unemployed respondents (the omitted category). The coefficients for retirees and for housewives/students were positive relative to the unemployed category, suggesting higher tax morale on average; however, these differences were not statistically significant in the reported specification.

**Table 4.5:** Empirical Analysis – Economic Impact

| | (1) Model 1 | (2) Model 4 |
|---|---|---|
| **State-level economic indicators** | | |
| Change in GDP growth per state (2006–2011) | -0.323 | |
| | (0.842) | |
| Change in unemployment rate per state (2006–2011) | -0.008 | |
| | (0.036) | |
| Foreclosures (2005–2008) | -0.025 | |
| | (0.101) | |
| **Individual economic indicators – Employment Status** | | |
| Employment status: Retired | | 0.198 |
| | | (0.168) |
| Employment status: Housewife or Student | | 0.191 |
| | | (0.132) |
| Employment status: Employed | | 0.096 |
| | | (0.153) |
| **Baseline tax morale & demographics** | | |
| Baseline tax morale (division average, 2006) | -0.137 | -0.128 |
| | (0.317) | (0.270) |
| Age | 0.223*** | 0.206*** |
| | (0.034) | (0.040) |
| Income | -0.158* | -0.170** |
| | (0.078) | (0.076) |
| Female | 0.259*** | 0.253*** |
| | (0.072) | (0.069) |
| ***Fixed effects & stats*** | | |
| Ethnicity | Yes | Yes |
| Ideology | Yes | Yes |
| Observations | 1,859 | 1,859 |
| R-squared | 0.0493 | 0.0504 |

***Notes:*** Dependent variable is tax morale in 2011 (TM). Estimates are weighted OLS with sampling weights (S018). Robust standard errors are clustered by state (X048ISO; 29 clusters). Baseline tax morale is the division-level average in 2006 (TM_Div2006). Model 2 reports coefficients on employment-status categories; the omitted category is the base employment group in the regression (unemployed). *, **, *** denote $p<0.10$, $p<0.05$, $p<0.01$.

While not core to the present paper, several individual-level correlates displayed patterns consistent with the tax morale literature. Age was positively associated with tax morale, and women reported higher tax morale on average (Doerrenberg & Peichl, 2017). Income was negatively associated with tax morale in these models. Ethnicity and ideology fixed effects were included in all specifications. Relative to White non-Hispanic respondents (the omitted category), Black non-Hispanic respondents showed weak evidence of lower tax morale ($p \approx 0.06$), and Hispanic and Other non-Hispanic respondents reported significantly lower tax morale. Relative to Republicans (omitted category), self-identified Democrats and respondents in the Rest category (e.g., independents/other) reported significantly lower tax morale.

### 4.6.2 Stimulus Packages and Tax Morale During the Great Recession

In assessing Hypothesis 3 using Model 2 on the effect of the size of the total stimulus package during the recession on tax morale, three variations of the model were estimated, as shown in Table 4.6. Model 2.1 included the demographic controls (age, income, gender, ethnicity, and ideology), along with division-level baseline tax morale. Model 2.2 added average welfare spending per capita at the state level. Model 2.3 further controlled for changes in state-level personal income, sales, and business taxes. The results in Table 4.6 show that total stimulus per capita (StimTpCT) was negatively associated with tax morale in Model 2.1 ($p = 0.003$). Interpreting StimTpCT in thousands of USD, the point estimate implied that an additional $1,000 per capita in total stimulus was associated with approximately a 0.36-point lower tax morale score on the 10-point scale. However, this relationship was not statistically significant once welfare spending was included (Model 2.2), and it remained statistically insignificant when adding the tax-policy controls (Model 2.3). In Model 2.3, a personal income tax rate increase was positively associated with tax morale, while the sales-tax increase indicator was negative at the 10% level. It is worth noting that the tax morale measure was highly concentrated at the upper end of the scale (with a large share of respondents selecting 10, “tax evasion is never justified”), so the estimated magnitudes should be interpreted as modest changes in an already right-skewed outcome.

**Table 4.6: Empirical Analysis: Government Response (Total Stimulus Package)**

| | (1) Model 2.1 | (2) Model 2.2 | (3) Model 2.3 |
|---|---|---|---|
| **Government response** | | | |
| Total stimulus per capita | -0.362*** | -0.432 | -0.212 |
| | (0.112) | (0.308) | (0.307) |
| Welfare spending per capita, average | — | 0 | 0 |
| | | (1.66E-04) | (1.38E-04) |
| Personal income tax rate increase | — | — | 0.152** |
| | | | (0.074) |
| Sales tax rate increase | — | — | -0.176* |
| | | | (0.102) |
| Business tax rate increase | — | — | -0.060 |
| | | | (0.108) |
| **Baseline tax morale and demographics** | | | |
| Baseline tax morale (division average, 2006) | -0.118 | -0.113 | 0.053 |
| | (0.254) | (0.248) | (0.310) |
| Age | 0.225*** | 0.225*** | 0.224*** |
| | (0.034) | (0.034) | (0.034) |
| Income | -0.162** | -0.162** | -0.170** |
| | (0.076) | (0.076) | (0.076) |
| Female | 0.254*** | 0.255*** | 0.248*** |
| | (0.072) | (0.072) | (0.071) |
| Ethnicity indicators | Yes | Yes | Yes |
| Ideology indicators | Yes | Yes | Yes |
| Observations | 1,859 | 1,859 | 1,859 |
| R-squared | 0.0511 | 0.0511 | 0.0531 |
| Clusters (States) | 29 | 29 | 29 |

*Notes:* Dependent variable: Tax morale in 2011 (TM). OLS estimates with sampling weights (S018). Robust standard errors (in parentheses) are clustered by state (X048ISO). StimTpCT is constructed from Recovery.gov state totals (archived snapshot: 20 April 2011) and is in nominal (current) USD as reported at the time. Control variables for Personal Income Tax, Sales Tax and Business Tax are indicators for rate increases (omitted category: no increase). * p<0.10, ** p<0.05, *** p<0.01.

Applying the same approach in Model 3, direct stimulus per capita (StimDpCT) showed a negative and statistically significant association with tax morale across specifications, including after adding controls for welfare spending and state tax changes (Table 4.7). The magnitude of the association was somewhat attenuated once the full set of controls was included, but the estimated relationship remained statistically significant.

**Table 4.7:** Empirical Analysis – Government Response – Direct Stimulus

| | (1) Model 3.1 | (2) Model 3.2 | (3) Model 3.3 |
|---|---|---|---|
| **Government response** | | | |
| Direct stimulus per capita | -0.813*** | -1.017*** | -0.809** |
| | (0.231) | (0.335) | (0.381) |
| Welfare spending per capita, average | — | 0 | 0 |
| | | (1.39E-04) | (1.20E-04) |
| Personal income tax rate increase | — | — | 0.122 |
| | | | (0.079) |
| Sales tax rate increase | — | — | -0.132 |
| | | | (0.105) |
| Business tax rate increase | — | — | -0.077 |
| | | | (0.106) |
| **Baseline tax morale and demographics** | | | |
| Baseline tax morale (division average, 2006) | -0.249 | -0.274 | -0.089 |
| | (0.260) | (0.253) | (0.309) |
| Age | 0.225*** | 0.225*** | 0.224*** |
| | (0.034) | (0.034) | (0.035) |
| Income | -0.167** | -0.167** | -0.172** |
| | (0.076) | (0.076) | (0.075) |
| Female | 0.251*** | 0.252*** | 0.247*** |
| | (0.071) | (0.072) | (0.069) |
| Employment Status | — | — | -0.001 |
| | | | (0.023) |
| Ethnicity indicators | Yes | Yes | Yes |
| Ideology indicators | Yes | Yes | Yes |
| Observations | 1,859 | 1,859 | 1,859 |
| R-squared | 0.0530 | 0.0533 | 0.0547 |
| Clusters (States) | 29 | 29 | 29 |

***Notes**:* Dependent variable: Tax morale in 2011 (TM). Coefficients with clustered standard errors in parentheses. OLS estimates with sampling weights (S018). Robust standard errors (in parentheses) are clustered by state (X048ISO). Ethnicity omitted category is White, non-Hispanic; ideology omitted category is Republican. TaxPI3/TaxSales3/TaxBiz3 are indicators for rate increases (omitted category: no increase). * p<0.10, ** p<0.05, *** p<0.01.

## 4.7 Robustness Checks

The earlier results on the potential impact of change in GDP growth and unemployment rate per state on tax morale used the change in the period 2006–2011 to align with the period of the WVS. A robustness check included using the economic impact during the narrower period of the Great Recession (i.e., 2007–2009), since this was when the highest volatility of change took place, and it focused on economic impact closest to the Great Recession in the United States.

This analysis still pointed to no statistically significant association between state-level changes in unemployment rate or GDP growth and tax morale for citizens of the states included.

Another robustness check was to use a binary variable for the tax morale dependent variable by coding 1 for those who answered Never Justified for the tax evasion question in the WVS and 0 for the rest of the answers. This approach provided a clear view of those who expressed no willingness to evade taxes at all (TM = 1) and those who had some degree of willingness to evade (TM = 0). Applying the same analysis using the binary dependent variable showed broadly similar results. Direct stimulus remained negatively and statistically significantly associated with high tax morale ($p = 0.031$), with an average marginal effect of approximately 18 percentage points per $1,000 per capita, even after controlling for welfare payments and changes in state-level tax policies. Total stimulus was also negative but only marginally significant at the 10% level in the full specification ($p = 0.062$), with an average marginal effect of approximately 13 percentage points.

## 4.8 Limitations

The present paper attempted to leverage existing data from a variety of sources to answer an important question regarding changes in tax morale in the United States during the Great Recession. Relying on existing data introduced limitations that could potentially have limited the robustness of the results. In the ideal case, there would have been years of data on tax morale, aggregated at the state level to allow for an event study to provide a more tangible estimation of the potential impact of the Great Recession on tax morale. Since these data were not available, I aimed to leverage available data from the 2011 WVS, and to control for tax morale per division in 2006, as a first attempt to consider existing data sources on tax morale. I used proxies for the Great Recession, including the economic impact and stimulus packages, to see if there was some support of the idea that tax morale was affected by the Great Recession.

A few endogeneity issues arose from this analysis. One of the primary endogeneity issues was reverse causality. Specifically, while the study hypothesized that the economic downturn (e.g., changes in unemployment, GDP growth, foreclosures) and government stimulus packages affected tax morale, the reverse was arguably also plausible: individuals' tax morale might have influenced their perceptions of government policy responses to the recession. For instance, citizens with high tax morale might have perceived the government's actions more favorably, influencing their views on the fairness of fiscal stimulus packages or unemployment benefits. Therefore, it was difficult to determine whether the

government's fiscal measures led to changes in tax morale or if individuals' pre-existing tax morale shaped their perceptions of the stimulus response. To address this issue, I used cross-state variation in terms of the economic impact and stimulus allocations as a proxy for the effect of the Great Recession on tax morale. By comparing states that experienced different economic shocks and government responses, the study aimed to isolate the effects of these factors on tax morale. The use of cross-state variation allowed the study to address reverse causality at a broader level, though it did not fully resolve the potential for individual-level reverse causality. Future research could use instrumental variables (IV) such as levels of political trust, historical government fiscal behavior, or external shocks unrelated to the Great Recession. These instruments could help isolate the effect of government actions from individuals' pre-existing tax morale, improving the causal interpretation.

Another concern was omitted variable bias, where unobserved factors could have simultaneously affected both tax morale and the economic and policy variables. If these factors were not properly controlled for, the results could be biased. I controlled for a range of demographic variables, including age, income, gender, ethnicity, and political ideology. Additionally, the study included state-level controls, such as welfare spending, and prior tax morale (using WVS Division-level data from 2006, as discussed), which helped account for potential confounders that could drive both economic response and tax morale. We also clustered standard errors by state; however, given the cross-sectional design and the inclusion of state-level regressors, we could not include state fixed effects without absorbing the between-state variations used for identification.

On the other hand, changes in tax policies (e.g., increases or decreases in state-level income taxes, sales taxes, or business taxes) could have influenced both tax morale and the government's fiscal response to the recession. If tax policy changes were implemented simultaneously with fiscal stimulus measures, it would be difficult to disentangle the effects of each on tax morale. The study controlled for changes in tax policies at the state level, categorizing them as increases, decreases, or no change. This allowed us to isolate the impact of fiscal stimulus on tax morale while accounting for the potential influence of concurrent tax policy changes. These control variables helped mitigate the bias from simultaneous tax policy changes and government stimulus measures. That said, although tax policy changes were controlled for, there could have been other policy shifts or external economic conditions (such as financial regulations or changes in the labor market) that affected tax morale in ways that the model did not capture. Future research could consider using a difference-in-differences (DiD) approach, where states with similar baseline economic conditions (before the recession) are compared, focusing on the variation in both tax policy and government stimulus measures across time.

## 4.9 Conclusion

It is important to note that this paper did not seek to establish causality. Instead, it aimed to explore potential associations between tax morale and certain elements that were unique to the Great Recession, such as the economic impact and stimulus packages across various states in the United States. We used existing data, taking a methodical and comprehensive approach to collect relevant secondary data relating to the economic impact and government response in each state during the Great Recession. The present research contributes to the scarce literature on the impact of a recession like the 2007–2009 financial crisis on tax morale, with a focus on the United States. This was done by identifying and aggregating disparate data from a variety of sources to see if we could gain new insights on factors influencing tax morale during a recession. Due to limited data availability, for the purpose of assessing the impact of the Great Recession on tax morale, the Great Recession was proxied by the in-between state variables, specifically the economic impact variables and stimulus package variables. Future research should consider running the analysis over an extended period to assess if the identified effects on tax morale during a recession are persistent.

The first insight from the analysis was that the macroeconomic impact, in the form of an increase in unemployment and drop in GDP growth at a state level in the United States, had no effect on the tax morale of citizens of the states considered. Meanwhile, retirees, students, and housewives had a higher tax morale compared to the unemployed in point estimates, although these differences were not statistically significant. There was no statistically significant difference in tax morale between employed and unemployed respondents. This effect could be rationalized by the retirees continuing to receive social benefits regardless of the recession since other individuals who were not active in the labor market (e.g., students and housewives) were also not as impacted by the recession compared to the unemployed. This could also explain why there was no statistical significance between tax morale of the employed versus the unemployed, since both were in the labor market and potentially shared anxieties about job prospects, considering the volatility of the job market during the recession. Pew (2010) showed that the work-related impact of the Great Recession extended far beyond the 9.7% who were unemployed or the 16.6% who, according to the U.S. Bureau of Labor Statistics, were either out of work or underemployed. This Pew (2010) survey found that about one-third (32%) of adults in the labor force had been unemployed during the recession. When asked about a broader range of work-related impacts, 55% of adults in the

labor force said that during the recession they had suffered a spell of unemployment, a cut in pay, a reduction in hours, or an involuntary spell in a part-time job (Pew, 2010).

The second insight was that the total size of the stimulus package in each state showed a small negative association with tax morale in the baseline specification; however, this relationship was not statistically significant once additional state-level controls were included. This could be interpreted as signaling that while citizens may have appreciated the benefits from the stimulus packages, there was potentially a sense of unfairness regarding how the government managed the overall response to the Great Recession. In the Pew (2010) survey about the stimulus package, a majority of Americans said that it had increased the federal budget deficit, and far fewer said that it had prevented steeper job losses or led to improvements in roads or other infrastructure in their area (Pew, 2010). A later Pew (2015) survey showed that citizens saw that the wealthy and large corporations had benefited greatly from the government policies during the recession and were concerned about the increase in the government deficit.

Furthermore, the direct stimulus packages in the form of household transfers (e.g., food stamps, unemployment insurance, and childcare subsidies) had a negative association with tax morale. This could be explained by U.S. citizens' sense of unfairness regarding how the government handled the overall response to the Great Recession, and potentially by the fact that those on the lower income scale were the beneficiaries of most of the direct stimulus benefits.

While acknowledging the aforementioned limitations, it is worth noting that this study provides a starting point to answer the question regarding the impact of the Great Recession on tax morale by building a rich data set and constructing a theoretical framework that built on existing literature in political science, economics, and psychology. It did so by leveraging the between-state variations during the Great Recession as a proxy to consider how the government responded at a state level and how this then influenced tax morale. It is worth stressing that while we could not confirm causality, the results point to theoretical predictions and indicators in the descriptive and empirical analysis and provide support for the influence of specific factors associated with the Great Recession and tax morale. The insights from this study should "directionally" inform policymakers' considerations when responding to an economic crisis, taking the importance of increasing tax morale into account as one of the ways to increase tax revenue as part of a broader strategy to recover from a recession.

# 5. The Arab Spring in Egypt, the Embrace of Democracy, and Tax Morale

## 5.1 Introduction

Collecting taxes is a fundamental way for countries to generate public revenue that makes it possible to finance investments in human capital, infrastructure, and to provide services for citizens and businesses. For this reason, it is important to understand the factors that may influence citizens' decisions to evade, or not evade, paying taxes, among other levers governments should consider to increase tax compliance. This is especially important after a political or economic shock, when governments typically scramble to increase revenue as part of the economic recovery process (IMF, 2011; Martinez-Vazquez & McNab, 2000; Slemrod, 1990). The emphasis in the extant literature on the low tax effort observed in many developing countries has been on *supply side* factors or *tax handles* (Bird et al., 2004; Gordon & Li, 2009; Kitchen, 2012; Martinez-Vazquez & McNab, 2000). While these factors remain important to consider when increasing tax revenues, telling a country that wants to raise its tax levels to find and tax natural resources is not a particularly promising form of policy advice (Bird et al., 2008). Hence, there is value in considering other levers to increase tax revenue, such as gaining a better understanding of the factors that influence citizens' willingness to pay taxes (i.e., tax morale).

In the present paper we examined Egypt during the Arab Spring as a case study to assess the association of political shock-related factors and tax morale. Egypt found itself in an especially precarious economic position after the Arab Spring, with inflation surging from 3% to 18%. Furthermore, government debt grew from $30 billion to $40 billion, debt payment jumped from $5 billion to $8 billion per annum, and international reserves melted from $36 billion to $15 billion (Tabaar, 2013). It is therefore important to consider Egypt after the Arab Spring, its related economic and political environment, and how these may have impacted Egyptians' tax morale.

The Arab Spring of 2011 marked a significant turning point in the political landscape of Egypt, ending three decades of authoritarian rule under President Hosni Mubarak. This revolutionary wave was fueled by an interplay of economic grievances and political discontent. Despite Egypt's impressive macroeconomic growth in the years preceding the revolution, with the GDP growing 5–7% from 1990–2008, the benefits of this growth failed to reach most of the population. By 2011, 25.2% of Egyptians lived below the national poverty line, inflation stood at 11.3%, and youth unemployment had reached a staggering 25%. The breakdown of the "authoritarian bargain," whereby the state provided

services and subsidies in exchange for political compliance, further eroded the legitimacy of the regime. In addition to economic grievances, Egypt was considered one of the most repressive countries in the world on the eve of the Arab Spring. Freedom House categorized Egypt as Not Free, and the country ranked poorly in various democratic and corruption indices. The combination of economic hardship, political repression, and widespread corruption created a volatile environment that ultimately led to the mass demonstrations of 2011.

In this chapter I examined the effects of the Arab Spring in Egypt in 2011 as a political shock on tax morale, where tax morale is defined as the intrinsic motivation to pay taxes. I considered the effects of the Arab Spring, the intensity of the related protests, and Egyptian citizens' vision for Egypt in terms of embracing democracy as potential factors that influenced tax morale. This study aimed to contribute to the broader understanding of tax behavior in transitioning economies. It built on existing literature on the Egypt context of the Arab Spring, specifically in terms of economic and political environment (Idris, 2016; Mahmood et al., 2020; Ogbonnaya, 2013; Winckler, 2013), Egyptians' sentiments and expectations before and after the Arab spring (Devarajan & Ianchovichina, 2018.; Echevarría & García-Enríquez, 2020; El-Haddad, 2020; Hatab, 2020; Tabaar, 2013), and the tie-ins to existing tax morale research (Bird et al., 2004, 2008; Daude et al., 2013; Torgler & Schneider, 2005, 2009).

This study contributes to the scarce research on the association between political shocks, democratic transitions, and tax morale. Examples of this limited literature include Bird et al. (2008), who considered the role of citizens' voice on tax compliance and who argued for democracy as a political system that channels citizen preferences into policy decisions as efficiently as possible. This conclusion was echoed in Frey (2001), Torgler (2002), and Torgler and Schneider (2009), to name a few examples. However, this literature did not clearly consider the situation when a democracy is in its infancy or when institutions are not mature enough for citizens to trust the democratic process or the potential value they might claim from democratically-run institutions.

The present study used a theoretical framework that considered the Arab Spring in Egypt a political shock. The theoretical framework and related empirical models analyzed the intensity of the protests across Egypt using the number of casualties during the Arab Spring as a proxy to conduct a diff-in-diff analysis across 10 governorates in Egypt before and after the Arab Spring, in order to assess the potential influence of the change in protest intensity during the Arab Spring on tax morale. Furthermore, we also considered citizens' vision for Egypt in terms of embracing democratic values as potential factors influencing tax morale and as potential mediating factors for the political shock. The Egyptian context

of this analysis offered another contribution, as we considered the results and policy implications as applying to Egypt and to other countries in similar situations.

The analysis here used WVS, which provides nationally representative survey data across the world. For the present study, we focused on Wave 5, which took place before the Arab Spring (2005–2009), and Wave 6, which took place after the Arab Spring (2010–2014) (Inglehart et al., 2014). To measure the extent of exposure to the Arab Spring and the intensity of protests against the various governorates across Egypt, we used the proportion of killings and injuries per governorate in the duration from January 2011 to February 2012 from the Egyptian Revolution Database (WikiThawra, 2014), which were gathered by the Egyptian Center for Economic and Social Rights. This approach built on the work of Rafhi and Volle (2019), who used diff-in-diff analysis to assess the change in the preference for redistribution in Egypt due to the Arab Spring, compared to other similar countries that did not experience the same political shock. The empirical analysis in the present paper showed that while the occurrence of the Arab Spring had a negative association on tax morale, the intensity of the protest per governorate seemed to have a positive association on tax morale. We also saw that embracing democracy had a positive association on tax morale. Introducing the embrace of democracy diluted the effect of protest intensity. We also saw empirical evidence of a positive association between protest intensity per governorate and an increase in the embrace of democracy by Egyptian citizens.

Furthermore, as part of the robustness checks, we used data from WVS Wave 5 (2008), which took place in Egypt before the Arab Spring, and Wave 7 (2018), which took place after the Arab Spring (2010–2014) (Inglehart et al., 2014). Using WVS-7 instead of WVS-6 for post-Arab Spring analysis meant that an additional 5 years had passed since the Arab Spring, and thus the related effects could have been diluted. However, it enabled us to extend the scope of the Egyptian governorates we considered from nine to 22, due to the difference in the level of data coverage in each wave.

## 5.2 Literature Review and Research Context

The literature review is split into two main sections. The first section examines the Egypt context in terms of the economic and political environment and provides a summary of the existing literature's assessment of how the economic and political environment, along with historical and cultural factors, contributed to the boiling point that was the 2011 Arab Spring in Egypt. The second section aims to create a bridge between the existing tax morale literature and the literature related to Egyptians' sentiments and expectations before and after the Arab Spring.

### 5.2.1 The Arab Spring in Egypt

The existing literature has pointed to many factors that preceded the Arab Spring in Egypt in 2011. The socioeconomic situation for most Egyptians was dire. On the one hand, the macro view of the Egyptian economy showed a rosy picture; the country's share in global trade had tripled, and its GDP was growing 5–7% between 1990–2008. Direct foreign investment remained $46 billion during the period from 2004–2009 (Mahmood et al., 2020). While the country's economic performance was impressive, it could not live up to the expectation of the masses, and for normal Egyptian people, the picture was very different. Poverty was widespread, with 25.2% of the population below the national poverty line, and inflation was high, at 11.3%. This disparity contributed to high economic discontentment.

It is also worth noting that the geographical development was uneven, leaving some areas, like Sinai and Upper Egypt, totally deprived. Furthermore, while the overall unemployment rate hovered around 9%, youth unemployment was at 25%, and the unemployment rate of those with advanced education lay at 19%. These trends alienated the youth, especially university graduates (Echevarría & García-Enríquez, 2020). Interestingly, before the 2011 revolution, income inequality in Egypt was low and declining (Hlasny & Verme, 2016). In 2011, Egypt's Gini index stood at 28.3. The Gini index reflects the distribution of income or wealth among a population and ranges from 0 (perfect equality, where everyone has the same income) to 100 (perfect inequality, where one person holds all the income). Thus, a lower Gini index indicates a more equitable distribution of resources. Gini global values are shown in Figure 5.1.

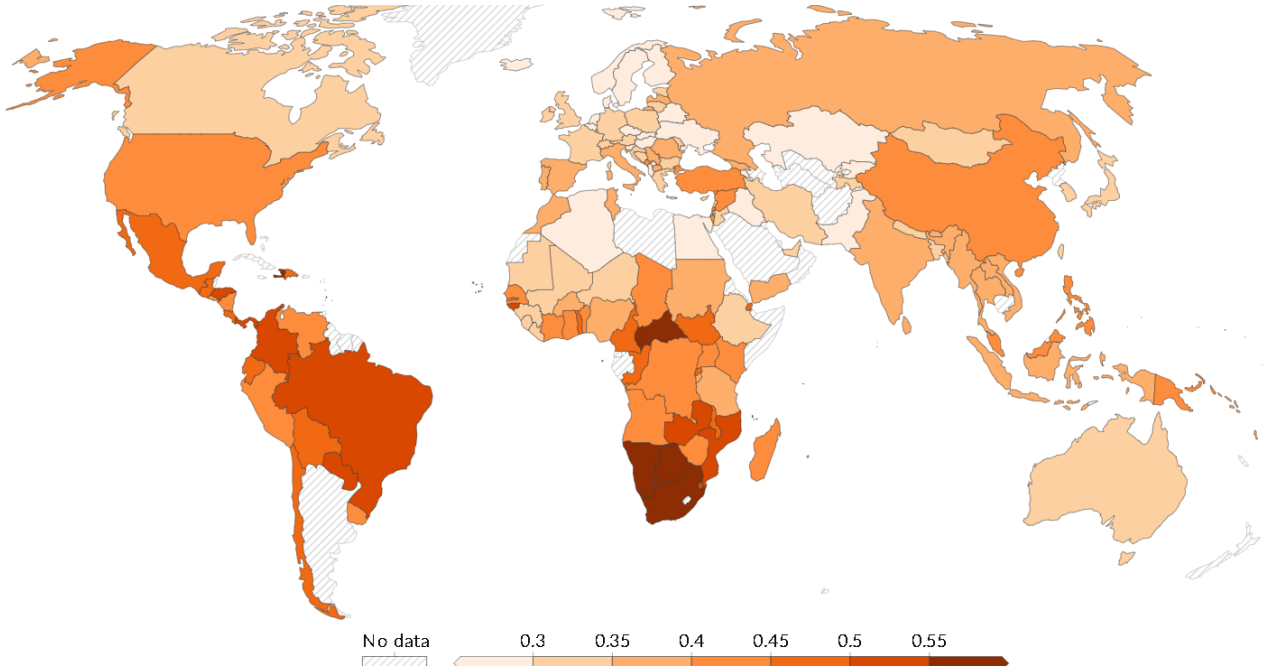



**Figure 5.1:** Gini Co-efficient across the world in 2011
**Source:** World Bank Poverty and Inequality Platform (2024)

Therefore, income and wealth inequalities in Egypt were moderate by global comparison. Inequalities in the outcomes of basic social achievements have dropped consistently, closing gaps in most quantitative health and education indicators. However, inequality is reproduced through the perpetuation and intersection of different types of inequalities, including in income, wealth, education, gender, employment, and health. These types of inequality inhibit social mobility, which adversely affects society and the economy (UNESCWA, 2023). However, it is essential to recognize that this seemingly low inequality coexisted with widespread social grievances and claims of injustice. The revolution itself was partly fueled by these disparities, highlighting the complex relationship between economic metrics and social realities, which this study assessed.

Furthermore, many scholars have pointed to the breakdown of the *authoritarian bargain*, or the social contract, as one of the overarching reasons for the loss of legitimacy by Arab regimes and for the popular anger against them (Idris, 2016; Winckler, 2013). The authoritarian bargain or social contract refers to a regime providing social services and large-scale public sector employment (including through nationalized industries) and massively subsidizing basic food and energy, in exchange for citizens' political compliance. This contract worked in the 1950s and 1960s in Egypt because populations were relatively small, and the government was able to deliver its end of the bargain. However, population

growth coupled with government failures to carry out structural reforms and create jobs led to rising unemployment, in particular youth unemployment, and the social contract model collapsed as the state could no longer offer the same deliverables (Beck, 2013; El-Haddad, 2020).

The public sector in Egypt used to absorb 70% of the workforce in 1980, compared to 15.5% in the informal private sector and 7.5% in the formal private sector. However, with bloated and often inefficient bureaucracies and an excessive wage bill, the Egyptian government was no longer able to use public sector employment to soak up excessive labor demands. By 2000, the public sector employed only 23% of the workforce, compared to 41.8% in the informal private sector and 9.6% in the formal private sector (ESCWA, 2014; Idris, 2016). Meanwhile, improvements in education levels across the country contributed to rising expectations among young people, and to frustration when public sector jobs were no longer available and when those in the private sector were low-paid or unsuited to their skills (ESCWA, 2014).

While poverty, unemployment, and the difficulties of life were cited as important motives of the revolution, many researchers indicated that alone they were not the main cause. Mahmood et al. (2020) pointed to the combination of economic factors, escalating tyranny, corruption, and to dependence on the ruler or system. Ogbonnaya (2013) emphasized this point using the Ibrahim Index of African Governance (IIAG), which measures and monitors governance performance in African countries, showing that although welfare in Egypt was relatively high between 2000 and 2010, there was a high rate of human rights violation and political exclusion in the country. Also, while Human Development scored high, the Sustainable Economic Opportunity was on the lower end of the spectrum. In other words, the level of human development was higher than the available sustainable economic opportunities.

To add fuel to the fire, on the eve of the Arab Spring in 2011, Egypt was considered one of the most repressive countries in the world, with Freedom House categorizing Egypt as Not Free, with a noted downward trend due to the extensive restrictions on political opposition during the 2010 parliamentary elections and due to the widespread crackdown on media that resulted in increased self-censorship.[17] Egypt was also ranked as one of the least democratic countries in the world by *The Economist*'s 2011 Democracy Index, ranked at 115 out of 165,[18] which was not surprising considering that Mubarak had been in power as president for 30 years under the guise of an electoral process where he received almost 90% of the votes and operated a government muddled in deep-rooted cronyism (Mumtaz, 2011). In 2010, Transparency

[17] Freedom House. (2011). *Freedom in the World 2011: The authoritarian challenge to democracy*. https://freedomhouse.org/sites/default/files/2020-02/FIW_2011_Report_PDF.pdf
[18] The Economist Intelligence Unit. (2011, December 14). *Democracy index 2011: Democracy under stress* [Report]. Internet Archive. https://archive.org/details/democracy-index-final-dec-2011

International's Corruption Perceptions Index (CPI) report gave Egypt a CPI score of 3.1 out of 10.0 (10 being no corruption and 0 being totally corrupt), based on perceptions of the degree of corruption. Egypt ranked 98th out of the 178 countries included in the report.

### 5.2.2 Protests, Democracy, and Tax Morale

Bird et al. (2008) argued, while assessing tax compliance in developing countries, that if taxpayers perceive that their interests (preferences) are properly represented in political institutions and that they a meaningful voice and ability to influence the state, then their willingness to contribute, including by paying taxes, increases. The authors further argued that for a country to implement a better tax system (better in the sense of giving the people what they want), it must have a better political system that translates citizens' preferences into policy decisions as efficiently as possible. *Democracy*, as Churchill reportedly once said, is the worst form of government, except all those other forms that have been tried from time to time.

Bird et al. (2008) also pointed to factors such as governance and level of corruption as other key influencers. If taxpayers believe that they live in a state where corruption is rampant and trust in authority low, the willingness to vote for higher levels of taxation and to comply with tax obligations decreases. The researchers showed, interestingly, that voice and accountability have a stronger impact on tax performance than corruption. These results supported other literature findings that underscored the strong role of voice and accountability in tax compliance. For example, Torgler and Schneider (2009) used Swiss data and found that tax evasion and the shadow economy were lower in cantons that had a higher degree of direct political control. Torgler and Schneider (2005) showed that a higher level of direct democracy in a jurisdiction leads to an increased willingness to pay taxes. Feld and Frey (2002) also observed that differences in the treatment of taxpayers by tax authorities are key, based on their empirical results using data from Switzerland. Furthermore, Alm and Torgler (2006) analyzed tax morale in the United States and in Europe. They found that countries with a higher level of democracy had a higher willingness to pay taxes. Analysis of survey data in Daude et al. (2013) pointed to greater support for democracy having a large effect on tax morale, with people agreeing that if they were governed under a democracy they were about 12 percentage points more likely to never justify tax evasion than those who did not like democracy as a system.

Mansour (2014) argued, using experimental analysis, that in the presence of the right to recall, citizens' use of tax compliance as a punishing tool would be minimized. The argument was based on the rationale that elections are an

institutional tool that provides voters with the ability to retain incumbents in office or to "throw the rascals out" (Lippmann, 1925; Powell, 2000). According to this perspective, the existence of free and fair elections guarantees that politicians can, to some extent, be held liable for the actions taken while in public office (Rose-Ackerman, 1999). Any institution that provides a punishment mechanism for politicians, such as the loss of elections or the possibility of being forced out of office, can induce politicians to improve their behavior by aligning their own interests with those of their electorates (Bailey & Valenzuela, 1997; Rose-Ackerman, 1999).

The results of this research showed that people might believe that empowering citizens with an electoral tool to discipline corruption could act as an alternative to the use of tax non-compliance to express dissatisfaction. Mansour (2014) argued, however, that the disappointment level would probably be stronger if the citizen had personally participated in the voting process rather than just observed its outcome. The research posited that while the right to recall increases citizens' ability to punish governments, it nevertheless harms social solidarity, and hence reduces citizens' motivation to comply. It does so by dividing a society into winners and losers, with losers feeling alienated and thus having no strong obligation to cooperate with fellow citizens for the benefit of all. This would lead them to act against the tax law, as the psychological costs associated with incompliance would be reduced (Mansour, 2014). The rationale behind this potential mechanism is often referred to as the *theory of divisive elections*. According to this theory, direct elections may decrease people's level of trust and lower their personal satisfaction with the democratic process because the zero-sum nature of elections always generates losers. From a policy standpoint, winners are happier because the parties that represent their views and interests are now in government and their policy preferences are likely to be enacted. Conversely, losers, i.e., supporters of the losing candidate, are dissatisfied with the outcome, less trustful of governments that do not represent their preferences, and thus more critical of the way democracy works.

This dissatisfaction may translate into disillusionment with government institutions and the political process. Ola et al. (2005) examined the impact of election outcomes on democratic legitimacy and explored how losing elections affects individuals' attitudes towards political authorities and the stability of democratic systems. In new democracies, the negative effects of losing elections are more pronounced compared to mature democracies. This is because individuals in new democracies have not yet developed the same level of acceptance and resilience towards electoral defeat. Furthermore, the authors pointed out that the gap in political support between winners and losers is more significant in new democracies. Losers in these systems tend to have lower levels of support for political authorities and democratic principles, which can affect the overall stability and legitimacy of the democratic system. Trust in political

institutions is generally lower in new democracies, and losing an election can further erode this trust. This can lead to increased political instability and challenges to democratic governance, and potentially to a reduction in tax morale.

## 5.3 Research Design

### 5.3.1 Data

The analysis in this paper used WVS, which provides nationally representative survey data from around the world. Here, we focused on Wave 5, which took place in Egypt in 2008, before the Arab Spring, and Wave 6, which took place in 2013, after the Arab Spring (Inglehart et al., 2014). For clarity, the WVS provides repeated cross-sections rather than panel data, so the individuals interviewed in 2008 and 2013 were not the same. Accordingly, the analysis identifies before–after differences using repeated samples within the same governorates, which were conditional on governorate fixed effects and demographic controls.

The first dependent variable was Tax Morale (TM), which is a measurement of citizens' willingness to pay taxes. It is typically captured in the literature using the following question from the WVS: "Please tell me for each of the following statements whether you think it can always be justified, never be justified, or something in between: Cheating on taxes if you have a chance." Respondents are asked to evaluate this statement on an ordered scale from Never Justifiable (1) to Always Justifiable (10). This survey question is the best available source to measure tax morale since, compared to other survey questions, its formulation is quite general, and a reasonable number of responses from a large set of countries over time is available (Halla, 2010). Building on existing tax morale literature, we coded Tax Morale as 1 for those who answered that tax evasion is Never Justifiable and 0 for the rest of the responses. Using a binary variable for tax morale is a common approach in tax morale literature, as in Cyan et al. (2016) and in Leonardo et al. (2017).

The second dependent variable, Democracy, measured the embrace of democratic values in Egypt. "Democracy" was a binary variable constructed from E235 in the WVS with the question asking respondents about the important of democracy and ranging from Not Important At All (1) to Very Important (10) from Waves 5 and 6 in the WVS. For descriptive purposes, we constructed the binary indicator to be equal to 1 if respondents placed democracy in the top category range (8–10 on the 1–10 scale), and 0 otherwise (top-box coding). This improved interpretability, given the strong right-skew in responses. The results were robust to alternative thresholds (e.g., 9–10), as shown in Figure 5.3. To measure the extent of exposure to the Arab Spring and the intensity of protests in the various governorates across Egypt,

we used the proportion of killings and injuries per governorate in the duration from January 2011 to February 2012 from the Egyptian Revolution Database (WikiThawra, 2014), collected by the Egyptian Center for Economic and Social Rights. Appendix 3 summarizes the main variables, coding, and data sources used in the analysis.

### 5.3.2 Tax Morale

The following figure shows tax morale before and after the Arab Spring, per governorate. We see in Figure 5.2 that that morale had dropped across almost all of the governorates considered.

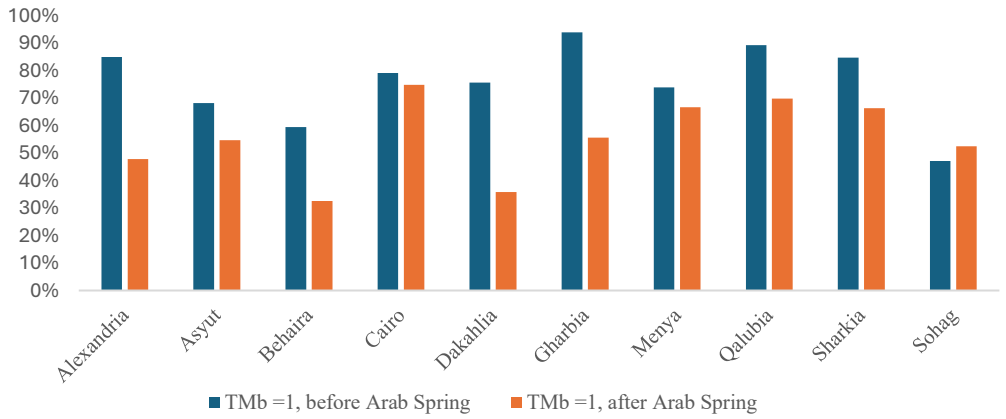



**Figure 5.2:** Tax Morale (TM) per Governorate before and after the Arab Spring
**Source:** Author's own using WVS data from Waves 5 (2008) and Wave 6 (2013), the bars indicate % of participants in each governorate with Tax Morale = 1 (vs 0) in the binary representation of tax morale.

### 5.3.3 Embracing Democracy

Figure 5.3 shows changing views on the importance of embracing democracy before and after the Arab Spring across various governorates. The figure summarizes the share of respondents who rated democracy as highly important (top-box: 8–10) before and after the Arab Spring, by governorate. The pattern was heterogeneous across space: the top-box share increased notably in Cairo (≈ +11.1 pp) and Behaira (≈ +7.4 pp) and increased modestly in Sohag (≈ +4.3 pp). By contrast, the top-box share declined in several governorates, most sharply in Qalubia (≈ −24.5 pp), and also in Menya (≈ −12.5 pp) and Alexandria (≈ −11.4 pp), motivating the subsequent regression analysis.

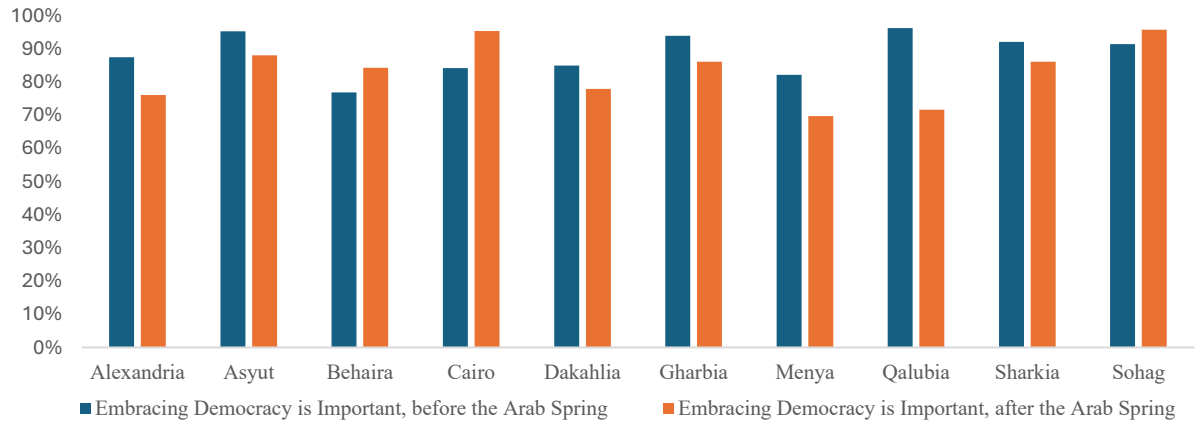



**Figure 5.3:** Dumbbell plot of high democracy importance (8–10) by governorate: pre- vs post-Arab Spring.
**Source:** Author's own using WVS data from Waves 5 (2008) and Wave 6 (2013).
***Notes: Top-box share is the fraction of respondents choosing 8–10 on the democracy-importance item (1=not at all important, 10=very important)***

## 5.3.4 Protest Intensity

To identify the variation of the exposure to Arab Spring events across Egypt, which we considered as one of our independent variables in the analysis, we used WikiThawra,[19] a database compiled by the Egyptian Center for Economic and Social Rights, which documented all of those killed, injured, arrested, or persecuted during the Egyptian revolution as a result of political and social change. The sources of the database included official sources, such as the Egyptian Ministry of Health and the Egyptian Ministry of the Interior, in addition to human rights organizations and press sources. From this database, we identified the number of killings and arrests in each governorate during three waves of the Arab Spring. The first wave corresponded to the 18 days of the revolutionary movement that overthrew Hosni Mubarak (January 25–February 11, 2011). The second wave covered the period from February 2011 to June 2012, after Mubarak's fall and coinciding with the period when the Supreme Council of the Armed Forces took over to supposedly ensure the democratic transition. The third wave corresponded to the period from July 2012 to June 2013, when Morsi was in power as the first democratically elected president in Egypt. Considering that this database relied mainly on government sources, it may have suffered from the underestimation of the real number of causalities, but it could still serve as a proxy for local conflict intensity and level of exposure to Arab Spring events at the local

[19] ويكي ثورة | حتى لا ننسى

governorate level. This was similar to the approach taken by Bargain et al. (2019) to assess the influence of the exposure to Arab Spring events in Egypt on women's political participation.

Figure 5.4 shows a summary of the casualties (injuries and killings) per governorate considered in our analysis, which covered the major governorates and the various corners of Egypt. Protest intensity was calculated using the total casualties (killings and injuries) from 2011 to 2013 per 1,000 people per governorate, using 2011 per governorate population figures. Figure 5.4 shows that Cairo had the majority of casualties, followed by Alexandria, Egypt's second largest city.

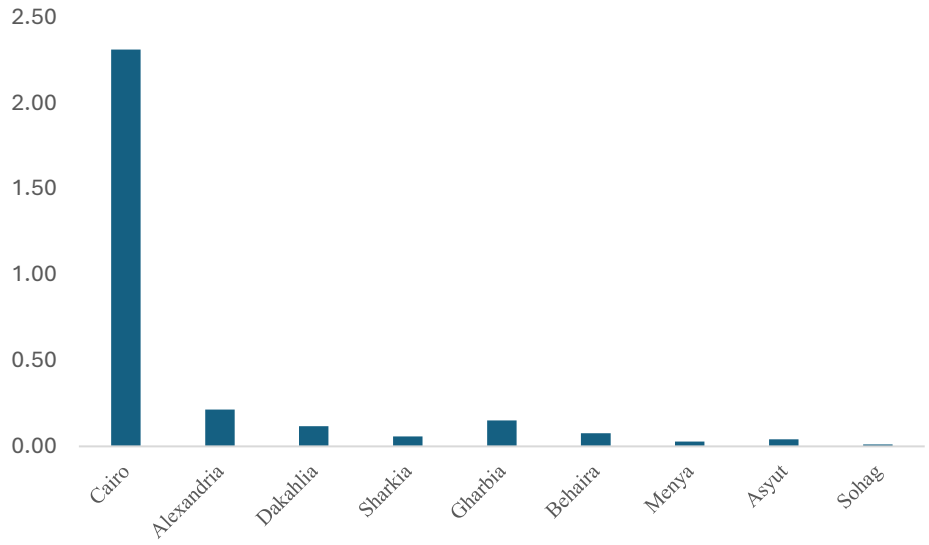



**Figure 5.4:** Protest Index: Casualties per 1000 Person per Governorate during the Arab Spring (2011-2013)
**Source:** Author's own using WikiThawra database
***Notes:*** Protest Index for each Governorate = (Total Killings + Total Injuries)/Governorate's 2011 population (1000s)

## 5.4 Theoretical Framework

Building on the literature referenced above, the present study introduced the theoretical framework depicted in Figure 5.5 to assess the impact of the Arab Spring in Egypt.

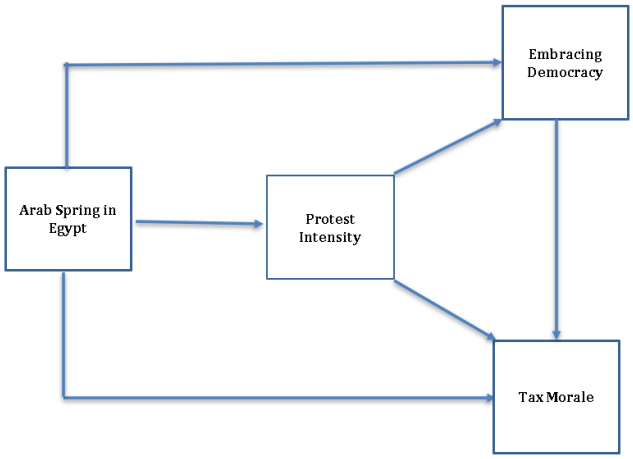



**Figure 5.5:** Proposed Theoretical Framework
**Source**: Author's own building on literature review in Chapter 5

The theoretical framework considered the Arab Spring in Egypt as a political shock with a distinct geopolitical salience. The potential impact of variation in protest intensity by governorate on tax morale and the embrace of democratic values was considered in the analysis. Protest intensity was proxied by the number of casualties per capita by governorate during the Arab Spring, as described in the Data section. Demographic variables, including age, education level, gender, and income level, were included as control variables. The empirical analysis clustered standard errors at the governorate level. The literature pointed to a strong positive connection between political participation and tax morale (Alm & Torgler, 2004; Casal et al., 2016; Gangl et al., 2015; Hayoz & Hug, 2007; Lisi, 2014; Slemrod, 2009). Meanwhile, an argument could be made that when citizens believe that the terms of the moral economy have broken down, they will seek to restore them through protest rather than to construct a new framework of demands based on political and civil rights. Hence, tax evasion can also be considered an act of social protest against a tax system and a government perceived to be unfair to in-group needs (Wenzel, 2003). These observations led to the following hypothesis:

*Hypothesis 1*: The intensity of the protests points to an increase in political participation and will have a positive association with tax morale in Egypt.

As covered in the literature review on the connection between political participation, democracy, and tax morale—especially in the context of developing democracies—Bird et al. (2008) argued that in developing countries, if taxpayers perceive that their interests (preferences) are properly represented in political institutions, they will assume they have a meaningful "voice" in influencing the state. This observation informed the second hypothesis:

*Hypothesis 2:* The intensity of the protests points to an increase in political participation and will have a positive association with embracing democratic values in Egypt.

Furthermore, the literature pointed to a connection between democratic values and tax morale. Greater support for democracy carries a large effect on tax morale, as shown by Alm and Torgler (2006) in their analysis of tax morale in the United States and Europe, and by Daude et al. (2013). Their work led to the third hypothesis:

*Hypothesis 3:* Embracing democratic values will have a positive association with tax morale.

### 5.4.1 Empirical Model

In line with the framework, the empirical analysis focused on whether governorates that experienced higher protest intensity showed different pre–post changes in tax morale and democratic values. The identification strategy relied on a difference-in-differences approach across governorates, using protest intensity as a treatment-intensity measure and controlling for governorate fixed effects and respondent characteristics. The models were the following:

**Model 1:** Difference-in-differences analysis between governorates: protest intensity and tax morale. To assess whether tax morale changed differentially after the Arab Spring in governorates with higher protest intensity, we estimated:

$$\boldsymbol{TM_{igt}} = \beta_0 + \beta_1 \boldsymbol{Time_t} + \beta_2 \boldsymbol{Protest_Intensity_g} + \beta_3 (\boldsymbol{Time_t} \times \boldsymbol{Protest_Intensity_g}) + \beta_4 \boldsymbol{Democracy_{igt}} + \beta_5 Income_{igt} + \beta_6 Educ_{igt} + \beta_7 Age_{igt} + \beta_8 Gender_{igt} + \alpha_g + \varepsilon_{igt} \quad (5.1)$$

The key coefficient of interest was $\beta_3$, which captured whether the post–pre change in tax morale was larger (or smaller) in governorates that experienced higher protest intensity.

**Model 2:** Effect of protest intensity on embracing democratic values. To assess whether protest intensity was associated with changes in democratic values, we estimated:

$$\boldsymbol{Democracy_{igt}} = \delta_0 + \delta_1 \boldsymbol{Time_t} + \delta_2 \boldsymbol{Protest_{Intensity_g}} + \delta_3 \left(\boldsymbol{Time_t} \times \boldsymbol{Protest_{Intensity_g}}\right) +$$

$$\delta_4 \, Income_{igt} + \delta_5 \, Educ_{igt} + \delta_6 \, Age_{igt} + \delta_7 \, Gender_{igt} + \alpha_g + \nu_{igt} \quad (5.2)$$

Here, $\delta_3$captured whether democratic values changed more between 2008 and 2013 in governorates with higher protest intensity.

The variable definitions were the following:

$TM_{igt}$: A binary variable for tax morale for individual $i$ in governorate $g$ at time $t$ (coded as $1 =$ Tax Evasion Is Never Justifiable; $0 =$all other responses).

$Time_t$: A binary variable; 1 for 2013 (after the Arab Spring; WVS Wave 6) and 0 for 2008 (before the Arab Spring; WVS Wave 5). This variable captured average differences between the two survey waves, while the DiD identifying variation came from the interaction with protest intensity.

$Protest_Intensity_g$: Arab Spring protest intensity by governorate, proxied using casualties per capita: the sum of those killed and injured from January 2011–June 2012, divided by the 2011 population of the governorate (as defined in the Data section). This variable was used as the DiD "treatment intensity" measure through its interaction with $Time_t$.

$Time_t \times Protest_Intensity_g$: The difference-in-differences interaction term. It captured whether outcomes changed more from 2008 to 2013 in governorates that experienced higher protest intensity. It is worth noting that since $Protest_Index$ was coded as zero in the pre-Arab Spring wave and varied only in the post-Arab Spring wave, the coefficient on $Protest_Index$ captured differential post-period outcomes across governorates by protest intensity (i.e., a treatment-intensity DiD structure)

$Democracy_{igt}$: A binary indicator capturing high support for democratic values. It was coded as 1 if the respondent rated democracy importance in the "top-box" range (8–10 on the WVS 1–10 scale, where 1 = Not Important At All and 10 = Very Important), and 0 otherwise. This variable was constructed from WVS Waves 5 and 6 (before and after the Arab Spring).

$Income_{igt}$, $Educ_{igt}$, $Age_{igt}$, $Gender_{igt}$: Demographic control variables, as coded in the chapter (WVS).

$\alpha_g$: Governorate fixed effects (i.e., a full set of governorate dummy variables) to account for time-invariant differences across governorates. $\varepsilon_{igt}$and $\nu_{igt}$: Error terms.

## 5.5 Results

Model 1 tested whether tax morale was associated with protest intensity, given the Arab Spring as an event. Table 5.1 reports the probit estimates (clustered at the governorate level) and Model 1.3 additionally controlled for embracing democracy using the updated binary measure (Democracy: 8–10 = 1, 1–7 = 0). Across specifications, the post-Arab Spring period (Time = 1) was negatively associated with tax morale. In Model 1.3, the average marginal effect implied that moving from before to after the Arab Spring was associated with an approximately 21 percentage-point lower probability of reporting the highest tax morale category (never justifiable to cheat on taxes), holding other covariates constant. At the same time, protest intensity was positively associated with tax morale. In Model 1.3, the protest intensity index remained positive and statistically significant; the marginal effects indicated that a one-unit increase in the protest intensity measure was associated with about a 6.4 percentage-point higher probability of high tax morale (AME ≈ 0.064). This pattern was consistent with Hypothesis 1.

Democracy entered with a positive coefficient, but it was not statistically significant in Model 1.3 (AME ≈ 0.087; p ≈ 0.14). So, while the sign was in the direction predicted by Hypothesis 3, the evidence was not strong enough in this specification to conclude that embracing democracy was independently associated with higher tax morale once protest exposure, governorate fixed effects, and demographics were included. Introducing Democracy also slightly attenuated the protest-intensity estimate relative to the specification without it. These patterns could be interpreted in light of the theory of divisive elections introduced above: contentious electoral and political transitions may erode trust and willingness to cooperate with the state, particularly among those who perceive themselves as losers in the process. In this sense, the post-Arab Spring context in Egypt may have amplified disappointment and reduced tax morale even as support for democratic principles remained high. The role of embracing democracy as a channel in a mediation framework is considered in the next section.

**Table 5.1: Probit estimates: protest intensity, democratic values, and tax morale (Egypt)**
Dependent variable: TMb (binary tax morale indicator)

| | Model 1.1 | Model 1.2 | Model 1.3 |
|---|---|---|---|
| **Main Regressors** | | | |
| Time (post- Arab Spring) | -0.538*** | -0.667*** | -0.654*** |
| | (0.172) | (0.183) | (0.182) |
| Protest intensity × Post-Arab Spring | | 0.217** | 0.197** |
| | | (0.085) | (0.088) |
| Embrace of Democracy (8–10=1) | | | 0.269 |
| | | | (0.181) |
| **Control Variables** | | | |
| Age | 0.004** | 0.004** | 0.004** |
| | (0.002) | (0.002) | (0.002) |
| Education | 0.032* | 0.035* | 0.035* |
| | (0.018) | (0.019) | (0.019) |
| Female | 0.069 | 0.066 | 0.071 |
| | (0.075) | (0.077) | (0.076) |
| Income | -0.025 | -0.024 | -0.026 |
| | (0.016) | (0.017) | (0.017) |
| Governorate fixed effects | Yes | Yes | Yes |
| Observations | 2,237 | 2,237 | 2,237 |
| Pseudo R-squared | 0.0756 | 0.08 | 0.0838 |
| Log pseudolikelihood | -1290 | -1283.98 | -1278.65 |

***Notes:*** Coefficients from probit regressions. Robust standard errors clustered by governorate (X048WVS) are reported in parentheses; number of clusters = 9. Protest intensity index is a governorate-level casualties-per-capita measure (as defined in the Data section). Democracy is a binary top-box indicator equal to 1 if democracy importance is rated 8–10 on the 1–10 scale, and 0 otherwise. All specifications include age, education, gender, income controls and governorate fixed effects. *, **, *** denote p<0.10, p<0.05, p<0.01, respectively. Inference should be interpreted cautiously given the small number of clusters.

### 5.5.1 Mediation Analysis

A mediation analysis was conducted to assess the association between protest intensity and the embrace of democratic values to assess if protest intensity during the Arab Spring was a possible mediation channel for the influence on tax morale. The approach to mediation analysis followed a causal inference framework proposed by Nguyen et al. (2021) and Stata (2023). The terms covered in the mediation analysis are defined below for clarity:

- *Natural direct effect (NDE):* This estimates the average direct effect of the treatment on the outcome when the mediator is held at its value, associated with being untreated. It is the difference Y [1, M(0)] − Y [0, M(0)], where "Y" is the dependent variable and "M" is the mediating variable.
- *Natural indirect effect (NIE):* This estimates the average indirect effect through a mediator. It is the difference Y [1, M(1)] − Y [1, M(0)].
- Total *effect (TE):* This estimates the average difference in outcomes that we expect when everyone receives the treatment versus when no one receives the treatment. TE = NIE + NDE.
- Variance account for (VAF) is calculated by dividing indirect effect through total effect.

### 5.5.2 Mediation Analysis Results

Table 5.2 reports the mediation analysis results using Democracy (embracing democratic values) as the mediator, with standard errors clustered at the governorate level (nine clusters). Overall, the results do *not* suggest that embracing democracy was an important channel linking protest exposure to tax morale. For *minor protests*, neither the total effect nor the indirect effect was statistically significant. For *mild protests* (relative to no protests before the Arab Spring), the total effect on tax morale was clearly negative and statistically significant, and this was driven almost entirely by the direct effect. The indirect effect through Democracy was very small and not statistically significant. Hence, there was no evidence of mediation in this case. For *large protests*, the total and direct effects were again negative and statistically significant, but the indirect effect was positive and statistically significant. This meant that the "democracy channel" moved in the opposite direction and slightly offset the overall negative association, rather than explaining it.

**Table 5.2: Mediation Analysis summary**

| Contrast (vs Before Arab Spring – No Protest) | NDE | NIE | TE | VAF (NIE/TE) | Mediation effect supported | Observations |
|---|---|---|---|---|---|---|
| **Minor Protests** | -0.029<br>(0.047) | -0.003<br>(0.011) | -0.032<br>(0.050) | 9.20% | No (TE n.s.; NIE n.s.) | 2,237 |
| **Mild Protests** | -0.318***<br>(0.037) | -0.002<br>(0.006) | -0.319***<br>(0.037) | 0.60% | No (NIE n.s.) | 2,237 |
| **Large Protests** | -0.043***<br>(0.006) | 0.003***<br>(0.001) | -0.040***<br>(0.006) | -7.80% | No — **suppression**<br>(opposite-sign NIE) | 2,237 |

**Mediation effect tested:** Protest exposure → Embracing democracy (Democracy) → Tax morale (TMb)
Base category: **Before Arab Spring – No Protest**
N = **2,237**

***Notes:*** NDE, NIE, and TE are from Stata mediate. Outcome and mediator models are linear; treatment is multivalued Protest intensity categories with the base category "Before Arab Spring – No Protest." Standard errors in parentheses. The output indicates the outcome equation includes a treatment–mediator interaction. VAF is computed as NIE/TE and should be interpreted cautiously when TE is not statistically significant. *, **, *** denote $p<0.10$, $p<0.05$, $p<0.01$.

Table 5.3 reports the empirical analysis for Model 2, which tested Hypothesis 2 on whether protest intensity during the Arab Spring was associated with Egyptians' embracing democratic values. Using the updated binary measure (Democracy: 8–10 = 1; 1–7 = 0), the post-Arab Spring indicator (Time) was not statistically significant on its own once governorate fixed effects and controls were included. When protest intensity was added, however, protest intensity was positive and highly statistically significant, indicating that governorates that experienced more intense protests were associated with a higher likelihood of embracing democratic values after the Arab Spring. At the same time, the Time coefficient became negative and marginally significant, suggesting that the overall post-period shift in Democracy was slightly negative once differences in protest exposure were accounted for. We return to the interpretation of these results in the discussion section.

**Table 5.3: Linear probability models: protest intensity and democratic values (Egypt)**
Dependent variable: Democracy (top-box indicator = 1 if democracy importance is rated 8–10; 0 otherwise).

| | Model 2.1 | Model 2.2 |
|---|---|---|
| **Main Regressor** | | |
| Time (post Arab Spring) | -0.011 | -0.058* |
| | (0.041) | (0.028) |
| Protest intensity index | | 0.074*** |
| | | (0.012) |
| **Control Variables** | | |
| Age | 0.001 | 0.001 |
| | (0.001) | (0.001) |
| Education | -0.001 | 0 |
| | (0.004) | (0.004) |
| Female | -0.016 | -0.018 |
| | (0.017) | (0.017) |
| Income | 0.006 | 0.007 |
| | (0.004) | (0.004) |
| Governorate fixed effects | Yes | Yes |
| Observations | 2,237 | 2,237 |
| Clusters (governorates) | 9 | 9 |
| R-squared | 0.0262 | 0.0362 |
| Root MSE | 0.338 | 0.336 |

***Notes:*** Coefficients from linear probability models (OLS). Robust standard errors clustered at the governorate level (X048WVS; 9 clusters) are reported in parentheses. Time variable captures post-Arab Spring; Wave 6-2013) and for 2008 (pre-Arab Spring; Wave 5). Protest intensity index equals 0 in the pre-period and varies by governorate in the post-period (as defined in the Data section). All specifications include Age, Education, Gender, Income, and governorate fixed effects. *, **, *** denote $p<0.10$, $p<0.05$, $p<0.01$. Inference should be interpreted cautiously given the small number of clusters.

## 5.5.3 Analysis of the Results

The results of the empirical analysis suggested a contrast between the overall post-Arab Spring shift and the variation across governorates by protest intensity, when it came to tax morale and democratic values. At a first glance, the Arab Spring revolution in Egypt did bring political change, including the election of Mohamed Morsi as the first democratically elected president. Hence, intense civic action, embracing democratic values, and the Arab Spring might have been expected to move together. Empirically, however, a more nuanced picture emerged.

First, we consistently observed a *negative association* between the post-Arab Spring period and tax morale. In the probit specifications, the Time coefficient remained negative and statistically significant, indicating that—on average—tax morale was lower after the Arab Spring than before it, holding constant demographics and governorate fixed effects. At the same time, we observed a *positive association* between protest intensity and tax morale: governorates that

experienced more intense protests tended to show a higher probability of high tax morale after the Arab Spring (relative to lower protest intensity governorates), which was in alignment with Hypothesis 1. Since *Protest_Index* was coded as zero before the Arab Spring and varied only after it, this coefficient captured differences across governorates by protest exposure in the post period. One way to interpret this was that protest intensity reflected heightened political participation and a stronger sense of citizens' "voice," which could support the willingness to contribute, including paying taxes (Bird et al., 2008).

Second, when considering the embrace of democratic values (Democracy) as a dependent variable, the analysis pointed to *no clear overall before/after shift* once governorate fixed effects and controls were included. However, when protest intensity was introduced, it was *positively and strongly* associated with Democracy, indicating that—after the Arab Spring—governorates exposed to more intense protests were also more likely to report strong support for democracy. This was consistent with the idea that protest participation can be associated with democratic engagement, as discussed in the literature review.

Third, in the tax morale model that included Democracy (Model 1.3), Democracy entered with a positive sign but was not statistically significant once protest intensity, fixed effects, and controls were included. This meant that while the direction was consistent with Hypothesis 3, the evidence was not strong enough in this specification to treat democratic values (as captured by the Democracy variable) as an independent correlate of tax morale beyond protest exposure and the other covariates.

Finally, the mediation analysis reinforced this interpretation. With Democracy as the mediator (and governorate-clustered standard errors), the results *did not* support Democracy as a meaningful mediating channel for the mild-protest contrast: the total effect remained negative and statistically significant, but the indirect effect was small and not statistically significant. For large protests, the indirect effect was statistically significant but ran in the opposite direction (positive NIE alongside a negative TE/NDE), implying a small offsetting pattern (often described as *suppression*) rather than mediation in the intuitive sense (i.e., the democracy channel did not explain the negative association; it slightly counteracted it). Overall, these patterns suggested that protest exposure was associated with both tax morale and democratic values, but that the link between protest exposure and tax morale was not primarily operating through Democracy in the mediation framework.

Turning to why the Arab Spring period itself was associated with lower tax morale (and weaker democratic sentiment), I considered the gap between expectations and post-revolution realities. One of the most popular slogans of

the Arab Spring in Egypt was “Bread, Freedom, Social Justice” (Basir & Datta, 2024; Mittermaier, 2014), capturing both the demands and the later disappointments associated with the uprising. For decades, the state had played the central economic role, and although reforms between 1980–2010 supported growth, they were also associated with rising inequality and feelings of exclusion among broad segments of the population. While aggregate indicators suggested improvement (Mahmood et al., 2020), gains were uneven, and unemployment and inequality remained salient. After the revolution, political uncertainty and economic deterioration contributed to disillusionment, with inflation and fiscal pressures rising and reserves falling (Tabaar, 2013). In this context, the negative association between the post-Arab Spring period and tax morale can be interpreted as reflecting a broader breakdown in confidence and expectations—consistent with the idea of the Arab Spring as an economic empowerment movement that did not deliver on key economic demands.

### 5.5.4 Limitations

This paper attempted to leverage existing data from the WVS to answer an important question regarding the potential association of changes in tax morale in Egypt with the Arab Spring revolution. Relying on existing data introduced limitations that could potentially have limited the robustness of the results. In the ideal case, there would have been multiple years of tax-morale data aggregated at the Egyptian governorate level, allowing for an event-study design and a more tangible estimation of the potential impact and dynamics of the Arab Spring on tax morale. Since these data were not available, I relied on data from WVS Wave 5, conducted in Egypt in 2008, and WVS Wave 6, conducted in 2013. These two waves were the closest available to the period before and after the Arab Spring. Unfortunately, out of the 27 governorates in Egypt, only nine were included in both waves. While the nine governorates included in the analysis offered meaningful variation in terms of size and geography and included Cairo—where many of the Arab Spring events took place—we were missing governorates that were also heavily impacted and not included in these waves, such as Giza and Suez.

As a robustness check, we conducted the analysis using WVS Wave 5 (2008) and WVS Wave 7 (2018), which extended the timeframe and increased the number of governorates covered to 19. That said, the 2008–2018 comparison reflected broader political and economic developments over a longer horizon and should therefore be interpreted as a longer-run robustness exercise rather than as a clean estimate of the immediate Arab Spring shock. Furthermore, because the WVS data were repeated cross-sections, the analysis did not follow the same individuals over time. As a result, changes over time could partly have reflected shifts in sample composition within governorates. This concern was mitigated by

controlling for observed demographics and using governorate fixed effects, but unobserved changes in composition could not be fully ruled out. While the difference-in-differences logic was a key element of the empirical analysis, we could not empirically establish a parallel trend between governorates with higher protest intensity and those with lower protest intensity prior to the Arab Spring. This was due to data limitations, as we did not have sufficient governorate-level observations across earlier WVS waves to assess whether pre-trends were similar and then broke after the treatment period.

Relatedly, since the paper relied on observational data, endogeneity concerns remained. Protest intensity could have been correlated with unobserved governorate characteristics (economic conditions, local institutions, political organization, policing capacity, or social cohesion) that also shaped tax morale and democratic attitudes. Governorate fixed effects accounted for time-invariant differences, but time-varying omitted factors may have still mattered. Finally, inference should be interpreted cautiously given the small number of governorates in the main analysis (nine clusters). We clustered standard errors at the governorate level to account for within-governorate correlation, but with a limited number of clusters, statistical inference could have been sensitive. Having richer governorate-level economic controls, and additional quantitative measures capturing political dynamics after the Arab Spring, would have further enhanced the analysis.

## 5.6 Robustness Checks

For the robustness check, we used data from WVS Wave 5 (2008), which took place in Egypt before the Arab Spring, and Wave 7 (2018), which took place after the Arab Spring (2010–2014) (Inglehart et al., 2014). Considering these two waves extended the timeframe of the Arab Spring to include Morsi's toppling in Jun 2013 and the military taking over. It also extended the scope of Egyptian governorates considered from nine to 19. The following figure shows, among respondents reporting high tax morale (TM = 1), the share rating the importance of democracy highly (8–10) before and after the Arab Spring, per governorate. It shows an almost even split, with 11 out of 19 governorates experiencing an increase in the embrace of democracy after the Arab Spring.

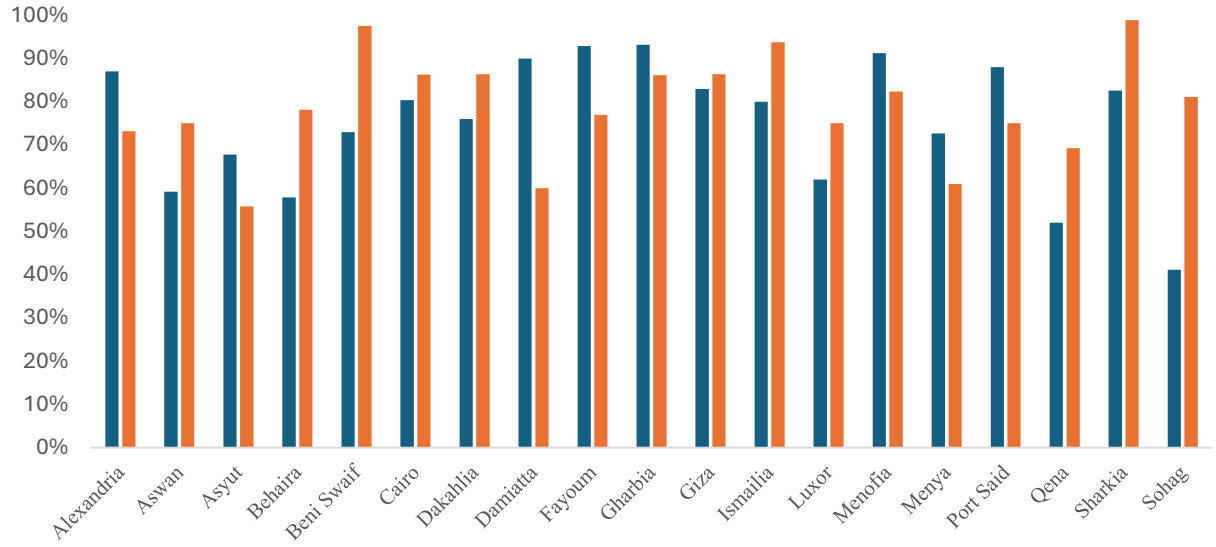



**Figure 5.6:** Dumbbell plot of high democracy importance (8–10) by governorate: pre- vs post-Arab Spring.
**Source:** Author's own using WVS data from Waves 5 (2008) and Wave 7(2018)
***Notes:*** Top-box share is the fraction of respondents with high tax morale (TM = 1) choosing 8–10 on the democracy-importance item (1=not at all important, 10=very important)

We also extended the scope of the protest intensity analysis to include the casualties during a fourth wave from July 2013 to January 2014, for the first seven months after the ousting of Morsi due to massive public protests and the military taking power over. Figure 5.7 shows that protest intensity was calculated using the total casualties (killings and injuries) per 1,000 people per governorate in the duration from January 2011 to February 2014. Port Said had the highest casualties in this period of all the governorates, including Cairo, mainly due to one major incident in 2012 called Port Said Stadium riot, which saw 74 people be killed and more than 500 injured.

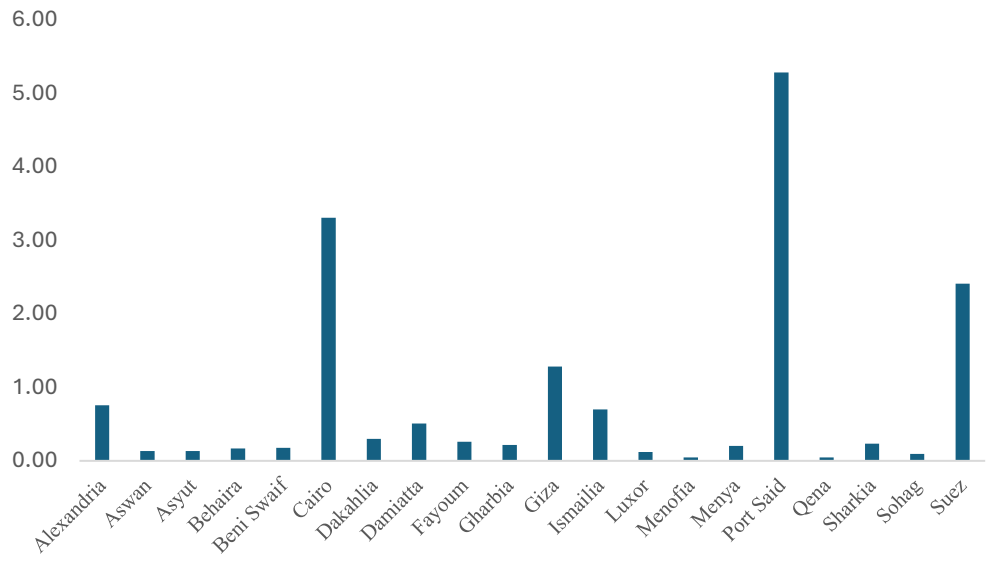



**Figure 5.7:** Protest Index: Casualties 1000s Per Governorate during the Arab Spring (2011-2014)
**Source:** Author's own using WikiThawra database
***Notes:*** Protest Index for each Governorate = (Total Killings + Total Injuries)/Governorate's 2011 population (1000s)

Table 5.4 shows the output of the empirical analysis for Model 1 using the new data set from WVS Waves 5 and 7 to assess whether tax morale was higher or lower than expected in governorates with high protest intensity, given the occurrence of the Arab Spring as an event. The empirical analysis of Model 1 showed that the occurrence of the Arab Spring and the protests intensity per governorate had no statistically significant impact on morale, so we rejected Hypothesis 1. Embracing democracy had a positive association with tax morale, aligning with Hypothesis 3.

**Table 5.4: Empirical analysis - Model 1 (Robustness Check including 19 governorates in WVS 5 and 7 )**
Dependent variable: TMb (binary tax morale indicator). Estimates are linear probability models (OLS).

| | Model 1.1 | Model 1.2 | Model 1.3 |
|---|---|---|---|
| **Main Regressor** | | | |
| Post-Arab Spring (2018=1) | 0.024 | 0.028 | 0.032 |
| | (0.018) | (0.024) | (0.024) |
| Protest index (casualties per 1,000) | | -0.011 | -0.014 |
| | | (0.02) | (0.019) |
| Democracy (8–10=1) | | | 0.089*** |
| | | | (0.029) |
| **Control Variables** | | | |
| Age | 0.002*** | 0.002*** | 0.002*** |
| | (0.001) | (0.001) | (0.001) |
| Female | -0.006 | -0.006 | -0.001 |
| | (0.016) | (0.016) | (0.016) |
| Income | 0.005 | 0.005 | 0.004 |
| | (0.005) | (0.005) | (0.005) |
| Governorate fixed effects | Yes | Yes | Yes |
| Observations | 3,723 | 3,723 | 3,723 |
| Clusters (governorates) | 19 | 19 | 19 |
| R-squared | 0.0768 | 0.077 | 0.0827 |
| Root MSE | 0.4 | 0.4 | 0.399 |

***Notes*:** Robust standard errors clustered at the governorate level (X048WVS; 19 clusters) in parentheses. Time is a post-period indicator. Protest index is defined at the governorate level for 2011–2014 and equals zero in the pre-period by construction. Democracy equals 1 if the respondent rates democracy as important at 8–10 on the 10-point scale (0 otherwise). Age, Gender, and Income are individual controls; governorate fixed effects are included in all specifications. *, **, *** denote $p<0.10$, $p<0.05$, $p<0.01$.

Table 5.5 reports the robustness-check results using WVS Wave 5 (2008) and Wave 7 (2018), restricted to the same nine governorates included in the main analysis. Consistent with the broader WVS5–WVS7 robustness exercise, neither the post-period indicator (2018 = 1) nor the protest intensity index was statistically significant in explaining tax morale. When we added the updated democracy measure (Democracy), its coefficient was positive and marginally statistically significant (10% level), suggesting that the positive association between embracing democracy and tax morale observed in the main analysis persisted, although it was weaker in this longer-run comparison.

**Table 5.5: Empirical analysis - Model 1 (Robustness Check including 9 governorates in WVS 5 and 7)**
Dependent variable: TMb (binary tax morale indicator). Estimates are linear probability models (OLS).

| | Model 1.1 | Model 1.2 | Model 1.3 |
|---|---|---|---|
| **Main Regressor** | | | |
| Post-Arab Spring (2018=1) | 0.029 | 0.032 | 0.036 |
| | (0.025) | (0.034) | (0.033) |
| Protest index (casualties per 1,000) | | -0.005 | -0.009 |
| | | (0.022) | (0.022) |
| Democracy (8–10=1) | | | 0.076* |
| | | | (0.037) |
| **Control Variables** | | | |
| Age | 0.002** | 0.002** | 0.002** |
| | (0.001) | (0.001) | (0.001) |
| Female | -0.001 | -0.001 | 0.003 |
| | (0.021) | (0.022) | (0.021) |
| Income | 0.003 | 0.003 | 0.002 |
| | (0.006) | (0.006) | (0.006) |
| Governorate fixed effects | Yes | Yes | Yes |
| Observations | 2,479 | 2,479 | 2,479 |
| Clusters (governorates) | 9 | 9 | 9 |
| R-squared | 0.0777 | 0.0778 | 0.0819 |
| Root MSE | 0.406 | 0.406 | 0.405 |

***Notes*:** Robust standard errors clustered at the governorate level (X048WVS; 9 clusters) in parentheses. Time is a post-period indicator. Protest index is defined at the governorate level for 2011–2014 and equals zero in the pre-period by construction. Democracy equals 1 if the respondent rates democracy as important at 8–10 on the 10-point scale (0 otherwise). Age, Gender, and Income are individual controls; governorate fixed effects are included in all specifications. *, **, *** denote $p<0.10$, $p<0.05$, $p<0.01$.

## 5.7 Dealing With Endogeneity

The present study faced several endogeneity concerns when interpreting the association between protest intensity, embracing democratic values, and tax morale in Egypt. First, while the analysis treated protest intensity as an exogenous political shock that varied across governorates, endogeneity could still arise if governorates with higher protest intensity were already systematically different before the Arab Spring—for example, in political attitudes, civic engagement, local economic conditions, or institutional quality. To mitigate this concern, the empirical strategy relied on a before/after comparison using WVS data around the timing of the Arab Spring and controlled for governorate fixed effects, which absorbed time-invariant differences across governorates. The analysis also included individual demographic controls and clustered inference at the governorate level. That said, because the WVS provided repeated

cross-sections rather than panel data, and because we only observed a limited number of waves at the governorate level, we could fully rule out time-varying omitted factors that were correlated with both protest intensity and outcomes.

Second, selection concerns could have arisen because protest participation and protest exposure were not randomly distributed. Governorates that experienced more intense protests may have differed in ways that were not captured fully by the available controls. We partially mitigated this by relying on WVS data and by using an aggregate protest-intensity proxy (casualties per capita) at the governorate level rather than individual participation. While the WVS is designed to provide nationally representative probability samples and provides recommended survey weights, our analysis conditions on a subset of governorates and relied on repeated cross-sections; therefore, inference at the governorate level was less precise and should be interpreted with appropriate caution. Accordingly, time-varying unobservables at the governorate level may still have confounded the estimated relationships.

Third, reverse causality was a potential concern when interpreting relationships between tax morale and political attitudes. For example, citizens with stronger civic norms (including higher tax morale) may also have been more supportive of democracy, and democratic attitudes may have shaped willingness to comply with taxes. In the main tax-morale specification, protest intensity was measured at the governorate level and related to level of exposure rather than reported participation by the survey participants, which reduced—but did not eliminate—individual-level reverse causality concerns. In addition, the empirical setup was motivated by the Arab Spring as a large political event occurring between the two survey waves used in the main analysis. Still, because we could not empirically test parallel trends with sufficient pre-treatment governorate-level observations, the results should be interpreted as associations consistent with the proposed mechanism rather than as strict causal estimates.

Finally, there may have been spatial correlation across governorates: geographically proximate regions may have experienced similar political dynamics or social spillovers, which could have violated independence assumptions. Governorate fixed effects addressed time-invariant geographic heterogeneity, but the analysis did not explicitly model spatial autocorrelation. Future research could use spatial econometric approaches or alternative inference procedures that account for geographic dependence, especially if richer subnational data become available.

## 5.8 Conclusion

The Arab Spring in Egypt reveals a complex and non-linear relationship between economic realities, democratic aspirations, and tax morale. In this chapter, tax morale was lower in the post-Arab Spring period overall, yet protest intensity was positively associated with tax morale. Support for democratic principles pointed in the same positive direction, although the association was not statistically significant. This apparent dichotomy could be read as the gap between pre-revolution expectations and post-revolution realities. The revolution's slogan—"Bread, Freedom, Social Justice"—condensed citizens' demands for political inclusion and material improvement. Empirically, governorates with higher protest intensity (proxied by casualties per capita) exhibited higher tax morale, and protest intensity was also positively related to embracing democratic values. Yet, when democratic attitudes were examined as a potential channel, the mediation results did not provide strong evidence that they explained the relationship between protest exposure and tax morale. Where the indirect effect was statistically significant, it even operated in the opposite direction, pointing to a limited and context-dependent role for democratic attitudes in shaping the overall association.

By contrast, the aftermath of the Arab Spring was marked by economic deterioration and heightened political uncertainty. This context likely contributed to the negative association between tax morale and the post-Arab Spring period, insofar as citizens' expectations for rapid economic improvement and fairer governance remained largely unmet. The theory of divisive elections offers further insight into how democratic transitions may affect tax morale. The closely contested presidential election—Morsi's narrow victory on the basis of relatively low turnout—may have intensified feelings of alienation among those on the losing side and weakened confidence in the electoral process as a fair mechanism of representation. Such dynamics could have eroded trust in government institutions and weakened perceptions of legitimacy, ultimately lowering citizens' willingness to comply with tax obligations. Concerns about "Ikhwanization" and perceived threats to civil liberties under Morsi's presidency, combined with restrictions on the media and civil society and the controversial constitutional declaration, likely reinforced political polarization and uncertainty—conditions that are not conducive to sustaining tax morale during a transition.

These findings have several implications for tax policy and governance in transitional democracies. First, they underscore the importance of managing economic expectations during political transitions. When citizens are mobilized around promises of social justice and improved living standards, the failure to deliver visible progress on employment, prices, and basic services can quickly undermine both trust in government and the willingness to comply with tax

obligations. Transitional authorities therefore need credible, well-communicated economic strategies that prioritize short-term relief and signal a realistic path to broader reforms. Second, the results highlighted the role of inclusive governance in mitigating post-election alienation. Institutions and practices that reduce the sharp divide between "winners" and "losers"—for example, power-sharing arrangements, meaningful parliamentary oversight, and protections for opposition parties, media, and civil society—may help contain the divisive effects of contentious elections. By broadening the set of actors who feel represented and heard, such strategies can support social cohesion and, indirectly, tax morale. Third, the Egyptian case illustrates the difficulty of simultaneously advancing democratic reforms and maintaining economic stability and inclusive growth. Political change does not automatically generate higher tax morale; rather, citizens must see that democratic institutions are capable of delivering tangible improvements in their daily lives and of protecting basic rights. For policymakers, this implies that efforts to modernize tax systems and strengthen revenue administration in transitional contexts should be explicitly linked to visible, broadly shared benefits, such as targeted social programs, improvements in public services, and transparent reporting on how tax revenues are used.

Overall, the evidence from Egypt suggests that democratic transitions interact with both political and economic factors to shape tax morale and that these relationships are not mechanically positive. While the observational nature of the data limited strong causal claims, the patterns documented here indicated that protests, democratic aspirations, and divisive electoral dynamics can pull citizen attitudes toward taxation in different directions. Future research should further examine how democratic processes, economic outcomes, and perceptions of legitimacy jointly influence tax compliance in transitional contexts, and under what conditions political liberalization strengthens rather than weakens the fiscal contract between citizens and the state.

# 6. Concluding Remarks

Tax morale—the intrinsic motivation of individuals to comply with tax obligations—plays a critical role in sustaining government revenue and, more broadly, the social contract between citizens and the state. Understanding what shapes tax morale is particularly important in countries that have experienced major historical legacies, deep economic shocks, or turbulent political transitions. This chapter synthesizes the findings from the four empirical studies in this thesis, which examined tax morale in post-communist contexts, during the Great Recession (both cross-nationally and in the United States), and in the aftermath of the Arab Spring in Egypt. Taken together, these studies showed how historical experiences, crisis responses, and political change are associated with citizens' willingness to pay taxes, while also highlighting the limits of what can be inferred from observational data. This final chapter proceeds by summarizing the main findings, drawing out policy implications that follow cautiously from these results, and outlining limitations and directions for future research, before I conclude with a brief reflection.

## 6.1 Synthesis of Main Findings

### 6.1.1 Post-Communist Legacies and Tax Morale

The first empirical study examined whether living in a country with a communist heritage was associated with lower tax morale. Using five waves of the WVS (1990–2014) and data for 85 countries (25 of which were classified as ex-communist), the analysis showed that individuals living in ex-communist countries tended, on average, to report lower tax morale than individuals in other countries, even many years after the end of communist rule. The negative association was particularly evident for ex-communist countries that were currently democratic, suggesting that the legacy of past institutions can continue to shape tax attitudes even after political regimes have changed. The duration of communist rule was also negatively associated with tax morale: longer periods under Communism were linked to lower tax morale in the post-transition period.

The chapter further explored whether this association operated through the three mediating channels suggested by the literature: trust in government, expectations of government responsibility, and political apathy. While these factors were each related to tax morale, the mediation analysis did not indicate that they fully accounted for the negative association between the communist heritage and tax morale. In other words, the results showed a robust association between ex-communist status (and duration of communist rule) and lower tax morale, but they did not pin down a single

dominant mechanism. These findings were consistent with a broader literature that found persistent effects of regime history on contemporary political attitudes and preferences (e.g. Alesina & Fuchs-Schündeln, 2007; Pop-Eleches & Tucker, 2017), but the thesis itself remained cautious and confined its claims to the patterns documented in the empirical models.

### 6.1.2 Tax Morale During the Great Recession: Cross-National Configurations

The second empirical study considered the Great Recession of 2007–2009 as an economic shock and used a QCA of 14 countries to examine how combinations of conditions were associated with changes in average tax morale. The outcome of interest was whether a country experienced a positive change in tax morale between the pre- and post-crisis WVS waves. The analysis focused on five conditions: (1) the economic impact of the recession (combined unemployment rate and GDP growth indicators), (2) whether the trigger of the crisis was coded as internal or external, (3) whether there was a change in the ruling party, (4) the size of total fiscal stimulus as a share of GDP, and (5) the share of demand-based measures in stimulus packages. The parsimonious QCA solution identified four configurations (paths) that were sufficient for a positive change in tax morale (TMd = 1), with solution consistency and coverage both equal to 1.00.

- **Internal trigger + change in ruling party (Trigger*PartyChange)**: In countries where the crisis was coded as internally triggered, a change in the ruling party was associated with a positive change in tax morale. This configuration appeared in the Netherlands, Spain, Ukraine, and the United States, and aligned with the idea that leadership change could be associated with renewed optimism when the incumbent was perceived as being responsible for the crisis.
- **External trigger + no change in ruling party (~Trigger*~PartyChange):** In countries where the crisis was coded as externally triggered, a positive change in tax morale was associated with continuity in government (Australia, India, Malaysia, Poland, Sweden, and Turkey). Here, citizens may have been more willing to accept the crisis as driven by external forces and to tolerate continuity in leadership.
- The third path **(~TsFStim)** pointed to smaller total stimulus packages being sufficient for a positive change in tax morale. In this configuration, countries with total fiscal stimulus below the OECD average (3.5% of GDP) still experienced a positive change in tax morale. This path appeared in India, Japan, Mexico, the Netherlands, Poland, Spain, Sweden, Turkey, and Ukraine. As highlighted in Chapter 3, this result ran counter to the initial expectations: the single-condition path ~TsFStim indicated that *not* having a very large

stimulus package was sufficient for a positive change in tax morale, which contradicted Hypothesis 3a (no clear association between stimulus size and tax morale) and Hypothesis 3c (external trigger combined with large stimulus leading to higher tax morale). Rather than larger stimulus packages systematically supporting tax morale, the QCA showed that countries with smaller packages could still belong to configurations associated with increased tax morale.

- **External trigger + smaller demand-based stimulus (~Trigger*~DsFStim):** Another solution path combined an external trigger with a smaller share of demand-based measures and was also associated with a positive change in tax morale (Australia, India, Japan, Malaysia, Mexico, Poland, and Turkey). These last two paths contradicted the prior expectation that larger or more demand-focused stimulus packages would be systematically associated with higher tax morale. Moreover, economic impact did not appear explicitly in any of the sufficient configurations, meaning that the QCA did not support the hypothesis that better macroeconomic performance during a recession is a necessary or central component of the paths to higher tax morale. Taken together, the QCA results suggested that the combinations of conditions associated with a positive change in tax morale during the Great Recession did not align neatly with the initial hypotheses about economic impact and stimulus design. Instead, patterns of political responsibility and leadership change (internal vs external triggers combined with party change or continuity) appeared more consistently in the sufficient configurations than did economic or fiscal-policy variables.

### 6.1.3 Tax Morale in the United States During the Great Recession

The third empirical study zoomed in on the United States and examined whether state-level variation in the severity of the Great Recession and in the size and composition of stimulus packages was associated with individual-level tax morale in 2011. The analysis combined WVS data for 29 states with state-level indicators of economic impact, stimulus measures, welfare spending, and state tax-policy changes. Two sets of hypotheses were examined. The first set focused on the state-level economic impact and individual economic positions (Hypotheses 1 and 2). Using indicators such as changes in state-level GDP growth, unemployment rates, and foreclosure rates, the first set of models found no statistically significant association between these measures of recession severity and tax morale in 2011. Similarly, when individual employment status categories (employed, retired, housewife/student) were added, they did not show statistically significant differences in tax morale relative to the unemployed reference group.

The second set of hypotheses focuses on government response and tax policy (Hypothesis 3). The second set of models examined total stimulus per capita and then direct stimulus per capita (household-oriented measures) at the state level, controlling for welfare spending and for changes in state-level personal income, sales, and business tax rates. Total stimulus per capita showed a negative association with tax morale in the simplest specification, but this relationship became statistically insignificant once welfare spending and tax-policy controls were included. By contrast, direct stimulus per capita was consistently negatively associated with tax morale across specifications: higher per-capita direct stimulus was associated with slightly lower reported tax morale, even after controlling for welfare spending and state tax changes. Overall, the U.S. analysis suggested that neither the severity of the recession nor the total size of state-level stimulus packages had a robust positive association with tax morale. If anything, higher levels of direct stimulus correlated with slightly lower reported tax morale, once controls were included. These results did not provide evidence that larger stimulus packages or less severe local economic conditions systematically strengthened tax morale.

### 6.1.4 Protest Intensity, Democracy, and Tax Morale After the Arab Spring in Egypt

The fourth empirical study focused on Egypt and the Arab Spring, treating the 2011 uprising as a political shock. Using WVS data from before (Wave 5) and after (Wave 6) the Arab Spring and constructing a protest-intensity index based on casualties per capita at the governorate level, the chapter examined how protest exposure and democratic attitudes related to tax morale. Model 1 showed three central patterns. The post-Arab Spring period (time dummy) was negatively associated with tax morale: on average, reported tax morale was lower after the Arab Spring than before. Protest intensity at the governorate level was positively associated with tax morale; governorates with higher casualties per capita tended to show higher tax morale, conditional on other factors. Embracing democracy (measured as a binary indicator based on the WVS question about the importance of living in a democracy) was positively associated with tax morale. When embracing democracy was introduced as a potential mediator between protest intensity and tax morale, the results did not provide strong evidence that democratic attitudes explained the positive association between protest exposure and tax morale. Where indirect effects were statistically significant, they sometimes operated in the opposite direction to what was hypothesized, underscoring the complexity of the relationship between protest, democratic aspirations, and tax morale.

At the same time, the analysis found a positive association between protest intensity and increases in the embrace of democracy: citizens in more intensely affected governorates were more likely to report democracy as "very important" after the Arab Spring. Taken together, the Egyptian case suggested a layered picture: the Arab Spring as an event was associated with lower overall tax morale, but within that context, more intense protest exposure was associated with higher tax morale and stronger democratic aspirations. The results supported the idea that contested democratic transitions can generate both civic engagement and disappointment, and that these forces can pull tax attitudes in different directions.

## 6.2 Policy Implications

Because the empirical chapters relied on observational data and were subject to endogeneity concerns, the policy implications drawn here are intentionally cautious. They are best understood as informed by patterns of association rather than as prescriptions derived from identified causal effects.

### 6.2.1 Historical Legacies and Reform Strategies

The findings on ex-communist countries suggested that long-term historical legacies can continue to shape tax morale even decades after regime change. Two implications follow directly from the results in Chapter 2. First, current institutional and attitudinal variables do not fully absorb the heritage effect. The ex-communist dummy and the duration of communist rule remained negatively associated with tax morale even after controlling for corruption perceptions, trust in government, expectations of government responsibility, and political apathy. This means that commonly used "proximate" indicators of institutional quality and political attitudes do not fully capture the legacy of communist experience. For policy analysis, this implies that cross-country differences in tax morale cannot be interpreted purely as reflections of contemporary institutional performance; part of the gap reflects inherited patterns that persist even when current governance indicators look similar.

Second, democratic status alone does not erase the legacy of communist rule. The negative association between communist heritage and tax morale was particularly pronounced among ex-communist democracies compared to other democracies. This suggests that simply transitioning to democratic institutions is not, on its own, sufficient to bring tax morale in line with that of long-standing democracies. For policy debates, this cautions against assuming that the adoption of formal democratic rules will quickly align fiscal attitudes with those observed in older democracies; instead,

expectations about the speed of convergence in tax morale need to be calibrated to the persistence documented in Chapter 2. These implications are specific to the patterns uncovered in the empirical analysis: they do not prescribe particular institutional reforms, but they do highlight that evaluations of tax morale, and the design of tax-system reform strategies in post-communist settings, need to treat regime history as an enduring part of the background rather than a short-lived shock.

### 6.2.2 Economic Shocks, Crisis Responses, and Tax Morale

The Great Recession chapters (Chapters 3 and 4) showed that the link between crisis conditions, government response, and tax morale was weaker and more conditional than the initial hypotheses suggested. From a comparative perspective, the QCA in Chapter 3 found four sufficient configurations associated with an increase in tax morale, but economic impact did not appear in any of the parsimonious solution paths — though the intermediate solution revealed it as a peripheral rather than core condition, appearing in four of six intermediate paths in its positive form. This meant that, in the 14-country sample, countries with milder macroeconomic shocks were not systematically the ones where tax morale held up. Likewise, the two paths involving fiscal stimulus — smaller total stimulus and, in externally triggered crises, smaller demand-based stimulus — contradicted the prior hypotheses stipulating that larger and more demand-oriented packages would be associated with higher tax morale. From a policy-analysis standpoint, these associations suggest that cross-country patterns in tax morale during the Great Recession cannot be summarized as "less damage + larger stimulus → higher tax morale." Instead, combinations of political responsibility (internal vs. external trigger) and leadership change or continuity appeared more regularly among the paths where tax morale increased — pointing to governance and accountability dynamics as more prominent configurational factors than economic or fiscal conditions alone.

The U.S. analysis in Chapter 4 reinforced this message. State-level indicators of recession severity—the change in GDP growth, change in unemployment, and foreclosure rates—were not significantly associated with tax morale in 2011. Similarly, individual employment status (employed vs. unemployed) did not show significant differences in tax morale, although retirees and housewives/students had positive but imprecisely estimated coefficients. On the policy side, the findings on stimulus packages were also more nuanced than simple “more stimulus, more tax morale” stories: total stimulus per capita was negatively associated with tax morale only in a simple specification and became insignificant once welfare spending and tax-policy controls were introduced, while direct stimulus per capita was robustly negatively associated with tax morale across models. Taken together, these results implied two major findings within the range

observed in the data. First, there was no clear empirical basis in this thesis for treating the depth of the macro shock or the sheer size of stimulus as levers that reliably increased tax morale. Second, in the QCA, some countries with *smaller* and less demand-focused packages appeared in configurations where tax morale held up, and in the United States, higher direct stimulus per capita was associated with slightly lower reported tax morale.

For policy debates, the contribution of Chapters 3 and 4 was therefore mainly negative but informative. The findings caution against assuming that more severe recessions automatically erode tax morale, or that larger, more demand-heavy stimulus packages automatically strengthen it. Instead, they show that tax morale can be relatively stable across quite different economic conditions, and that the expected positive link between stimulus and tax morale did not materialize in these data.

### 6.2.3 Political Transitions, Protest, and Tax Morale

Chapter 5 used the Arab Spring in Egypt to study a political shock rather than an economic one. The empirical findings have three direct implications for how political transitions are discussed in relation to tax morale. First, the occurrence of the Arab Spring itself was associated with lower tax morale: the post-Arab Spring's time dummy entered with a negative and statistically significant coefficient in the main specifications, implying a sizable decline in the probability of reporting that tax evasion was "never justified." This indicated that, in this case, a major democratic opening and change in regime type did not translate into higher average tax morale over the period covered by the surveys. Second, within that overall decline, there were positive associations between protest intensity, democratic aspirations, and tax morale. Governorates with higher protest intensity (measured by casualties per capita) had higher tax morale on average, and protest intensity was also positively related to embracing democracy. Embracing democracy itself was positively associated with tax morale, even though the mediation analysis showed that it did not operate as a straightforward channel explaining the protest–tax morale link. Where an indirect effect appeared, it could run in the opposite direction to the simple story in which protest raises democracy, which in turn raises tax morale. Third, the interpretation of these patterns in Chapter 5 pointed to the role of divisive electoral dynamics and unmet expectations rather than to democracy per se. The conclusion emphasized that the post-revolution period in Egypt was marked by economic deterioration, political uncertainty, a closely contested presidential election with low turnout, and concerns about "Ikhwanization," restrictions on media and civil society, and a controversial constitutional declaration. In that context, the theory of divisive elections and the literature on winners and losers in new democracies suggest that those who feel excluded or on the losing side

may become less willing to comply with tax obligations, even as some groups become more engaged and more strongly committed to democratic principles.

For policy discussions, these findings from Egypt do *not* support a simple expectation that "more democracy" automatically raises tax morale in the short run. Instead, the chapter has many contributions. First, it provides evidence that a democratic transition can coincide with an *overall decline* in tax morale. Second, it also provides evidence that protest exposure and democratic aspirations can still be positively associated with tax morale for some groups and places. Finally, it provides an illustration of how contested, polarized transitions and unmet economic expectations can help explain why aggregate tax morale falls even when civic engagement rises. The policy relevance of Chapter 5, therefore, lies less in prescribing particular institutional designs and more in *qualifying* the conditions under which political openings are likely to support or undermine tax morale. It shows that, at least in Egypt over the period studied, the combination of economic strain and divisive elections was associated with lower average tax morale, despite localized increases in civic engagement and democratic support.

## 6.3 Limitations and Directions for Future Research

The analyses in this thesis were subject to several limitations that followed directly from the research designs and available data, and these should be borne in mind when interpreting the findings. First, the thesis relied mainly on observational survey data and quasi-comparative designs. Across all empirical chapters, the results identified *associations* rather than causal effects. Although models incorporated relevant controls and, in some cases, alternative specifications, unobserved heterogeneity and reverse causality could not be ruled out. The QCA analysis, similarly, identified combinations of conditions that were consistent with particular outcomes in the observed cases, but did not establish causal necessity beyond those configurations. Second, tax morale was measured using self-reported survey responses. While widely used in the literature, these items captured stated attitudes toward tax evasion rather than actual behaviour. They may also have been influenced by social desirability pressures and cultural norms around survey response. The findings should therefore be interpreted as relating to *norms and attitudes about taxation*, rather than as directly to tax compliance behaviour. Third, institutional and contextual variables were necessarily simplified. Key elements such as communist heritage, protest intensity, and crisis responses were operationalised in ways that allowed for cross-case comparison, but they inevitably abstracted from local nuance. For example, the ex-communist dummy and duration

measure could not capture within-region variation in institutional experience; the fiscal stimulus indicators summarised complex policy packages; and the protest-intensity index could not represent the full diversity of political mobilisation across Egyptian governorates. Fourth, timing constraints limited the scope of inference. The Great Recession analyses relied on the timing of available WVS waves, meaning that changes in tax morale were captured over relatively long intervals rather than immediately before and after key policy events. Similarly, the Arab Spring analysis captured the early phase of Egypt's transition rather than a long post-transition trajectory. The results therefore described patterns during specific windows, not permanent legacies.

These limitations also suggested clear avenues for further research. Future work could:

- exploit panel data or experimental approaches to better isolate causal mechanisms;
- extend analyses to additional survey waves to examine whether effects persist, fade, or reverse;
- incorporate richer measures of institutional experience, perceptions of fairness, and administrative interactions; and
- explore similar questions in other political transitions and crises to test the generalizability of the patterns observed here.

## 6.4 Concluding Reflection

Taken together, the findings of this thesis show that tax morale is shaped by long-term historical legacies, by the political handling of major economic shocks, and by the dynamics of political transition—yet not always in the intuitive or expected ways. The analysis of communist heritage demonstrated that regime history remains empirically relevant for tax morale decades after transition, and that commonly used attitudinal controls do not fully absorb this legacy. The cross-national and U.S. studies of the Great Recession showed that neither the depth of the macroeconomic shock nor the size of stimulus packages systematically explain variation in tax morale, and that relationships between stimulus design and tax morale run counter to prominent expectations. The Egyptian case illustrated that periods of political opening can combine widespread democratic aspirations and civic mobilisation with declining aggregate tax morale, particularly in contexts of polarization and unmet expectations. The contribution of the thesis is therefore not to propose a single unifying determinant of tax morale, but to demonstrate—empirically—that historical context, crisis management, and political

transitions condition tax attitudes in ways that are heterogeneous, contingent, and sometimes surprising. By documenting these patterns across different regions, time periods, and methodological approaches, the thesis contributes to a more cautious and empirically grounded understanding of how citizens form attitudes toward taxation, and how these attitudes may evolve in moments of institutional and political change.

# Appendix

## A1 - Chapter 2's Appendix

**A1.Table 1:** Ex-Communist Countries in Scope

| Country | Region | WVS 3 | WVS 4 | WVS 5 | WVS 6 |
|---|---|---|---|---|---|
| Albania | Balkan | X | X | | |
| Armenia | Central Asia and Southern Caucasus | X | | | X |
| Azerbaijan | Central Asia and Southern Caucasus | X | | | X |
| Belarus | Central Asia and Southern Caucasus | X | | | |
| Bosnia Herzegovina | Balkan | X | X | | |
| Bulgaria | Eastern and Southern Europe | X | | X | |
| Czech Rep. | Eastern and Southern Europe | X | | | |
| Estonia | Eastern and Southern Europe | X | | | X |
| Georgia | Central Asia and Southern Caucasus | X | | x | X |
| Hungary | Eastern and Southern Europe | | | x | |
| Kazakhstan | Central Asia and Southern Caucasus | | | | X |
| Kyrgyzstan | Central Asia and Southern Caucasus | | X | | X |
| Latvia | Balkan | X | | | |
| Lithuania | Eastern and Southern Europe | X | | | |
| Macedonia | Balkan | X | X | | |
| Moldova | Balkan | X | X | X | |
| Poland | Eastern and Southern Europe | x | | X | X |
| Romania | Eastern and Southern Europe | x | | X | X |
| Russia | Central Asia and Southern Caucasus | x | | X | X |
| Serbia | Balkan | | | X | |
| Slovakia | Eastern and Southern Europe | x | | | |
| Slovenia | Eastern and Southern Europe | | | X | x |
| Ukraine | Eastern and Southern Europe | x | | X | x |

*Notes: No ex-communist country was surveyed in WVS Wave 2 (1990–1993); coverage of ex-communist countries begins with Wave 3. The pooled analysis nonetheless spans Waves 2–6 (1990–2014), with Wave 2 contributing observations from non-ex-communist countries only.*

**A1.Table 2:** Key variables: definitions and data sources (Chapter 2)

This appendix table consolidates the main variables used in Chapter 2's empirical analysis. It is intended as a quick reference; construction details follow the chapter's Data section.

| Role | Variable | Coding / scale | Description (as used in analysis) | Source |
|---|---|---|---|---|
| Outcome | **TMb** | Binary: 1 if "tax evasion is never justifiable"; 0 otherwise | Main tax morale variable. Based on the WVS question on whether cheating on taxes is ever justifiable (10-point scale). Recoded to a binary outcome equal to 1 for "never justifiable" and 0 otherwise for the probit specifications. | World Values Survey (WVS), Waves 2–6; Inglehart et al. (2014). |
| Outcome (robustness) | **TM** | 1–10 (original WVS scale) | Continuous version of tax morale used in robustness checks, retaining the original 10-point response scale ("never justifiable" = 1; "always justifiable" = 10). | WVS, Waves 2–6. |
| Main treatment: regime history | **Comm** | Binary country-level indicator: 1 = ex-communist country; 0 = otherwise | Country-level dummy capturing whether a country has an ex-communist heritage (as defined in Chapter 2). Used to test the association between communist heritage and individual tax morale. | Author's coding based on historical sources; matched to WVS country codes. |
| Historical exposure (country) | **CommDr** | Continuous (years) | Number of years a country was under a communist regime, measured relative to the year of the WVS survey wave. Used to test whether longer exposure to communism is associated with lower tax morale. | Author's calculations from historical regime start/end dates and WVS survey years. |
| Historical exposure (individual) | **AgeComm** | Continuous (years; defined for respondents in ex-communist countries) | Number of years an individual has lived under a communist regime, constructed from respondent age, the timing of the communist regime, and the WVS interview year. Used in models restricted to ex-communist countries to test whether longer personal exposure is associated with tax morale. | Author's calculations using WVS individual age and country regime timelines. |
| Regime-type context | **DemComm** | Binary country-level indicator | Dummy identifying ex-communist democracies (as defined in Chapter 2) versus other regimes, used to compare tax morale across regime types and to test whether communist heritage has different implications in democracies versus non-democracies. | Author's coding combining communist heritage classification with democracy indicators (see Chapter 2 for details). |
| Potential mediator | **TrustGov** | Binary indicator | Dummy for trust in government, constructed from the WVS question on confidence in "the government". Categories are split into "positive" (e.g. a great deal / quite a lot) versus "negative" (not very much / none at all). Used as a potential mediator | WVS, Waves 2–6. |

| Role | Variable | Coding / scale | Description (as used in analysis) | Source |
|---|---|---|---|---|
| | | | between communist heritage and tax morale. | |
| Potential mediator | **PolApath** | Categorical (1–3) | Index of political apathy based on WVS items on political participation and engagement. Coding follows Chapter 2: 1 = "have done", 2 = "might do", 3 = "would never do" (aggregated across specified political actions). Used as a potential channel linking communist heritage to tax morale. | WVS, Waves 2–6. |
| Potential mediator | **GovResp** | 1–10 (original WVS scale) | Respondent's view on the role of government, based on the WVS question ranging from "people should take more responsibility" (1) to "government should take more responsibility" (10). Used both as a covariate and as a potential mediator between communist heritage and tax morale. | WVS, Waves 2–6. |
| Country control | **Inequality** | Continuous index (e.g. Gini coefficient) | Country-level measure of income inequality included as a control in the extended specifications. Higher values indicate greater income inequality. | Cross-national inequality dataset (see Chapter 2 Data section for exact source). |
| Country control | **Corruption** | Continuous index | Country-level corruption index included as a control. Higher values indicate higher perceived corruption or lower integrity, depending on the specific scale used. | Cross-national corruption dataset (e.g. Transparency International CPI / similar; see Chapter 2 for details). |
| Individual controls | **Age** | Categorical or continuous (as coded in Chapter 2) | Respondent's age (or age categories) included as a standard socio-demographic control. | WVS, Waves 2–6. |
| Individual controls | **Gender** | Binary indicator | Respondent's gender. | WVS, Waves 2–6. |
| Individual controls | **Income** | Categorical | Self-reported income category used as an indicator of respondent's relative income position. | WVS, Waves 2–6. |

**Notes:**
(i) TMb is derived from the WVS tax-evasion item ("cheating on taxes if you have the chance") originally coded from 1 ("never justifiable") to 10 ("always justifiable"). The binary recode follows the chapter's empirical specification.
(ii) Communist-heritage and duration variables are constructed at the country level, then merged to WVS respondents by country and wave. AgeComm is defined only for respondents in ex-communist countries.
(iii) Inequality and Corruption are included as country-level controls in combined analyses; see Chapter 2 Data section for the precise indices and years used.

# A2 - Chapter 4's Appendix

**A2.Table 1: List of States in scope and related Divisions**

| US Region | US Division | US State |
|---|---|---|
| Midwest | East North Central | Illinois |
| Midwest | East North Central | Indiana |
| Midwest | East North Central | Michigan |
| Midwest | East North Central | Ohio |
| Midwest | East North Central | Wisconsin |
| South | East South Central | Alabama |
| South | East South Central | Kentucky |
| South | East South Central | Tennessee |
| Northeast | Middle Atlantic | New Jersey |
| Northeast | Middle Atlantic | New York |
| Northeast | Middle Atlantic | Pennsylvania |
| Northeast | New England | Connecticut |
| Northeast | New England | Massachusetts |
| West | Pacific | California |
| West | Rocky Mountain states | Arizona |
| West | Rocky Mountain states | Colorado |
| West | Rocky Mountain states | Nevada |
| South | South Atlantic | Florida |
| South | South Atlantic | Georgia |
| South | South Atlantic | Maryland |
| South | South Atlantic | North Carolina |
| South | South Atlantic | South Carolina |
| South | South Atlantic | Virginia |
| Midwest | West North Central | Iowa |
| Midwest | West North Central | Minnesota |
| Midwest | West North Central | Missouri |
| South | West South Central | Louisiana |
| South | West South Central | Oklahoma |
| South | West South Central | Texas |

## A2.Table 2: Breakdown of Direct Stimulus (household transfer) per State

| State | Temporary Increase in State FMAP | Education | Unemployment Insurance | Child Care | Child Support | Training and Employment Services | Food Stamp Program | Homelessness Prevention Fund | Child Tax Credit | Making Work Pay Tax Credit | Total Household Transfers per State |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Alabama | 850 | 1,162 | 99 | 38 | 17 | 27 | 389 | 20 | 1,440 | 668 | 4,711 |
| Arizona | 1,980 | 1,506 | 138 | 51 | 22 | 44 | 36 | 22 | 2,130 | 832 | 6,762 |
| Arkansas | 730 | 728 | 57 | 25 | 15 | 25 | 381 | 11 | 1,110 | 388 | 3,470 |
| California | 11,230 | 8,944 | 844 | 220 | 155 | 494 | 1,466 | 189 | 12,240 | 4,960 | 40,742 |
| Colorado | 880 | 1,088 | 122 | 24 | 19 | 27 | 181 | 15 | 1,260 | 716 | 4,334 |
| Connecticut | 1,320 | 789 | 84 | 14 | 16 | 29 | 152 | 17 | 648 | 524 | 3,593 |
| Florida | 4,390 | 4,088 | 436 | 105 | 100 | 141 | 879 | 65 | 4,800 | 2,676 | 17,682 |
| Georgia | 1,730 | 2,389 | 216 | 83 | 43 | 86 | 666 | 34 | 3,000 | 1,340 | 9,587 |
| Illinois | 2,900 | 3,209 | 316 | 74 | 37 | 154 | 890 | 71 | 3,480 | 1,884 | 13,015 |
| Indiana | 1,440 | 1,531 | 148 | 43 | 32 | 55 | 409 | 28 | 1,740 | 972 | 6,398 |
| Iowa | 550 | 684 | 72 | 18 | 27 | 13 | 161 | 17 | 870 | 444 | 2,856 |
| Kansas | 450 | 673 | 68 | 18 | 13 | 16 | 127 | 11 | 840 | 408 | 2,625 |
| Kentucky | 1,030 | 1,054 | 90 | 35 | 29 | 46 | 427 | 19 | 1,380 | 596 | 4,704 |
| Louisiana | 1,660 | 1,175 | 92 | 40 | 24 | 39 | 461 | 27 | 1,620 | 596 | 5,733 |
| Maryland | 1,630 | 1,307 | 130 | 24 | 29 | 29 | 219 | 22 | 990 | 868 | 5,249 |
| Massachusetts | 3,090 | 1,538 | 163 | 24 | 35 | 54 | 317 | 45 | 1,050 | 980 | 7,295 |
| Michigan | 2,270 | 2,580 | 233 | 59 | 104 | 197 | 800 | 53 | 2,820 | 1,492 | 10,608 |
| Minnesota | 2,030 | 1,167 | 141 | 26 | 48 | 43 | 175 | 24 | 1,020 | 812 | 5,485 |
| Mississippi | 790 | 800 | 54 | 31 | 13 | 45 | 296 | 14 | 1,140 | 400 | 3,583 |
| Missouri | 1,600 | 1,387 | 131 | 39 | 41 | 66 | 562 | 27 | 1,860 | 860 | 6,572 |
| Nebraska | 310 | 438 | 42 | 12 | 10 | 7 | 83 | 8 | 450 | 272 | 1,633 |
| Nevada | 450 | 571 | 71 | 14 | 8 | 25 | 84 | 8 | 870 | 384 | 2,486 |
| New Jersey | 2,200 | 1,985 | 214 | 34 | 63 | 57 | 297 | 41 | 1,590 | 1,296 | 7,777 |
| New Mexico | 630 | 544 | 36 | 18 | 5 | 13 | 172 | 9 | 840 | 276 | 2,541 |
| New York | 12,650 | 5,123 | 404 | 97 | 101 | 174 | 1,289 | 14 | 5,220 | 2,704 | 27,776 |
| North Carolina | 2,350 | 2,141 | 205 | 68 | 53 | 76 | 616 | 29 | 2,670 | 1,292 | 9,499 |
| Ohio | 3,010 | 2,802 | 282 | 68 | 114 | 148 | 756 | 3 | 3,240 | 1,816 | 12,239 |
| Oklahoma | 960 | 897 | 72 | 30 | 16 | 20 | 302 | 12 | 1,080 | 492 | 3,882 |
| Pennsylvania | 4,070 | 2,948 | 292 | 60 | 100 | 82 | 779 | 90 | 3,000 | 1,888 | 13,309 |
| South Carolina | 860 | 1,092 | 93 | 36 | 13 | 64 | 383 | 16 | 1,320 | 636 | 4,514 |
| Tennessee | 1,620 | 1,477 | 140 | 42 | 32 | 65 | 608 | 20 | 2,070 | 884 | 6,959 |
| Texas | 5,450 | 6,360 | 530 | 215 | 161 | 175 | 1,812 | 104 | 9,780 | 3,212 | 27,799 |
| Utah | 320 | 672 | 57 | 22 | 13 | 10 | 94 | 8 | 900 | 352 | 2,449 |
| Virginia | 1,470 | 1,752 | 195 | 38 | 40 | 32 | 355 | 25 | 1,560 | 1,164 | 6,631 |
| Wisconsin | 1,240 | 1,320 | 143 | 30 | 53 | 36 | 246 | 10 | 1,560 | 884 | 5,523 |
| Wyoming | 110 | 152 | 12 | 3 | 5 | 5 | 17 | 2 | 120 | 84 | 509 |

**A2.Table 3: Key variables: definitions and data sources (Chapter 4)**

This table provides concise definitions and primary sources for the dependent variable and key independent variables used in Chapter 4. Detailed construction steps (e.g., per-capita scaling and any log transformations) are described in the chapter text and appendix materials.

| Category | Variable | Description | Source |
|---|---|---|---|
| Dependent variable | TM | Tax morale in 2011 (WVS Wave 6). Higher values indicate stronger stated tax morale (10-point scale). | World Values Survey (WVS), Wave 6 (2010–2014; U.S. 2011 sample). |
| Government response | StimTpCT | Total Recovery Act stimulus per capita by state. (Used in levels or log as specified in the model.) | Recovery.gov state totals (archived snapshot: 20 April 2011); nominal (current) USD as reported at the time. |
| Government response | StimDpCT | Direct stimulus per capita (household-transfer component). (Used in levels or log as specified in the model.) | Center on Budget and Policy Priorities (ARRA components) and archived supporting links (as used in the thesis' construction tables). |
| Economic impact | GDP | Change in state GDP growth between 2006 and 2011. | U.S. Bureau of Economic Analysis (BEA), state GDP/growth series. |
| Economic impact | Unemp | Change in state unemployment rate between 2006 and 2011. | U.S. Bureau of Labor Statistics (BLS), regional and state unemployment annual averages. |
| Economic impact | Foreclosure | Foreclosure-rate measure at the state level (crisis period as specified in the thesis). | Report to the U.S. Congress on the Root Causes of the Foreclosure Crisis (Table 1). |
| Individual economic indicator | Emp | Employment-status category for respondents in 2011 (e.g., unemployed [omitted], employed, retired, housewife/student). | World Values Survey (WVS), Wave 6 (2010–2014; U.S. 2011 sample). |

***Note*:** Stimulus-dollar amounts from Recovery.gov are nominal (current) USD as reported in the archived snapshot (20 April 2011) and are not inflation-adjusted unless explicitly stated. Per-capita scaling and any log transformations follow the chapter's variable-construction description.

**A2.Table 4: Definitions and data sources (Chapter 4)**

Controls are included as indicated in the regression tables. Where controls are coded as indicators, the omitted category is the reference group in the regression.

| Category | Variable | Description | Source |
|---|---|---|---|
| Government response (control) | WelfarepC_Avg | Average public welfare and employment security administration spending per capita by state (2006–2011, as specified). | U.S. Census Bureau, Annual Surveys of State and Local Government Finances (2006–2011); public welfare & employment security administration spending. |
| Tax policy (control) | TaxPI | Indicator for personal income tax rate increase during the recession period (as coded in the thesis). | CBPP: State tax changes in response to the recession; Tax Foundation fiscal facts reports (as cited in the thesis). |
| Tax policy (control) | TaxSales | Indicator for sales tax rate increase during the recession period (as coded in the thesis). | Tax Foundation fiscal facts reports (as cited in the thesis). |
| Tax policy (control) | TaxBiz | Indicator for business tax change during the recession period (as coded in the thesis). | Tax Foundation fiscal facts reports (as cited in the thesis). |
| Ideology (control) | Ideology2 | Party/ideology category in 2011; included as indicator variables (omitted category: Republican). | World Values Survey (WVS), Wave 6 (2010–2014; U.S. 2011 sample). |
| Demographics (controls) | Age | Age-category indicators (as coded in the thesis). | World Values Survey (WVS), Wave 6 (2010–2014; U.S. 2011 sample). |
| Demographics (controls) | Income | Income-category indicators (as coded in the thesis). | World Values Survey (WVS), Wave 6 (2010–2014; U.S. 2011 sample). |
| Demographics (controls) | Gender | Female indicator (as coded in the thesis). | World Values Survey (WVS), Wave 6 (2010–2014; U.S. 2011 sample). |
| Demographics (controls) | Ethnicity | Ethnicity indicators (omitted category: White, non-Hispanic). | World Values Survey (WVS), Wave 6 (2010–2014; U.S. 2011 sample). |
| Baseline tax morale (control) | TM_Div2006 | Division-level baseline tax morale (mean of WVS Wave 5 in 2006) matched to individuals by Census division. | World Values Survey (WVS), Wave 5 (2005–2009; U.S. 2006 sample). |

***Note:*** Ethnicity and ideology enter as sets of indicator variables. Tax-policy variables (TaxPI/TaxSales/TaxBiz) are binary indicators; the omitted category is no change. Time windows and coding choices follow the chapter's construction description.

**A2.Table 5: Tax Policy changes during the Great Recession per State (2009-2010)**

Data is aggregated from: A Review of 2010's Changes In State Tax Policy and A Review of Significant State Tax Changes During 2009.

| US State | Personal Income Tax (TaxPI) | Sales Tax (TaxSales) | Business Tax (TaxBiz) |
|---|---|---|---|
| Alabama | No personal income change | No sales tax change | No change in business tax rate |
| Arizona | No personal income change | Temporary increase | Reduced tax rate |
| Arkansas | No personal income change | Reduced tax on some goods | No change in business tax rate |
| California | Increase for all + Broaden tax base | Temporary increase | Reduced tax credits |
| Colorado | Broaden tax base | Broaden tax base and/or increase for some goods | Increase tax rate |
| Connecticut | Broaden tax base | Permanent increase | Increase tax rate Reduced tax credits |
| Florida | No personal income change | No sales tax change | No change in business tax rate |
| Georgia | No personal income change | No sales tax change | No change in business tax rate |
| Illinois | Increase tax for all | Broaden tax base and/or increase for some goods | Increase tax rate |
| Indiana | No personal income change | Permanent increase | No change in business tax rate |
| Iowa | No personal income change | No sales tax change | No change in business tax rate |
| Kansas | No personal income change | Permanent increase | No change in business tax rate |
| Kentucky | No personal income change | Broaden tax base and/or increase for some goods | No change in business tax rate |
| Louisiana | No personal income change | No sales tax change | No change in business tax rate |
| Maryland | Increase for existing top bracket | No sales tax change | Reduced tax credits |
| Massachusetts | No personal income change | Permanent increase + Broaden tax base | Reduce tax avoidance |
| Michigan | No personal income change | No sales tax change | No change in business tax rate |
| Minnesota | No personal income change | No sales tax change | Reduce tax avoidance |
| Mississippi | No personal income change | No sales tax change | No change in business tax rate |
| Missouri | No personal income change | No sales tax change | No change in business tax rate |
| Nebraska | No personal income change | No sales tax change | No change in business tax rate |
| Nevada | No personal income change | Temporary increase | Increase tax rate |
| New Jersey | Broaden tax base | No sales tax change | No change in business tax rate |
| New Mexico | No personal income change | Broaden tax base and/or increase for some goods | No change in business tax rate |
| New York | Increase for existing top bracket + Broaden tax base | Broaden tax base and/or increase for some goods | Increase tax rate + Reduced tax credits |
| North Carolina | No personal income change | No sales tax change | No change in business tax rate |

| | | | |
|---|---|---|---|
| Ohio | Personal income tax rate reduced | No sales tax change | No change in business tax rate |
| Oklahoma | No personal income change | No sales tax change | No change in business tax rate |
| Pennsylvania | No personal income change | No sales tax change | No change in business tax rate |
| South Carolina | No personal income change | Broaden tax base and/or increase for some goods | No change in business tax rate |
| Tennessee | No personal income change | Broaden tax base and/or increase for some goods | Broaden tax base |
| Texas | No personal income change | No sales tax change | No change in business tax rate |
| Utah | No personal income change | Permanent increase | No change in business tax rate |
| Virginia | No personal income change | No sales tax change | No change in business tax rate |
| Wisconsin | Increase for existing top bracket + Broaden tax base | Broaden tax base and/or increase for some goods | Reduced tax credits + Reduce tax avoidance |
| Wyoming | No personal income change | No sales tax change | No change in business tax rate |

A2.Table 6: Coding of Personal Income Tax Changes

| Coding | Personal income tax coding | |
|---|---|---|
| Reduced | Personal income tax rate reduced | 0 |
| No change | No personal income change | 1 |
| Some form of increase | Increase for existing top bracket<br>Broaden tax base<br>Increase for existing top bracket + Broaden tax base<br>Increase tax for all<br>Increase for all + Broaden tax base | 2 |

**A2.Table 7: Coding of Sales Tax Changes**

| Coding | Sales tax coding | |
|---|---|---|
| Reduced | Reduced tax on some goods | 0 |
| No change | No sales tax change | 0 |
| Some form of increase | Temporary increase<br>Broaden tax base and/or increase for some goods<br>Permanent increase<br>Permanent increase + Broaden tax base | 1 |

**A2.Table 8: Coding of Business Tax Changes**

| Coding | Business tax coding | |
|---|---|---|
| Reduced | Reduced tax rate | 0 |
| No change | No change in business tax rate | 1 |
| Some form of increase | Actions to reduce tax avoidance | 2 |
| | Broaden tax base | |
| | Reduced tax credits | |
| | Increase tax rate | |
| | Increase tax rate + Reduced tax avoidance | |
| | Increase tax rate + Reduced tax credits | |

**A2.Table 9: Welfare per state 2006-2011 and Average of Welfare spending within this duration**

| US State | Welfare per Capita 2006 | Welfare per Capita 2008 | Welfare per Capita C2009 | Welfare per Capita 2011 | Welfare per Capita_Avg |
|---|---|---|---|---|---|
| Alabama | 1,032 | 972 | 1,158 | 1,262 | 1,106 |
| Arizona | 1,191 | 1,141 | 1,266 | 1,455 | 1,263 |
| Arkansas | 1,270 | 1,318 | 1,331 | 1,576 | 1,374 |
| California | 1,327 | 1,337 | 1,418 | 1,831 | 1,478 |
| Colorado | 828 | 847 | 847 | 993 | 879 |
| Connecticut | 1,385 | 1,475 | 1,608 | 1,752 | 1,555 |
| Florida | 1,129 | 1,042 | 1,063 | 1,260 | 1,124 |
| Georgia | 1,050 | 975 | 1,010 | 1,053 | 1,022 |
| Illinois | 1,091 | 1,274 | 1,373 | 1,375 | 1,279 |
| Indiana | 1,104 | 1,306 | 1,235 | 1,328 | 1,243 |
| Iowa | 1,217 | 1,289 | 1,396 | 1,601 | 1,376 |
| Kansas | 1,081 | 1,132 | 1,170 | 1,260 | 1,161 |
| Kentucky | 1,419 | 1,432 | 1,584 | 1,688 | 1,531 |
| Louisiana | 1,111 | 1,289 | 1,364 | 1,442 | 1,301 |
| Massachusetts | 1,737 | 1,899 | 1,988 | 2,226 | 1,962 |
| Michigan | 1,017 | 1,186 | 1,285 | 1,360 | 1,212 |
| Minnesota | 1,808 | 1,902 | 2,085 | 2,256 | 2,013 |

| | | | | | |
|---|---|---|---|---|---|
| Mississippi | 1,349 | 1,456 | 1,670 | 1,776 | 1,563 |
| Missouri | 1,075 | 1,061 | 1,175 | 1,299 | 1,152 |
| Nebraska | 1,199 | 1,192 | 1,246 | 1,216 | 1,213 |
| Nevada | 871 | 692 | 810 | 903 | 819 |
| New Jersey | 1,488 | 1,454 | 1,539 | 1,658 | 1,535 |
| New Mexico | 1,499 | 1,793 | 1,935 | 2,157 | 1,846 |
| New York | 2,292 | 2,282 | 2,320 | 2,622 | 2,379 |
| North Carolina | 1,115 | 1,116 | 1,177 | 1,217 | 1,156 |
| Ohio | 1,490 | 1,487 | 1,572 | 1,782 | 1,583 |
| Oklahoma | 1,192 | 1,295 | 1,373 | 1,469 | 1,333 |
| Pennsylvania | 1,664 | 1,665 | 1,804 | 2,022 | 1,789 |
| South Carolina | 1,208 | 1,191 | 1,314 | 1,451 | 1,291 |
| Tennessee | 1,355 | 1,308 | 1,328 | 1,601 | 1,398 |
| Texas | 991 | 911 | 1,056 | 1,235 | 1,048 |
| Utah | 1,002 | 828 | 923 | 1,041 | 949 |
| Virginia | 1,048 | 1,028 | 1,102 | 1,291 | 1,117 |
| Wisconsin | 1,360 | 1,331 | 1,576 | 1,802 | 1,517 |
| Wyoming | 1,240 | 1,245 | 1,352 | 1,420 | 1,314 |

***Notes:*** Data is aggregated from the annual Census of Governments (2007-2011): Finance - Survey of Local Government Finances – Table 2[20], specifically amount of "public welfare" expenditure per state under **Social services and income maintenance.**

[20] For example: 2007 State & Local Government Finance Historical Datasets and Tables for 2007

**A2.Table 10: Average marginal effects for Table 2.5 (Model 3), weighted probit**

**Main regressors**

| | Model 3.1 | Model 3.2 | Model 3.3 | Model 3.4 |
|---|---|---|---|---|
| **CommAge:** Number of years observant Lived in a country with a communist heritage | -0.0026*** | -0.0001 | -0.0012* | 0.0088 |
| | (0.0009) | (0.0007) | (0.0007) | (0.0053) |
| **Comm:** Live in a country with a communist heritage | | -0.1328*** | | |
| | | (0.0403) | | |
| **CommDr**: Duration of the communist regime | | | | -0.0028** |
| | | | | (0.0014) |
| **DemComm: Democratic ex-communist** | | | -0.0916* | |
| | | | (0.0470) | |
| **DemComm: Autocratic ex-communist** | | | -0.0763 | |
| | | | (0.0789) | |
| **DemComm: Autocratic non-ex-communist** | | | 0.1056** | |
| | | | (0.0427) | |

**Individual variables**

| | Model 3.1 | Model 3.2 | Model 3.3 | Model 3.4 |
|---|---|---|---|---|
| Age | 0.0039*** | 0.0031*** | 0.0035*** | -0.0056 |
| | (0.0005) | (0.0004) | (0.0004) | (0.0052) |
| Income | -0.0072*** | -0.0072*** | -0.0078*** | -0.0093*** |
| | (0.0021) | (0.0021) | (0.0020) | (0.0032) |
| Female | 0.0347*** | 0.0362*** | 0.0362*** | 0.0232*** |
| | (0.0056) | (0.0053) | (0.0053) | (0.0059) |

**Country-level controls**

| | Model 3.1 | Model 3.2 | Model 3.3 | Model 3.4 | |
|---|---|---|---|---|---|
| Corruption index | -0.0184 | -0.0265* | -0.0208 | -0.0075 | |
| | (0.0137) | (0.0146) | (0.0159) | (0.0264) | |
| Inequality index | -0.0010 | -0.0022 | -0.0019 | -0.0022 | |
| | | (0.0016) | (0.0017) | (0.0017) | (0.0040) |
| Observations | | 225,312 | 225,312 | 225,312 | 67,806 |

**Fixed effects & stats**

| | Model 3.1 | Model 3.2 | Model 3.3 | Model 3.4 |
|---|---|---|---|---|
| Wave fixed effects | Yes | Yes | Yes | Yes |
| Observations | 225,312 | 225,312 | 225,312 | 67,806 |
| Country clusters | 85 | 85 | 85 | 31 |

*Notes:* The table reports **average marginal effects (AMEs)** from the weighted probit models reported in Table 2.5. Standard errors (in parentheses) are **cluster-robust at the country level**. Models 3.1–3.3 are estimated on the full sample (N=225,312; 85 country clusters); Model 3.4 is estimated on the restricted sample for which CommDuration is observed (N=67,806; 31 clusters). All specifications include individual controls (age, income, and gender), country-level controls (corruption and inequality), and WVS wave fixed effects. Regressions use the WVS weighting factor S018. For i.DemComm, AMEs represent the discrete change from the omitted base category (democratic non-ex-communist). *** p<0.01, ** p<0.05, * p<0.10. In Model 3.4, the coefficient and average marginal effect for CommAge have p-values of approximately 0.10 (0.101 and 0.099, respectively) and are therefore treated as not statistically significant at conventional levels.

# A3 - Chapter 5's Appendix

**A3.Table 1:** Protest Index Data – Egypt (2011-2013)

Data translated from Arabic and aggregated from WikiThawra,: ويكي ثورة | حتى لا ننسى

| Governorate | Total Killed (2011-2013) | Total Injured (2011-2013) | Casualties (2011-2013) | 2011 Population(1000s) | Protest_index |
|---|---|---|---|---|---|
| Cairo | 647 | 16,235 | 16,882 | 7,302 | 2.31 |
| Alexandria | 150 | 804 | 954 | 4,438 | 0.21 |
| Dakahlia | 26 | 613 | 639 | 5,440 | 0.12 |
| Sharkia | 27 | 313 | 340 | 5,876 | 0.06 |
| Gharbia | 38 | 921 | 959 | 6,347 | 0.15 |
| Behaira | 52 | 347 | 399 | 5,206 | 0.08 |
| Menya | 27 | 103 | 130 | 4,687 | 0.03 |
| Asyut | 81 | 75 | 156 | 3,800 | 0.04 |
| Sohag | 17 | 31 | 48 | 4,124 | 0.01 |

**Notes:** Data is for governorates included in the main analysis and for duration considered in the main analysis (2011-2013). **Casualties** = Total Killed + Total Injured. **Protest_Index** = Casualties / Population (1000s)

**A3.Table 2:** Protest Index Data – Egypt (2011-2014)

Data translated from Arabic and aggregated from WikiThawra,: ويكي ثورة | حتى لا ننسى

| Governorate | Total Killed (2011-2014) | Total Injured (2011-2014) | Total Casualties (2011-2014) | 2011 Population(1000s) | Protest_index |
|---|---|---|---|---|---|
| Alexandria | 330 | 3,036 | 3,366 | 4,438 | 0.76 |
| Aswan | 15 | 156 | 171 | 1,292 | 0.13 |
| Asyut | 99 | 407 | 506 | 3,800 | 0.13 |
| Behaira | 68 | 815 | 883 | 5,206 | 0.17 |
| Beni Swaif | 77 | 373 | 450 | 2,540 | 0.18 |
| Cairo | 2,314 | 21,838 | 24,152 | 7,302 | 3.31 |
| Dakahlia | 62 | 1,574 | 1,636 | 5,440 | 0.30 |
| Damiatta | 30 | 587 | 617 | 1,211 | 0.51 |
| Fayoum | 140 | 592 | 732 | 2,803 | 0.26 |
| Gharbia | 52 | 1,311 | 1,363 | 6,347 | 0.21 |
| Giza | 568 | 3,476 | 4,044 | 3,148 | 1.28 |
| Ismailia | 106 | 635 | 741 | 1,057 | 0.70 |
| Luxor | 8 | 118 | 126 | 1,043 | 0.12 |
| Menofia | 26 | 138 | 164 | 3,580 | 0.05 |
| Menya | 150 | 793 | 943 | 4,607 | 0.20 |
| Port Said | 161 | 3,100 | 3,261 | 617 | 5.29 |
| Qena | 24 | 101 | 125 | 2,738 | 0.05 |
| Sharkia | 58 | 1,328 | 1,386 | 5,876 | 0.24 |
| Sohag | 49 | 332 | 381 | 4,124 | 0.09 |

**Notes:** Data is for governorates and duration included in the robustness checks analysis.

**A3.Table 3:** Key variables: definitions and data sources (Chapter 5)

This appendix table consolidates the main variables used in Chapter 5 empirical analysis. It is intended as a quick reference; construction details follow the chapter's Data section.

| Role | Variable | Coding / scale | Description (as used in analysis) | Source |
|---|---|---|---|---|
| Outcome | TM | Binary: 1 if 'tax evasion is never justifiable'; 0 otherwise | Tax morale in Egypt (WVS question on 'cheating on taxes'). Recorded to a binary outcome consistent with the chapter's empirical specification. | World Values Survey (WVS): Wave 5 (Egypt 2008) and Wave 6 (Egypt 2013); Inglehart et al. (2014). |
| Outcome / mediator | Democracy | Scale 1–10 (original WVS scale) | Importance of democracy to the respondent (used as a mediator in the main analysis and as the outcome in Model 2). | World Values Survey (WVS): Wave 5 (Egypt 2008) and Wave 6 (Egypt 2013); Inglehart et al. (2014). |
| Post indicator | Time | Binary: 0=pre-Arab Spring; 1=post-Arab Spring | Post indicator for the Arab Spring period. Time=0 corresponds to WVS Wave 5 (Egypt 2008); Time=1 corresponds to WVS Wave 6 (Egypt 2013). | Constructed from WVS wave/year information. |
| Treatment intensity | Protest_Index (Protest_Intensity_g) | Continuous; casualties per 1,000 population (governorate-level) | Proxy for protest intensity by governorate: (killed + injured) during Jan 2011–Feb/Jun 2012 (as specified) divided by 2011 governorate population; scaled per 1,000. | Egyptian Revolution Database (WikiThawra) / Egyptian Center for Economic and Social Rights; governorate population (2011). |
| Fixed effects | Governorate_g | Indicator variables | Governorate fixed effects to capture time-invariant geographic heterogeneity across governorates. | WVS governorate identifier (Egypt). |
| Controls | Age_i | Categorical indicators (bins as coded in chapter) | Respondent age categories. | WVS Waves 5 and 6 (Egypt). |
| Controls | Gender_i | Binary indicator (as coded) | Respondent gender. | WVS Waves 5 and 6 (Egypt). |
| Controls | Income_i | Categorical indicators (as coded) | Self-reported income category. | WVS Waves 5 and 6 (Egypt). |
| Controls | Educ_i | Categorical indicators (as coded) | Education level (included in the main specification; omitted in WVS-7 robustness checks if unavailable). | WVS Waves 5 and 6 (Egypt). |

Notes: (i) TM is derived from the WVS tax evasion item (1='never justifiable' … 10='always justifiable') and is recoded following the chapter text. (ii) Protest_Index is merged to WVS respondents by governorate; the DiD effect is captured by the interaction of Time and Protest_Index in the regression specification. (iii) Sample coverage differs by wave and by robustness checks; governorate counts are reported in the chapter.

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# Impact paragraph

This thesis examined how economic and/or political shocks such as the transition of communist regimes, the Great Recession, and the Arab Spring in Egypt relate to citizens' tax morale, that is their willingness to pay taxes. Understanding these factors matters because governments typically experience a greater need to increase their revenue after recession or as part of an economic transformation.

The scientific contribution of the thesis is not to propose a single unifying determinant of tax morale, but to demonstrate empirically that historical context, crisis management, and political transitions condition tax attitudes in ways that are heterogeneous, contingent, and sometimes surprising. The analysis of communist heritage demonstrated that regime history remains empirically relevant for tax morale decades after transition, and that commonly used attitudinal controls do not fully absorb this legacy. The cross-national and U.S. studies of the Great Recession showed that neither the depth of the macroeconomic shock nor the size of stimulus packages systematically explain variation in tax morale, and that relationships between stimulus design and tax morale run counter to prominent expectations. The Egyptian case, when considering the impact of political and economic dynamics during the Arab Spring illustrated that periods of political opening can combine widespread democratic aspirations and civic mobilization with declining aggregate tax morale, particularly in contexts of polarization and unmet expectations. By documenting these patterns across different regions, time periods, and methodological approaches, the thesis contributes to a more cautious and empirically grounded understanding of how citizens form attitudes toward taxation, and how these attitudes may evolve in moments of institutional and political change.

Because the empirical chapters relied on observational data and were subject to endogeneity concerns, the societal and policy implications are intentionally cautious and are best understood as informed by patterns of association rather than as prescriptions derived from identified causal effects. On historical legacies, cross-country differences in tax morale cannot be interpreted purely as reflections of contemporary institutional performance, and the design of tax-system reform strategies in post-communist settings needs to treat regime history as an enduring part of the background rather than a short-lived shock; the adoption of formal democratic rules will not, on its own, quickly align fiscal attitudes with those of older democracies. On economic shocks and crisis responses, the findings caution against assuming that more severe recessions automatically erode tax morale, or that larger, more demand-heavy stimulus packages automatically strengthen it; tax morale can be relatively stable across quite different economic conditions. On political transitions, the

findings from Egypt do not support a simple expectation that “more democracy” automatically raises tax morale in the short run, and they qualify the conditions under which political openings are likely to support or undermine tax morale.

# Samenvatting Proefschrift

## *Economische schokken en belastingmoraal*

Belastinginkomsten vormen een fundamentele manier waarop landen publieke middelen genereren die het mogelijk maken om te investeren in menselijk kapitaal, infrastructuur en de levering van diensten aan burgers en bedrijven, teneinde de voortdurende economische ontwikkeling te ondersteunen (Burgess & Stern, 1993). Het is daarom belangrijk om inzicht te krijgen in de factoren die de beslissing van burgers kunnen beïnvloeden om belasting al dan niet te ontduiken, naast andere instrumenten die overheden zouden moeten overwegen om de belastingnaleving te vergroten. Dit proefschrift had tot doel verschillende economische en/of politieke schokken te beschouwen—met de transitie van communistische regimes en de Grote Recessie als voorbeelden—en te onderzoeken hoe daaraan gerelateerde elementen een effect op, of een samenhang met, de belastingmoraal van burgers (dat wil zeggen de bereidheid om belasting te betalen) kunnen hebben gehad, als indicator (proxy) voor belastingnaleving.

Ondanks de uitgebreide literatuur over belastingontduiking die uiteenlopende factoren heeft onderzocht die de belastingmoraal in verschillende contexten beïnvloeden, zoals besproken in het literatuuroverzicht, is er weinig literatuur die de context van economische schokken, zoals recessies, of ingrijpende veranderingen in politieke en economische regimes, zoals bij de transitie vanuit het communisme, in beschouwing neemt. In dit proefschrift heb ik deze situaties opgevat als contexten die unieke factoren introduceren welke de belastingmoraal beïnvloeden, en heb ik zowel de ernst van de economische gevolgen onderzocht als de wijze waarop overheden op deze economische schokken hebben gereageerd. Inzicht in deze factoren is van belang omdat overheden doorgaans een grotere behoefte ervaren om hun inkomsten te verhogen na recessies of als onderdeel van een economische transformatie.

Het proefschrift omvat zes hoofdstukken. Hoofdstuk 1 vormt de inleiding, met daarin de motivatie en doelstelling van het proefschrift, evenals een overzicht van de literatuur over belastingmoraal.

Hoofdstuk 2 beschouwt het effect op de belastingmoraal van het feit dat men burger is van een land met een communistisch verleden. De empirische analyse onderzoekt 86 landen wereldwijd, waarvan er 29 een communistisch verleden hebben (dat wil zeggen ex-communistisch zijn), op basis van een conceptueel kader dat is geïnformeerd door bestaande literatuur over belastingmoraal en de psychologie van het leven in een ex-communistisch land. De resultaten van de analyse laten zien dat het leven in een land met een communistisch verleden een negatieve samenhang vertoont met de belastingmoraal. Dit effect lijkt te blijven bestaan, vele jaren nadat deze landen de transitie uit het communisme hebben gemaakt. De bijbehorende hypothese stelde dat individuen uit landen met een communistisch verleden een psychologische bagage met zich meedragen die in veel opzichten uniek is ten opzichte van mensen die leven in landen die dit verleden niet delen.

In hoofdstuk 3 beschouw ik de rol van de Grote Recessie van 2007–2009 als een economische schok in brede zin over landen heen, om de mogelijke samenhang te beoordelen tussen de belastingmoraal van burgers en de rol van hun overheden, voor zover aanwezig, bij het veroorzaken van de recessie, de ernst van de economische gevolgen en de aard van de reacties van de overheden. Ik heb dit gedaan door een rijke secundaire dataset op te bouwen die onder meer antwoorden uit de World Values Survey (WVS) bevatte, en door qualitative comparative analysis (QCA) toe te passen om een vergelijking tussen 14 landen uit te voeren. De analyse wijst op een samenhang tussen een positieve verandering in de gemiddelde belastingmoraal per land en een wisseling van de regerende partij wanneer de oorzaak van de recessie als intern wordt beschouwd. Tegelijkertijd hield een positieve verandering in de belastingmoraal verband met landen waar geen wisseling van de regerende partij plaatsvond wanneer de oorzaak van de recessie werd toegeschreven aan externe factoren. Economische omstandigheden en de omvang van de stimuleringspakketten leken geen duidelijke samenhang te vertonen met de verandering in de belastingmoraal in de beschouwde landen.

In hoofdstuk 4 beschouw ik de Grote Recessie van 2007–2009 in de Verenigde Staten om de mogelijke samenhang te beoordelen tussen de belastingmoraal van Amerikaanse burgers, de ernst van de economische gevolgen en de wijze waarop de Amerikaanse overheid op deze financiële crisis reageerde. Ik heb dit gedaan door een rijke secundaire dataset op te bouwen over 29 staten, afkomstig uit diverse bronnen van de Amerikaanse overheid en de WVS, als input voor de empirische analyse. De empirische analyse van de belastingmoraal in 29 staten suggereerde dat veranderingen op staatsniveau in werkloosheidscijfers, bbp-groei en gedwongen woningverkopen (foreclosures) de individuele belastingmoraal niet leken te beïnvloeden. Daarnaast leek de totale omvang van de stimuleringspakketten in elke staat geen statistisch significante samenhang met de belastingmoraal te vertonen, wanneer gecontroleerd werd voor de verandering in het belastingbeleid van de afzonderlijke staten. Directe stimulering, dat wil zeggen overdrachten aan huishoudens, had een klein negatief effect op de belastingmoraal.

In hoofdstuk 5 beschouw ik vervolgens het effect van de intensiteit van de protesten in de verschillende gouvernementen in Egypte tijdens de Arabische Lente op de belastingmoraal van Egyptenaren en op hun omarming van de democratie. Ik heb de protestintensiteit gemeten aan de hand van het aantal slachtoffers per hoofd van de bevolking (doden en gewonden) per gouvernement tijdens de Arabische Lente. De analyse in dit deel maakt gebruik van de WVS, in het bijzonder Wave 5, die vóór de Arabische Lente plaatsvond (2005–2009), en Wave 6, die ná de Arabische Lente plaatsvond (2010–2014). De empirische analyse laat zien dat, hoewel het optreden van de Arabische Lente een negatieve samenhang met de belastingmoraal had, de intensiteit van de protesten per gouvernement een positieve samenhang met de belastingmoraal leek te hebben. Ook bleek dat het omarmen van de democratie een positieve samenhang met de belastingmoraal had. Het opnemen van de omarming van de democratie zwakte het effect van de protestintensiteit af. Er was eveneens een empirische positieve samenhang tussen de protestintensiteit per gouvernement en de toename van de omarming van de democratie door Egyptische burgers.

Tot slot sluit hoofdstuk 6 het proefschrift af door de belangrijkste bevindingen, beleidsimplicaties, beperkingen en richtingen voor vervolgonderzoek samen te vatten.

# Curriculum Vitae

## Dina Kamal

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### PROFILE

Dina Kamal has a career of more than twenty years spanning artificial intelligence and cyber security alongside business strategy and economics. She has worked in more than a dozen countries, building diverse teams and partnerships and executing strategy under highly ambiguous objectives, with a sustained record of launching new services and delivering profitable growth. Her training combines an MBA, a Master of Public Administration, and a doctorate in economics now in its final stages.

### EDUCATION

**PhD Candidate, GPAC2/ Economics** **Mar 2017 – Present**
*Maastricht Universit-UNU Merit, Maastricht, Netherlands*
**Master of Public Administration — Distinction** **2014 – 2016**
*The London School of Economics and Political Science, London, United Kingdom*
**Master of Business Administration — Distinction** **2009 – 2011**
*Cornell University & Queen's University (joint program), Ithaca, USA and Kingston, Canada*
**Bachelor of Electrical Engineering — With Honours** **1994 – 1999**
*Alexandria University, Faculty of Engineering, Alexandria, Egypt*

### PROFESSIONAL EXPERIENCE

**DataBahn.ai — Field CTO and Canada General Manager** **2024 – Present**
*Toronto, Canada*

- Lead market expansion across Canada, the Middle East, and the Americas, and direct the company's technology strategy and AI-focused R&D in close partnership with product management.

**Deloitte — Partner** **2011 – 2024**
*Toronto, Canada*

- Leader in the AI practice (Omnia), delivering AI-enabled solutions to financial services and public sectors while advocating for trustworthy AI and related risk management.
- Catalyst North Leader for Deloitte Canada's products and assets strategy; in 2022–2023 the portfolio enabled sales of more than $750M with $20M of funding.
- Led large-scale client engagements in industry analytics, cyber analytics, and financial crime for major financial services and government organizations. Earlier roles included Global Leader of Cyber Threat Management Services and Canadian Co-Leader of Financial Crime Services.

**Creative Destruction Lab, University of Toronto — Mentor** **2019 – 2021**
*Toronto, Canada*

- Mentored AI-stream ventures in this seed-stage program for scalable, science-based companies, focusing on launch and go-to-market.

**Cisco — Senior Systems Engineer** **2005 – 2010**
*Ottawa, Canada and Dubai, U.A.E.*

- Provided technical consultancy to energy and public-sector customers in Canada and across the Middle East. Prior roles in information security consultancy and CMMS systems supervision in the U.A.E. and Egypt (1999–2005).

### BOARD & ADVISORY APPOINTMENTS

- Board Director and Chair of the Governance Committee, Toronto Mendelssohn Choir.
- Board Director, Girl Guides of Canada.
- Advisory Board Member, Dialogue Action (innovative approaches to public policy, peacebuilding, and governance).
- Advisory Board Member, Lassonde School of Engineering, York University.