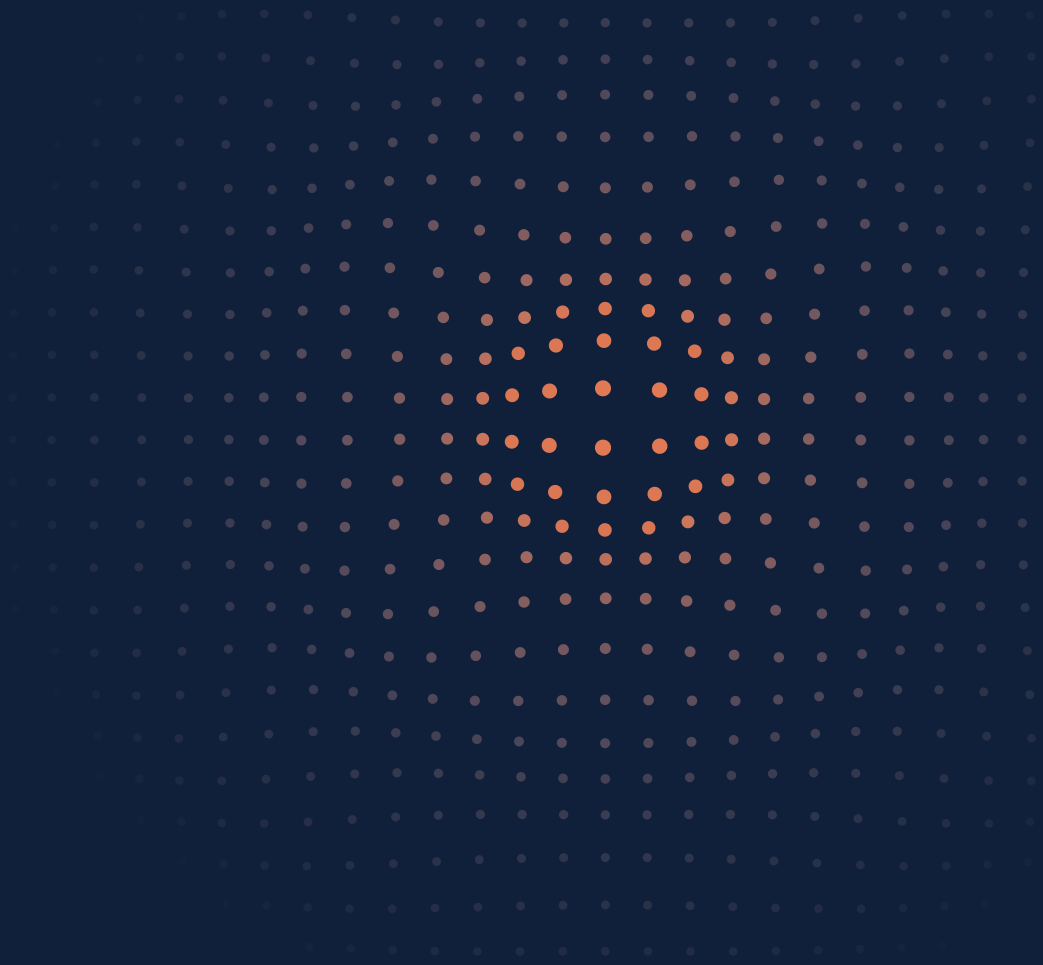
Economic Shocks and Tax Morale



DINA KAMAL

UNU-MERIT | MAASTRICHT UNIVERSITY

Propositions

Belonging to the doctoral thesis Economic Shocks and Tax Morale, by Dina Kamal

1. The negative association between a communist past and tax morale persists decades after transition; adopting democratic institutions does not, on its own, erase it.

2. The depth of a recession does not systematically explain changes in citizens' willingness to pay taxes, and larger stimulus packages do not raise it; where the crisis originated, and whether the governing party changed, appear more consistently in the paths to higher tax morale.

3. In Egypt, tax morale was lower after the Arab Spring than before it, despite widespread democratic aspirations: a political opening does not, by itself, raise citizens' willingness to pay taxes.

4. Tax morale cannot be understood through contemporary institutional performance alone; historical and political context is an indispensable part of the explanation.

5. Qualitative Comparative Analysis deserves a larger place in cross-national political economy, where the number of countries is small and outcomes often depend on combinations of conditions rather than on any single variable.

6. Survey-based measures of attitudes are proxies, not direct observations of behavior; conclusions drawn from them should be expressed as associations rather than causal effects.

7. When the number of clusters is small, conventional clustered standard errors overstate precision; small-cluster-robust inference should be standard practice, not an optional robustness check.

8. Governments expecting to raise revenue after a crisis or during a political transition should not assume that hardship automatically lowers, or that reform automatically raises, citizens' willingness to comply.

9. Human behavior belongs to no single discipline; understanding it requires borrowing from psychology, political science, and economics alike.

ECONOMIC SHOCKS AND TAX MORALE

Dina Kamal

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ECONOMIC SHOCKS AND TAX MORALE

DISSERTATION

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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 and a statement of the methodological approach that unifies the four empirical studies. 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, 28 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. Chapter 3 considers 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 is associated with countries that have no change in ruling party when the trigger of the recession is considered to be due to external factors. Economic conditions appear only as a peripheral contributing condition in the identified configurations, while smaller fiscal stimulus packages — contrary to expectations — form part of the configurations associated with a positive change in tax morale. Chapter 4 considers 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 implies that state-level change in unemployment rates, GDP growth, and foreclosures does not seem to influence individual tax morale. Furthermore, the total size of stimulus packages in each state does 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, shows a small negative association with tax morale, although this association is only marginally significant once inference accounts for the small number of state clusters. Chapter 5 considers 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 the occurrence of the Arab Spring has a negative association with tax morale—a result that is robust to inference accounting for the small number of governorates—while the intensity of the protests per governorate seems to have a positive association with tax morale, although this latter association is not robust to the same test and should be read as suggestive. It also shows that embracing democracy is positively, though not statistically significantly, associated with tax morale. Introducing the embrace of democracy dilutes the effect of protest intensity. There is 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.

SAMENVATTING

Belastinginkomsten vormen een fundamentele manier waarop landen publieke inkomsten genereren, waarmee investeringen in menselijk kapitaal en infrastructuur kunnen worden gefinancierd en diensten aan burgers en bedrijven kunnen worden verleend ter ondersteuning van voortdurende economische ontwikkeling (Burgess & Stern, 1993). Het is daarom belangrijk om inzicht te krijgen in de factoren die van invloed kunnen zijn op de beslissing van burgers om belastingen al dan niet te ontduiken, naast andere instrumenten die overheden zouden moeten overwegen om belastingnaleving te vergroten. Dit proefschrift had als doel verschillende economische en/of politieke schokken te onderzoeken, waarbij de overgang van communistische regimes en de Grote Recessie als voorbeelden werden gebruikt, en te analyseren hoe daarmee samenhangende factoren van invloed kunnen zijn geweest op, of samenhangen met, de belastingmoraal van burgers, dat wil zeggen hun bereidheid om belasting te betalen, als een maatstaf voor belastingnaleving. Hoewel de omvangrijke literatuur over belastingontduiking verschillende factoren heeft onderzocht die van invloed zijn op belastingmoraal in uiteenlopende contexten, zoals besproken in het literatuuroverzicht, is er slechts beperkte literatuur die rekening houdt met de context van economische schokken, zoals recessies, of ingrijpende veranderingen in politieke en economische regimes, zoals bij de overgang van het communisme. In dit proefschrift beschouwde ik deze situaties als contexten waarin unieke factoren worden geïntroduceerd die de belastingmoraal beïnvloeden. Daarbij onderzocht ik de ernst van de economische gevolgen en de wijze waarop overheden op deze economische schokken reageerden. Het begrijpen van deze factoren is belangrijk, omdat overheden doorgaans een grotere behoefte hebben om hun inkomsten te verhogen na recessies of als onderdeel van een economische transformatie.

Het proefschrift bestaat uit zes hoofdstukken. Hoofdstuk 1 bevat de inleiding, met daarin de motivatie en doelstelling van het proefschrift, evenals een overzicht van de literatuur over belastingmoraal en een uiteenzetting van de methodologische aanpak die de vier empirische studies met elkaar verbindt. Hoofdstuk 2 onderzoekt het effect van het staatsburgerschap van een land met een communistische achtergrond op de belastingmoraal. De empirische analyse omvat 85 landen wereldwijd, waarvan 28 een communistische achtergrond hebben (dat wil zeggen voormalige communistische landen), en is gebaseerd op een conceptueel kader dat is geïnformeerd door bestaande literatuur over belastingmoraal en de psychologie eigen aan burgers van een voormalig communistisch land. De resultaten van de analyse laten zien dat het wonen in een land met een communistisch verleden negatief samenhangt met belastingmoraal. Dit effect lijkt vele jaren na de overgang van deze landen uit het communisme nog steeds aanwezig

te zijn. De bijbehorende hypothese stelde dat individuen uit landen met een communistische geschiedenis een psychologische bagage met zich meedragen die in veel opzichten uniek is ten opzichte van personen die wonen in landen die deze historische achtergrond niet delen.

Hoofdstuk 3 onderzoekt de rol van de Grote Recessie van 2007–2009 als een economische schok in verschillende landen, met als doel de mogelijke samenhang te beoordelen tussen de belastingmoraal van burgers en de rol van hun overheden bij het al dan niet veroorzaken van de recessie, de ernst van de economische gevolgen en de aard van de reacties van de overheden. Hiervoor heb ik een uitgebreide secundaire dataset samengesteld met onder andere antwoorden uit de World Values Survey (WVS) en kwalitatieve vergelijkende analyse (QCA) toegepast om een vergelijking tussen 14 landen uit te voeren. Wanneer de oorzaak van de recessie als intern wordt beschouwd toont de analyse een positieve samenhang tussen een betere belastingmoraal per land en een verandering van de regerende partij. Wanneer de oorzaak van de recessie als extern wordt beschouwd, is een positieve verandering in belastingmoraal gerelateerd aan geen verandering van de regerende partij. Economische omstandigheden lijken slechts een perifere factor te zijn in de geïdentificeerde configuraties, terwijl kleinere fiscale stimuleringspakketten — in tegenstelling tot de verwachtingen — deel uitmaken van de configuraties die samenhangen met een positieve verandering in belastingmoraal.

Hoofdstuk 4 richt zich op de Grote Recessie van 2007–2009 in de Verenigde Staten, met als doel de mogelijke samenhang te beoordelen tussen de belastingmoraal van Amerikaanse burgers, de ernst van de economische gevolgen en de manier waarop de Amerikaanse overheid op deze financiële crisis reageerde. Hiervoor heb ik een uitgebreide secundaire dataset samengesteld voor 29 staten, op basis van verschillende Amerikaanse overheidsbronnen en de WVS, die vervolgens als input voor de empirische analyse werd gebruikt. De empirische analyse van de belastingmoraal in 29 staten suggereert dat veranderingen op staatsniveau in werkloosheidspercentages, bbp-groei en het aantal gedwongen woningverkopen geen invloed lijken te hebben op de individuele belastingmoraal. Daarnaast lijkt de totale omvang van stimuleringspakketten in elke staat geen statistisch significante samenhang te vertonen met belastingmoraal, wanneer wordt gecontroleerd voor veranderingen in het belastingbeleid van de afzonderlijke staten. Directe stimuleringsmaatregelen, dat wil zeggen overdrachten aan huishoudens, vertonen een kleine negatieve samenhang met belastingmoraal. Deze samenhang is echter slechts marginaal significant wanneer bij de statistische inferentie rekening wordt gehouden met het kleine aantal clusters van staten.

Hoofdstuk 5 onderzoekt het effect van de intensiteit van protesten in de verschillende gouvernoraten van Egypte tijdens de Arabische Lente op de belastingmoraal van Egyptenaren en op hun steun voor democratie. Ik heb de protestintensiteit gemeten aan de hand van het aantal slachtoffers per hoofd van de bevolking (doden en gewonden) per gouvernoraat tijdens de Arabische Lente. De analyse in dit hoofdstuk maakt gebruik van de WVS, en specifiek van Wave 5, die plaatsvond vóór de Arabische Lente (2005–2009), en Wave 6, die plaatsvond na de Arabische Lente (2010–2014). De empirische analyse laat zien dat het plaatsvinden van de Arabische Lente negatief samenhangt met belastingmoraal. Dit resultaat blijft overeind wanneer bij de statistische inferentie rekening wordt gehouden met het kleine aantal gouvernoraten. De intensiteit van de protesten per gouvernoraat lijkt daarentegen positief samen te hangen met belastingmoraal, hoewel deze laatste samenhang niet robuust is voor dezelfde toets en daarom als indicatief moet worden beschouwd. De analyse laat tevens zien dat steun voor democratie positief, maar niet statistisch significant, samenhangt met belastingmoraal. Het opnemen van steun voor democratie verzwakt het effect van de protestintensiteit. Daarnaast bestaat er een positieve empirische samenhang tussen de protestintensiteit per gouvernoraat en de toename van de steun voor democratie onder Egyptische burgers.

Ten slotte sluit hoofdstuk 6 het proefschrift af met een samenvatting van de belangrijkste bevindingen van het onderzoek, de implicaties voor het beleid, de beperkingen van het onderzoek en mogelijkheden voor toekomstig onderzoek.

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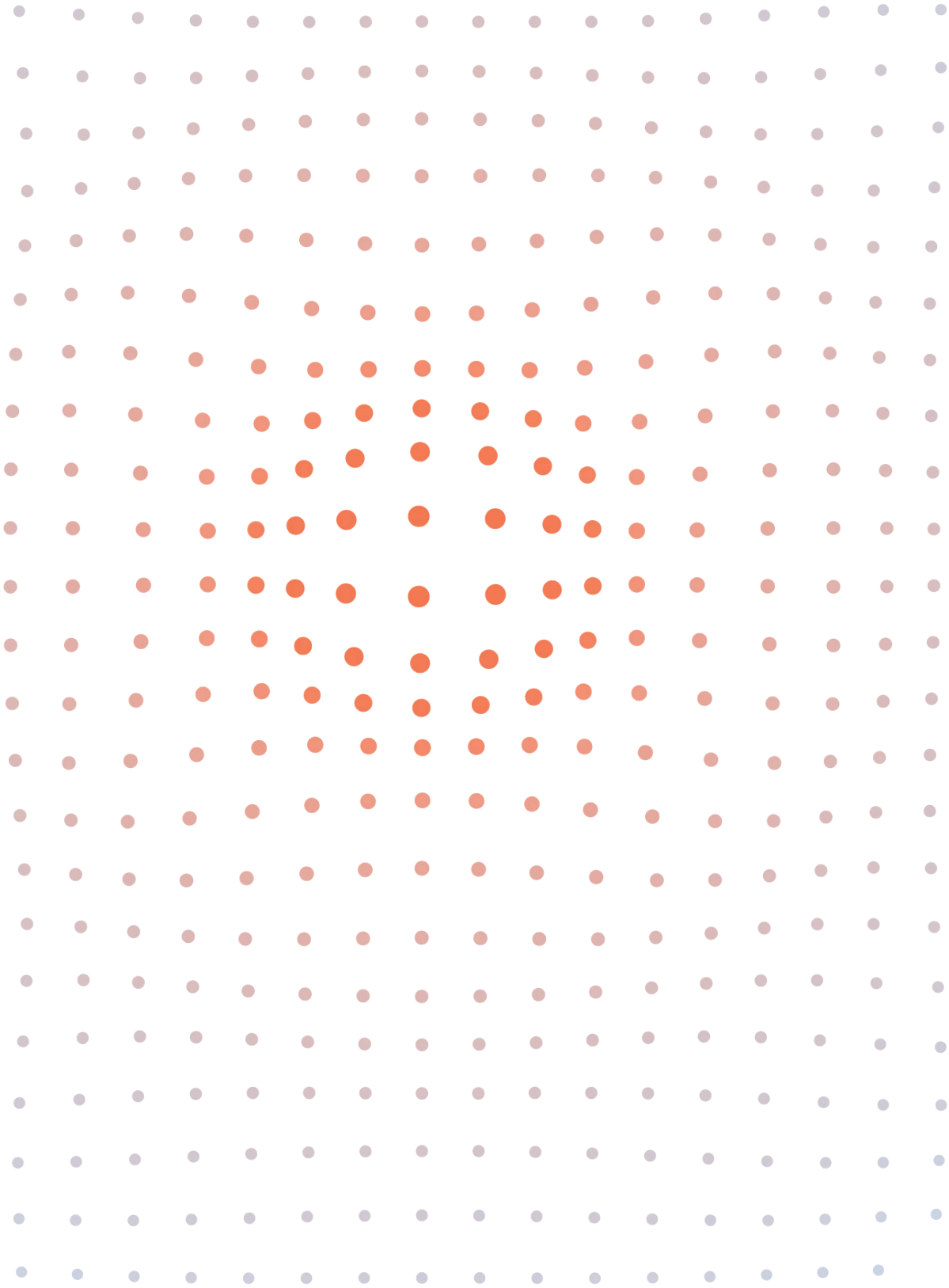
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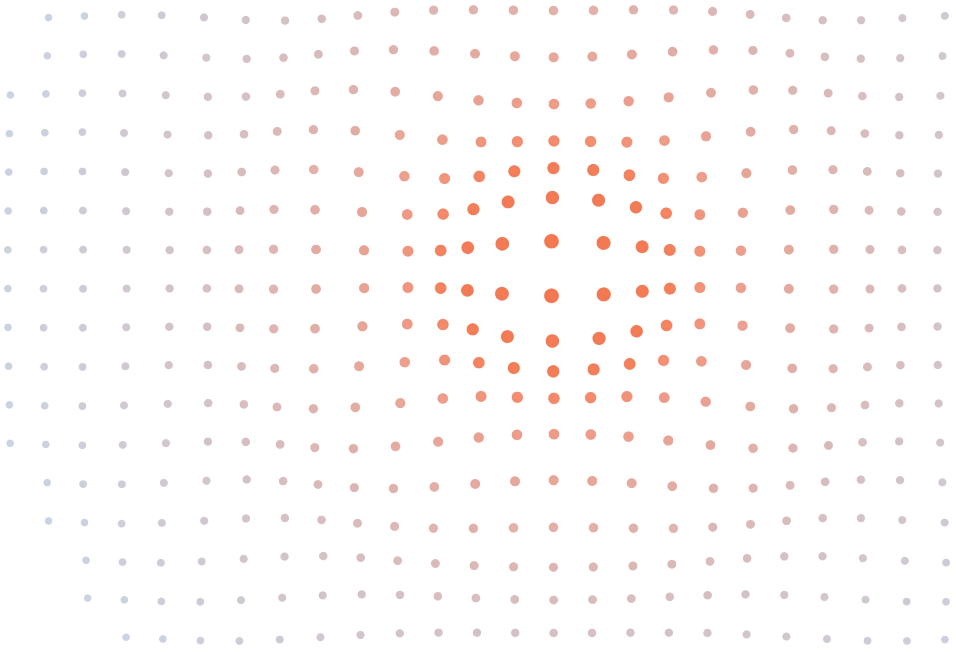
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Equation 5.2: Model 2 – Protest intensity and embracing democratic values



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 fact 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 communist 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 four 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 2–5 to address the specific context and research questions in each chapter. Section 1.5 then sets out what unifies the four empirical studies methodologically, beyond their shared thematic focus on shocks and tax morale.

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 toward 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 the 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. 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 (2007) 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) 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 threatens the internal validity of the estimates and makes 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 arise in Chapter 3, which examines how the size and composition of fiscal stimulus packages during the Great Recession are 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, the three regression-based chapters (Chapters 2, 4, and 5) include a rich set of individual-level controls (e.g., age, gender, income, education, and employment status) and, where relevant, country-, state-, or governorate-level variables (e.g., 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, where the data allowed (Chapter 5), on 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, 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 cannot 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. Where the number of clusters was modest, the sensitivity of inference to this clustering structure was assessed explicitly using wild cluster bootstrap procedures, as described in Section 1.5 and reported in the relevant chapters.

1.5 METHODOLOGICAL APPROACH

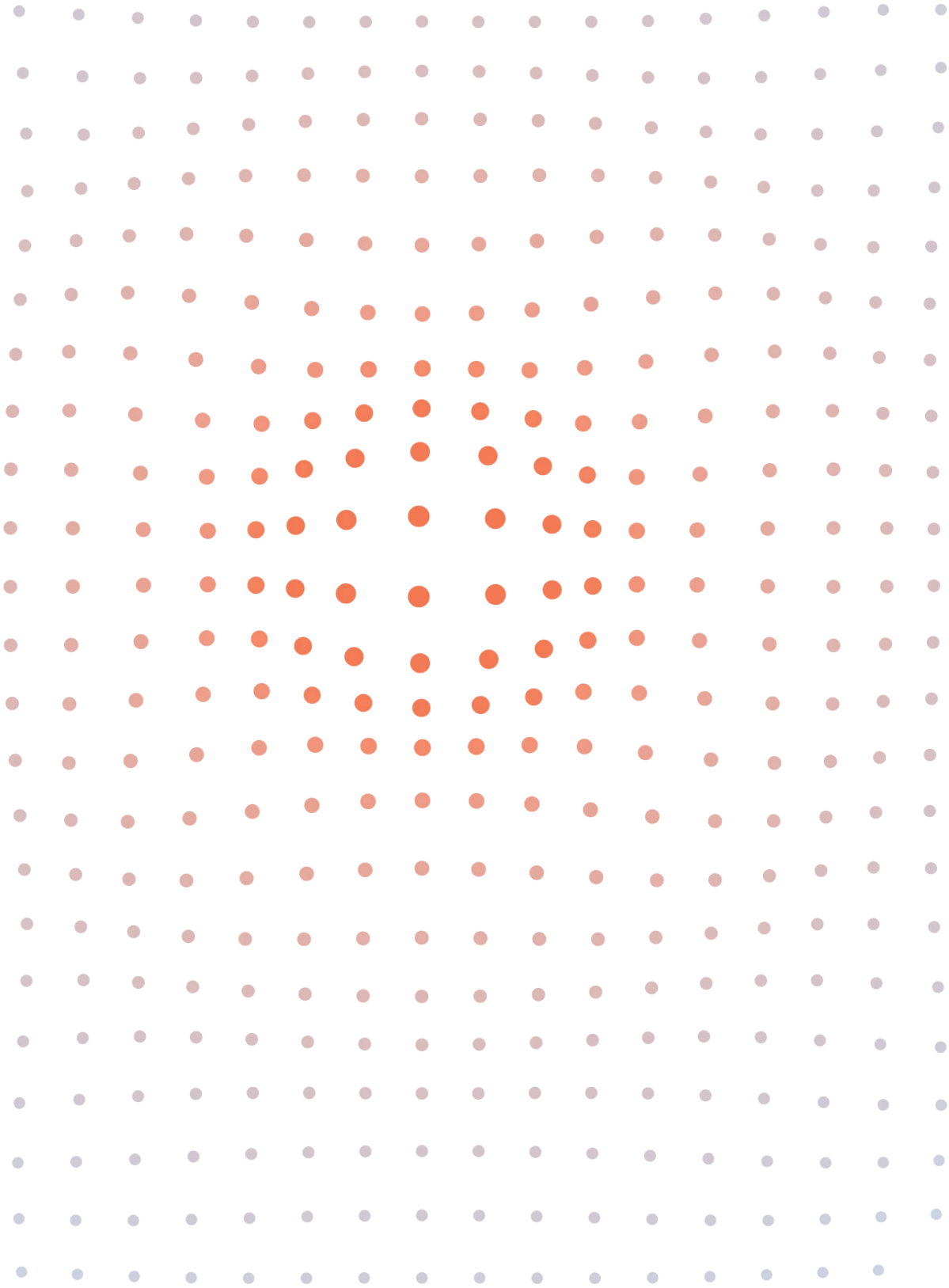
The four empirical studies in this thesis (Chapters 2–5) on a macro level address one research question, which is how economic and political shocks relate to citizens' tax morale. This question is considered in four settings that differ in scale, in the nature of the shock, and in the structure of the available data. Thematically,

they are unified by the framework set out in Section 1.3: each chapter derives its hypotheses from the trust, fairness, and social-norm mechanisms through which a shock, and the way in which a government handles this shock, may be associated with citizens' willingness to pay taxes (as measured by tax morale). The empirical approaches differ across the various chapters, applying the empirical method deemed appropriate for the scope of the analysis and nature of available data. These include weighted probit with formal mediation analysis in Chapter 2, qualitative comparative analysis (QCA) in Chapter 3, clustered cross-sectional regression in Chapter 4, and a governorate-level difference-in-differences design in Chapter 5. That said, there are a number of themes that unify the four studies methodologically. First, all four studies share the same outcome construct and the same measurement of it. Tax morale is measured throughout with the WVS item on the justifiability of cheating on taxes (Section 1.1). It is coded either as a binary indicator equal to 1 for respondents who consider tax evasion "never justifiable" (the main specification in Chapters 2 and 5, and a robustness check in Chapter 4) or on the original 1–10 scale (the main specification in Chapter 4, the country–wave averages that form the outcome in Chapter 3, and a robustness check in Chapter 2), and each chapter reports results under the alternative coding where the design allows. Second, all four studies share a similar multi-level data architecture. The shock itself is defined at the level of an aggregate unit; the country in Chapters 2 and 3, the U.S. state in Chapter 4, and the Egyptian governorate in Chapter 5. For each study a new contextual data set describing that shock, such as the communist heritage and its duration, the recession trigger, its severity, and policy response to the recession per country, stimulus per capita for each U.S. state, and protest intensity per Egyptian governorate, was assembled at that level from archival and secondary sources.

Tax morale, by contrast, is always measured at the level of the individual respondent, as are the demographic controls and, in Chapters 2 and 5, the mediating attitudes; several of the explanatory variables of interest are likewise individual level, such as the number of years a respondent lived under Communism in Chapter 2, employment status in Chapter 4, and democratic values in Chapter 5. In Chapters 2, 4, and 5, individual-level WVS responses (weighted with the WVS weighting factor S018 in the cross-national and cross-state analyses) are therefore merged with the contextual data of the unit in which the respondent is located, so that respondents are nested within units that share the same exposure to the shock. In Chapter 3, where no individual-level estimation is undertaken, tax morale is collapsed to country–wave averages of the same WVS variable. This nesting is what links the level of measurement to the level of inference: because all respondents in a unit share the same exposure, their disturbances cannot be treated as independent, and standard errors are clustered at the level of the unit that defines the

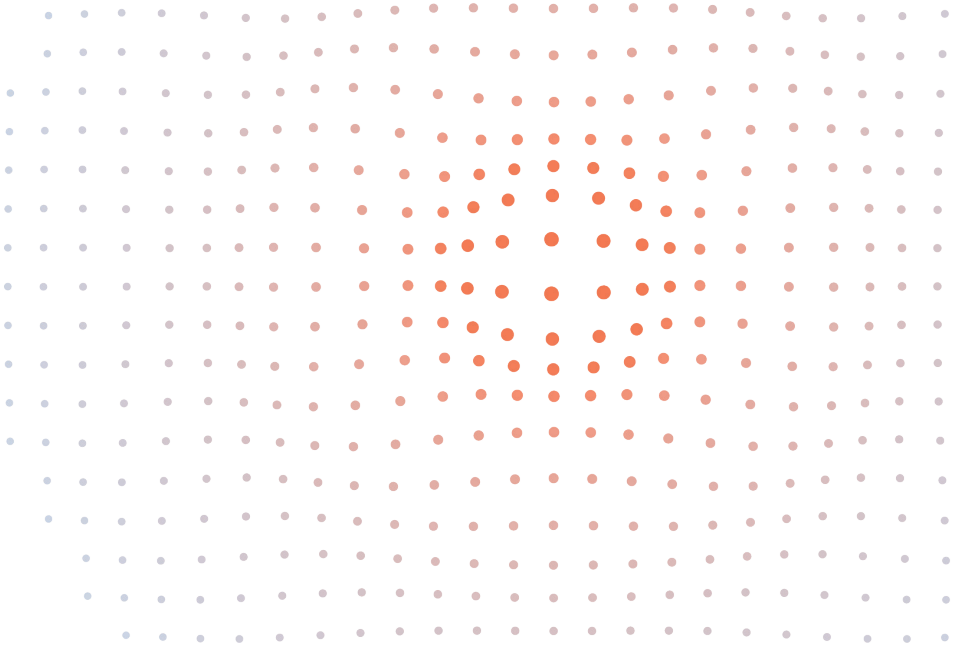
shock even when the regressor of interest itself varies across individuals. Third, the four studies share the same identification logic, which follows from this data structure. In each chapter, I identified the association of interest from differences in exposure to the shock across countries, states, or governorates and, where more than one WVS wave was available (Chapters 2 and 5), from changes within those units over time. In the three regression-based chapters, I controlled for the same core of individual characteristics (age, income, and gender), adding education, employment status, ethnicity, or ideology where the data allowed. I addressed unit-level confounders with contextual controls and, where the design permitted, with fixed effects: wave fixed effects in Chapter 2 and governorate fixed effects in Chapter 5. In Chapter 4, state fixed effects would have absorbed the state-level stimulus and economic-impact variables, so I used 2006 division-level tax morale as a pre-shock baseline instead. Chapter 3 works at the country level throughout and relies on case selection and calibration rather than on statistical controls (Section 1.4). Because everyone surveyed in a given country, state, or governorate was exposed to the same shock, their errors could not be treated as independent. I therefore clustered standard errors at the level of the shock in Chapters 2, 4, and 5, whether the regressor of interest varied across individuals or across units (Moulton, 1990; Cameron & Miller, 2015). Where the number of clusters was modest (31 countries in the regime-duration models of Chapter 2, 29 states in Chapter 4, and nine governorates in Chapter 5), conventional cluster-robust standard errors can over-reject the null hypothesis. I therefore reassessed the key coefficients with wild cluster bootstrap procedures (Cameron et al., 2008; MacKinnon & Webb, 2017) and report the results in Sections 2.5, 4.6, and 5.5.4.

Finally, the four studies share the same inferential posture and the same approach to robustness. Each chapter states its hypotheses before the analysis, reports findings that run counter to them rather than reframing the theory after the fact. Furthermore, each chapter interprets estimates as associations rather than causal effects and devotes a dedicated section to limitations and endogeneity (Sections 2.6, 3.8, 4.7, 5.5.4, and 5.7). Each chapter also subjects its main results to robustness checks drawn from a common repertoire—alternative coding of the dependent variable, and alternative definitions, calibrations, or time windows for the shock variable. Examples include alternative definitions of ex-communist status in Chapter 2, alternative calibration thresholds in Chapter 3, the narrower 2007–2009 recession window in Chapter 4, a longer post-shock horizon in Chapter 5, aggregation to the country level where individual-level results might be driven by within-country correlation (Chapter 2), and re-checking the key p-values with a wild cluster bootstrap wherever the number of clusters was small (Chapters 2, 4, and 5). It is on this common methodological basis, and not only on their shared theme, that Chapter 6 draws the four studies together.



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 toward 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-Schündeln, 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, 28 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 show that living in a country with a communist past has a negative association with tax morale for individuals living in these countries. This effect appears to be persistent many years after these countries transitioned out of Communism. Further analysis implies that this negative association with tax morale applies specifically to ex-communist countries that are currently under democratic regimes. Furthermore, the analysis shows that the duration of communist regimes has a negative association with tax morale, many years after the transition from Communism. Meanwhile, trust in government, expectations of government responsibility, and political apathy do 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 toward 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 out 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-Schündeln, 2005). One of Alesina and Fuchs-Schündeln'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-Schündeln, 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, Sapsford and Abbott (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 (2005a) 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.

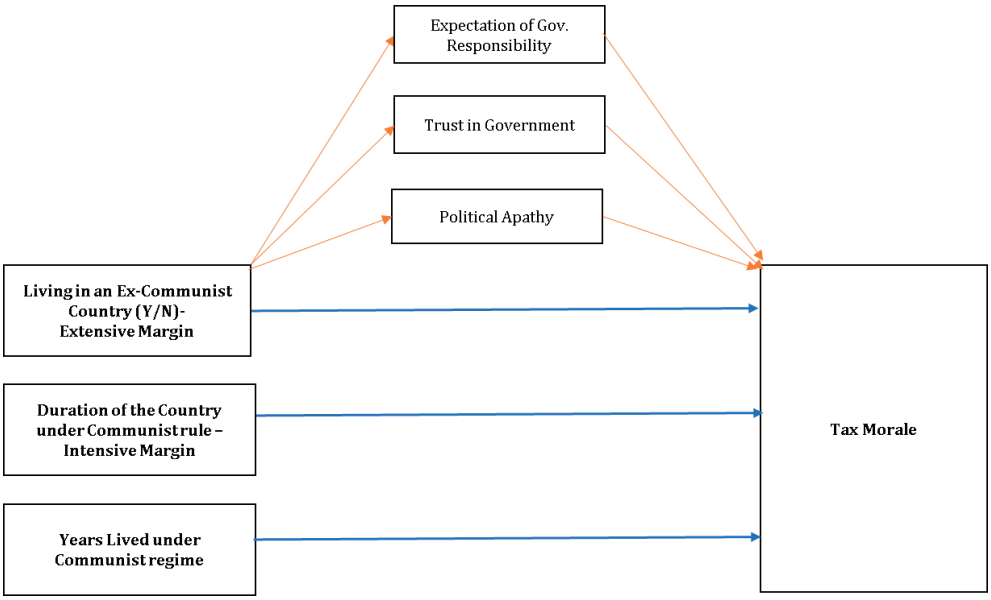


Figure 2.1: Theoretical Framework
Source: Author's Own

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 the 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 1990–2014, 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 communist 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 toward 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 tax morale.
Hypothesis 5: Having higher expectations of a government's responsibility toward 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 experience greater distortion than other economies (Traps, 2009).

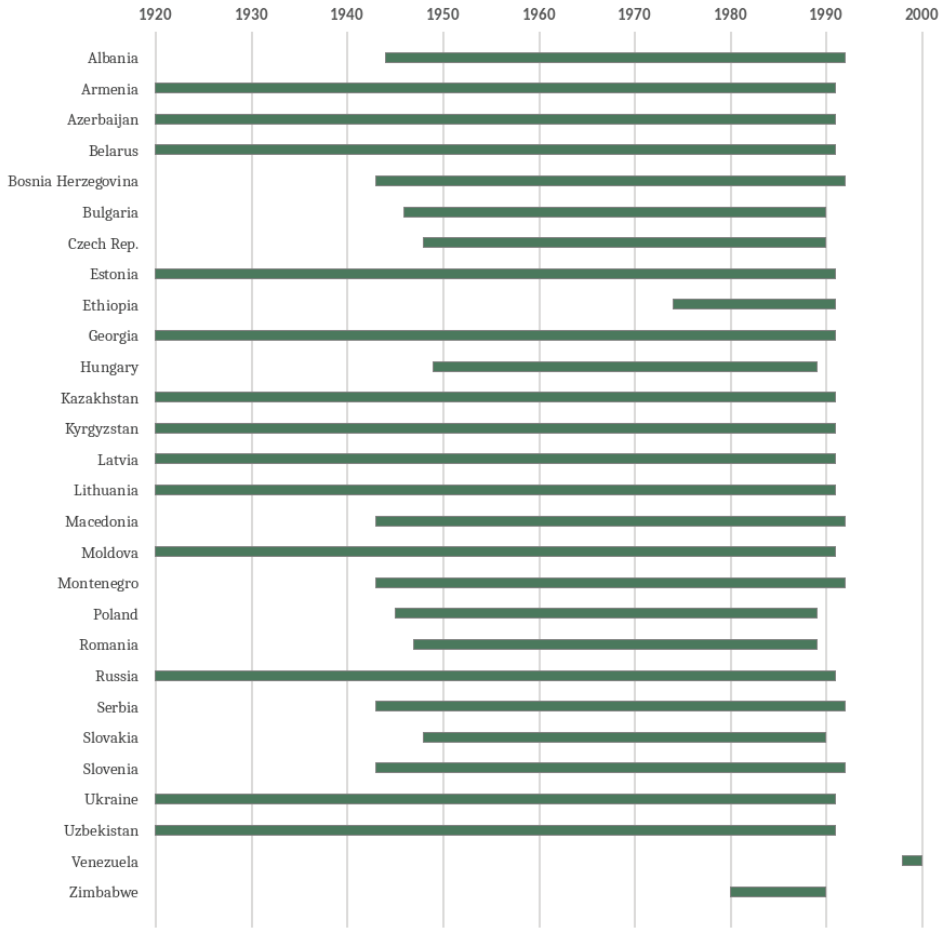


Figure 2.2: List of Ex-Communist Countries using definition by (Chen & Sil, 2009), the length of the green bar indicates the duration of the communist regime showing start and end dates

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, 28 countries included in the analysis had a history of Communism, applying the definition of Chen and Sil (2009), as listed in A1.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 consid-

ered 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 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, 2012). 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; 63% 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 toward 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. The variable was coded 1 for respondents choosing 10 (the government should take more responsibility) and 0 otherwise.

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:

$$TsncComm = WVSyear - CommEnd \tag{2.1}$$

$$CommDr = CommEnd - CommStart \tag{2.2}$$

$$AgeComm = Age - TsncComm \tag{2.3}$$

$$If\ CommDr < (Age - TsncComm) \longrightarrow AgeComm = CommDr \tag{2.4}$$

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 WVS3. 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 & 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
- AutocraticNotComm 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 (1990–2014) 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	244,649	0.63	0.49	0.00	1.00
History of Communism Heritage (ex-communist)	244,649	0.28	0.45	0.00	1.00
Duration of Communism Regime (for those with history of Communism)	67,806	56.75	17.24	2.00	74.00
Trust in Government	224,031	0.46	0.50	0.00	1.00
Expectation of Government Responsibility	236,667	0.22	0.42	0.00	1.00

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. Regressions use the 225,312 observations with complete data on all covariates.

- 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 toward 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 (1990–2014), controlling for wave/time fixed effects and clustering by country, which accounted for unobservable country-specific characteristics while also controlling for regional differences. Because the main regressors of interest (Comm, DemComm, and Comm_Dr) vary only at the country level, clustering at the country level was essential to avoid understating the standard errors of these aggregate regressors (Moulton, 1990). Models 1.1 and 1.2 were estimated on the full sample of 85 country clusters. Model 2 (and the corresponding specification

within Model 3, Model 3.4), however, could only be estimated on the subsample of countries for which the duration of the communist regime (Comm_Dr) was defined (i.e., countries with a history of communism), which reduced the number of clusters to 31. With a modest number of clusters, conventional cluster-robust standard errors tend to over-reject the null hypothesis (Cameron et al., 2008; Cameron & Miller, 2015); inference for the regime-duration coefficients was therefore additionally assessed using the wild cluster bootstrap, as reported in Section 2.5.

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 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 accounted for (VAF): Calculated by dividing the indirect effect by the total effect.

2.4.5 Results

The analysis in Model 1.1 points 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 applies even when controlling for the demographic variables for each respondent and for country-level corruption and inequality variables. We also controlled for the wave fixed effects using the 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, implies that, compared to those from democratic non-ex-communist countries, those from democratic ex-communist countries have lower tax morale. This supports the earlier argument that regimes with a communist heritage have unique aspects that show an association with their citizens' tax morale. For autocratic ex-communist countries, there is no statistically significant association with tax morale. Autocratic non-ex-communist countries, however, show a positive association that is 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 are 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 is consistent with the positive association observed for autocratic non-ex-communist countries, whereas for autocratic ex-communist countries it may be offset by the negative communist-heritage association documented above, potentially explaining the absence of a statistically significant association.

In assessing the effect of the duration of the communist regime in an ex-communist country, Model 2 points 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 has 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 intensive 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 extensive margin). As noted in Section 2.4.3, Model 2 was estimated on 31 country clusters, and the significance levels reported in Table 2.4 are based on conventional cluster-robust standard errors. Section 2.5, as part of the robustness checks, reports the corresponding wild cluster bootstrap p-values, which provide a more conservative basis for inference with this number of clusters.

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.

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. Given the modest number of clusters, wild cluster bootstrap p-values for Comm_Dr are reported in Section 2.5.

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 is negative and statistically significant. In Model 3.2, once communist heritage (Comm) was included, the estimated association for AgeComm essentially becomes zero and is no longer statistically significant, while (Comm) remains negative and statistically significant. In Model 3.3, when communist exposure was captured through the regime-type-by-heritage categories (i.DemComm), AgeComm is 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 turns positive but is not statistically significant ($p \approx 0.10$), while Comm_Dr is negative and statistically significant. Taken together, the results show that the negative association between AgeComm and tax morale found in the baseline specification is not robust once alternative country-level measures of communist exposure were included, and it also varies across samples and specifications.

Table 2.5: Empirical Analysis - Years lived under a communist regime 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)

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

	Model 3.1	Model 3.2	Model 3.3	Model 3.4
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). 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 A1.Table 3.

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 are 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 mediates the association. The indirect effect through political apathy is not statistically significant (NIE = 0.0030, p = 0.227). The indirect effect through trust in government is likewise small and not statistically significant (NIE = -0.0017, p = 0.662; VAF ≈ 1.6%). Finally, for expectations of government responsibility (E037), the indirect effect is essentially zero and not statistically significant (NIE = 0.0020, p = 0.360). In all three cases, the association between communist heritage and tax morale operates almost entirely through the direct effect. Table 2.6 summarizes 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→ Trust in government → Tax morale	-0.1043***	-0.0017	-0.1060***	1.6%	No (NIE n.s.)	206,569
H5	Ex-communist Country → Expectation of Gov. Responsibility → Tax morale	-0.1071***	0.0020	-0.1051***	-1.9%	No (NIE n.s.)	217,526
H6	Ex-communist Country → Political apathy → Tax morale	-0.1192***	0.0030	-0.1161***	-2.6%	No (NIE n.s.)	205,433

Notes: Table reports the natural direct effect (NDE), natural indirect effect (NIE), and total effect (TE) from Stata mediate; *** $p < 0.01$. 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 (85 clusters; 83 for political apathy, as the petition item is not available for two countries). 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); for political apathy, WVS non-substantive responses (don't know, no answer, not asked) are treated as missing.

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, confirm the main findings. The coefficient of living in a country with a communist heritage is negative and statistically significant at the 1% level. This implies that, on the 1–10 tax morale scale, individuals in ex-communist countries have, 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 are fully consistent with the baseline probit results, suggesting that the core relationship between communist heritage and tax morale is not driven by the dichotomization of the tax morale variable. In addition, re-estimating Model 1.1 with a broader definition of communist heritage, which also includes China, Vietnam, and Iraq, yields a similar negative and statistically significant coefficient (-0.305, SE 0.104; $p < 0.01$).

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 communist heritage was negative and statistically significant at the 1% level. Column (2) replaces the ex-communist dummy with the duration of the communist regime (Comm_Dr) and also yields a negative and statistically significant estimate. These results imply that both the extensive and intensive measures of communist heritage are associated with lower average tax morale even when the analysis was carried out at the aggregated country–wave level.

Table 2.7: Empirical analysis – Robustness Check: Communism Heritage using Tax Morale as a continuous 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 all samples contributed equally to the combined analysis, giving each country the same effective N. 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.

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. Wild cluster bootstrap p-values for the Comm_Dr coefficient in column (2) are reported in Table 2.9.

As a third robustness check, I reassessed statistical inference for the regime-duration specifications, which relied on a modest number of clusters. Whereas Models 1.1 and 1.2 were estimated with 85 country clusters, Model 2 (Table 2.4), Model 3.4 (Table 2.5), and column (2) of Table 2.8 were estimated on the 31 countries for which Comm_Dr was defined. With this smaller number of clusters, conventional cluster-robust standard errors can over-reject the null hypothesis, particularly for regressors such as Comm_Dr that vary only at the cluster level (Cameron et al., 2008; Cameron & Miller, 2015). Hence, I reassessed the key coefficients using the wild cluster bootstrap with the null hypothesis imposed, Rademacher weights, and 9,999 replications, clustering by country (Cameron et al., 2008; Roodman et al., 2019); for the probit specifications, I applied the score version of the procedure (Kline & Santos, 2012).

As shown in Table 2.9, the negative association between the duration of the communist regime and tax morale survives this more conservative test in all three specifications. In Model 2, the coefficient for Comm_Dr remains statistically significant at the 5% level (bootstrap $p = 0.046$, compared with a conventional $p = 0.047$), as does the Comm_Dr coefficient in Model 3.4 (bootstrap $p = 0.045$, conventional $p = 0.037$). Meanwhile, the coefficient for AgeComm in Model 3.4 remains statistically insignificant (bootstrap $p = 0.329$). In the country–wave specification in column (2) of Table 2.8, the Comm_Dr coefficient likewise remains significant (bootstrap $p = 0.014$; 95% bootstrap confidence set [-0.035, -0.004]), essentially unchanged from conventional inference ($p = 0.012$). These results indicate that the duration finding is not an artifact of the small number of clusters, and Hypothesis 2 is therefore supported under both conventional and small-cluster-robust inference, although the estimate sits close to the 5% threshold in the individual-level models and should be read with that in mind.

Table 2.9: Empirical analysis – Robustness Check: Wild cluster bootstrap inference for the regime-duration specifications (31 country clusters)

	(1) Model 2	(2) Model 3.4	(3) Model 3.4	(4) Table 2.8, col. (2)
Coefficient tested	Comm_Dr	Comm_Dr	AgeComm	Comm_Dr
Coefficient	-0.007**	-0.008**	0.023	-0.017**
	(0.003)	(0.004)	(0.014)	(0.006)
Inference				
Conventional p-value	0.047	0.037	0.101	0.012
Wild cluster bootstrap p-value	0.046	0.045	0.329	0.014
95% bootstrap confidence set	—	—	—	[-0.035, -0.004]
Specification				
Estimator	Probit	Probit	Probit	OLS
Dependent variable	High tax morale (0/1)	High tax morale (0/1)	High tax morale (0/1)	Country-wave mean tax morale (1–10)
Bootstrap procedure	Score	Score	Score	Restricted (WCR)
Observations	67,806	67,806	67,806	58
Clusters (countries)	31	31	31	31

Notes: Columns (1)–(3) re-assess the regime-duration coefficients from Table 2.4 (Model 2) and Table 2.5 (Model 3.4); column (4) re-assesses the country–wave specification in column (2) of Table 2.8. Coefficients and conventional standard errors (in parentheses, cluster-robust at the country level) are reproduced from those tables. Bootstrap p-values are from a wild cluster bootstrap with the null hypothesis imposed, Rademacher weights, and 9,999 replications, clustering by country (Cameron et al., 2008; Roodman et al., 2019); for the probit specifications the score version of the procedure was applied (Kline & Santos, 2012), for which a confidence set is not reported. Probit specifications use the WVS weighting factor S018 and include the individual and country-level controls and wave fixed effects of the original models. Stars denote conventional significance levels: *** p<0.01, ** p<0.05, * p<0.10.

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 (1990–1993 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 comoved with apathy.

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 country (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. More broadly, persistent country characteristics that predate communist rule—such as long-run institutional quality, historical state capacity, and deeply rooted cultural norms regarding the state and authority—could have been correlated with both the likelihood of experiencing communism and contemporary tax morale, and the corruption and inequality controls could capture such traits only partially. 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.

A further limitation concerned statistical inference in the regime-duration specifications. Because Comm_Dr was defined for only 31 countries, Model 2 and Model 3.4 were estimated with 31 country clusters, a number at which conventional cluster-robust standard errors may over-reject the null hypothesis, especially for a regressor that varies only at the country level with a relatively small number of countries in scope (Cameron et al., 2008; Cameron & Miller, 2015). This concern was addressed in one of the robustness checks by re-assessing the regime-duration coefficients with the wild cluster bootstrap. The significance levels reported in Tables 2.4 and 2.5 should nonetheless be read with the modest number of clusters in mind, and the duration results are best interpreted alongside the bootstrap p-values reported there. The main heritage results (Models 1.1 and 1.2) were not subject to this concern to the same degree, being estimated on 85 clusters.

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 shows that living in an ex-communist country has a negative association with tax morale, after controlling for demographic factors, corruption, and inequality. Furthermore, the analysis shows that the duration of communist regimes has a negative association with tax morale, many years after the transition from Communism. Potential explanations include the long-standing habit in these countries of very few citizens paying taxes (e.g., private entrepreneurs), combined with the prevailing abuse of civic virtues and higher willingness to engage in dishonest behavior toward the government. Further analysis implies that this negative association with tax morale applies specifically to ex-communist countries that are 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 shows 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 (E037). In all three cases, the estimated indirect effects are small, and the negative association operates almost entirely through the direct effect. Taken together, these results suggest that the communist-heritage association is not transmitted through the three attitudinal channels measured in the WVS. It may instead reflect norms and habits internalized under the regime itself, as proposed in the theoretical framework, or operate through channels that the available WVS instruments are too broad to capture—a possibility discussed further below in relation to the definition of the government-responsibility measure. Any very small estimated indirect effect through political apathy could be interpreted

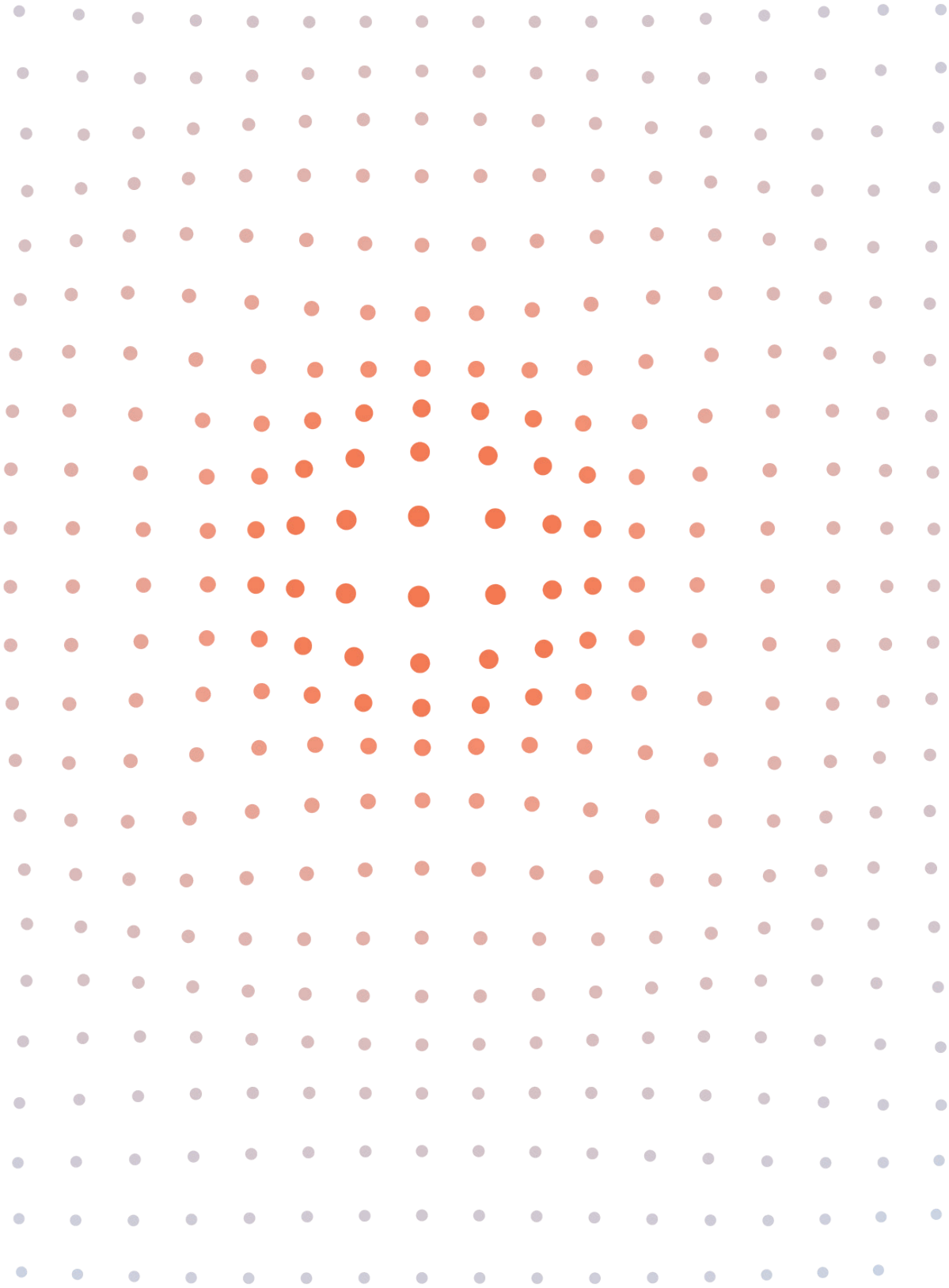
in light of fluctuations in post-communist participation, with communist-era apathy followed by a remarkable spike in political mobilization from 1988–1992 and again during the "colored revolutions" of the mid-2000s. The first elections of the post-communist era routinely featured turnout rates of more 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 is 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 hierarchical relationship between the rulers above and the ruled below (Trüdinger & Hildebrandt, 2013). Regarding the expectations of government responsibility, the absence of a meaningful indirect effect could be rationalized if we consider the strict definition of the government responsibility variable in the WVS. This definition is 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 does 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

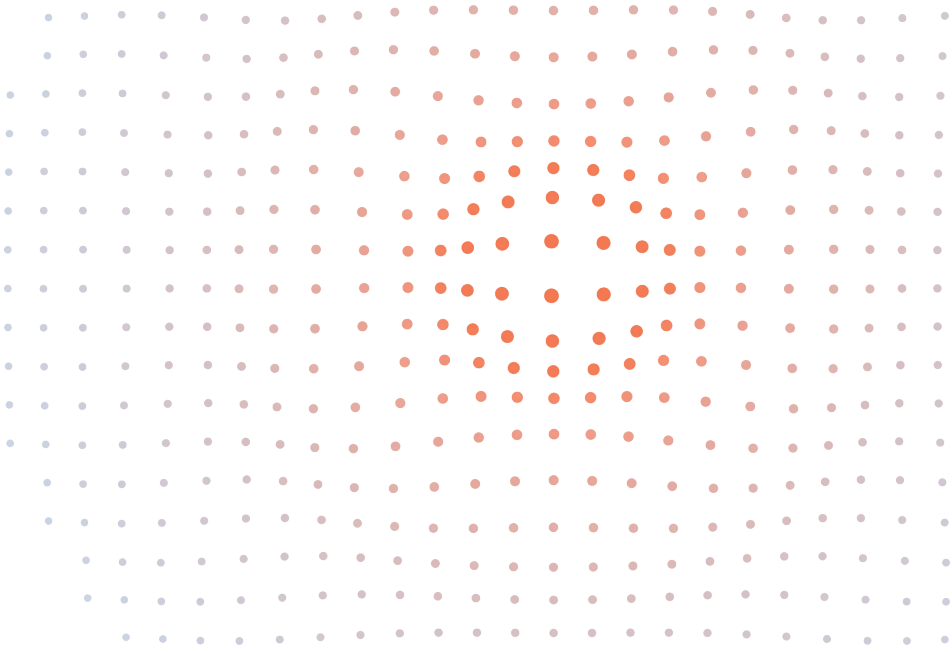
variables were not included mainly due to the lack of consistent data on these variables covering all countries in the scope of the present paper, considering its global view and the timespan of analysis as I pooled repeated cross-sections from five WVS waves (1990–1993 to 2010–2014) and included wave fixed effects (S002). The robustness checks discussed provide additional reassurance that the main findings are not driven by a single operationalization 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 28 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]



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

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 best practices we can learn 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.

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 toward 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 is especially useful in the cross-country analysis presented here as it allows 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 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 to be internal (i.e., the source of the recession is due to internal factors, such as poor government policies). Meanwhile, a positive change in tax morale is associated with countries that had no change in ruling party when the trigger of the recession is 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 do 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 & Sugawara, 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 toward 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, 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, the trigger for the financial crisis in Russia during this period could also be considered external, considering the external impact of the global trade slowdown on its economy; in the main analysis, Russia and Ukraine were coded as having an internal trigger (Table 3.4). 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 toward 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 5.6% of the 2008 GDP (Organisation for Economic Co-operation and Development [OECD], 2009a).

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 toward 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 toward 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, 2009a). 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.

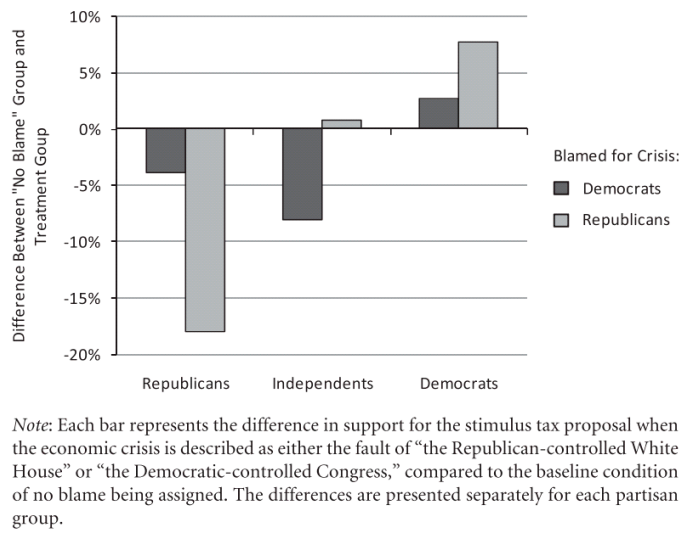
Meanwhile, Vasileva-Dienes and Schmidt (2018) viewed Russia as a mix of state capitalism and patrimonialism, given the reassertion of state authority by an increasingly authoritarian president. For clarity, patrimonial capitalism is based on informal clientelist relations between the state and business 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 the government's 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 Soman 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.



Note: Each bar represents the difference in support for the stimulus tax proposal when the economic crisis is described as either the fault of "the Republican-controlled White House" or "the Democratic-controlled Congress," compared to the baseline condition of no blame being assigned. The differences are presented separately for each partisan group.

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.

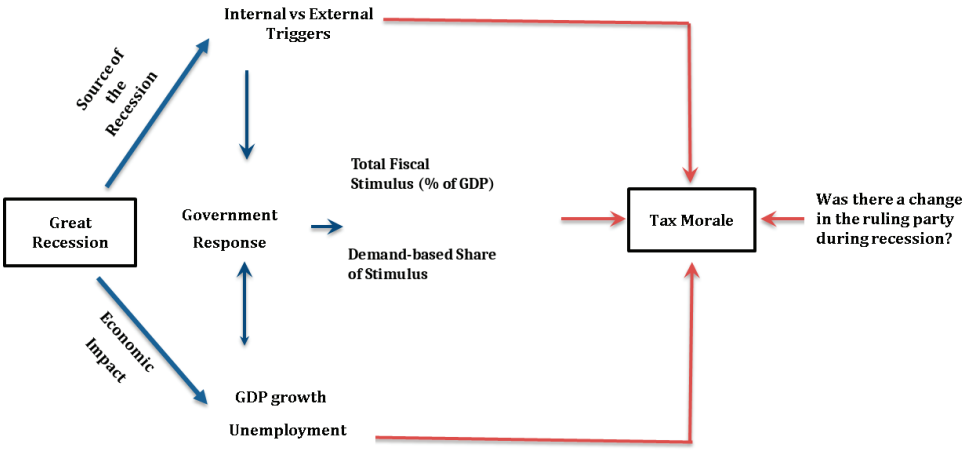


Figure 3.2: Theoretical framework. Channels Linking the Great Recession to Changes in Tax Morale (Trigger, Economic Impact, and Government Response).

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 toward 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 toward the new ruling government.

The size of the stimulus also may have had a combined effect with these factors, as posited in Hypotheses 3a, 3b, and 3c 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 total stimulus package was measured as a percentage

of 2008 GDP, and the demand-based component as its share of the total package. The relevant hypotheses for this portion of the study were the following:

Hypothesis 3a: There 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 is especially useful in the cross-country analysis in this paper as it allows 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 allows 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.

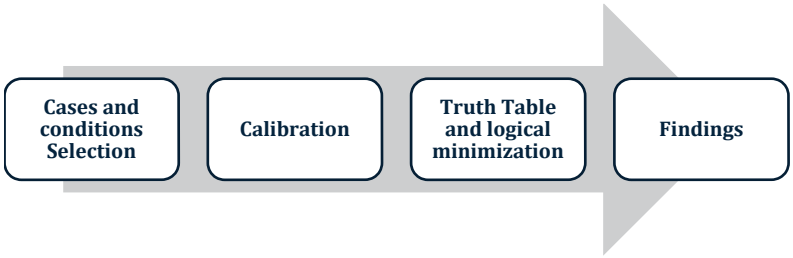


Figure 3.3: QCA Methodology
Source: Author's illustration (QCA approach following Ragin's framework).

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. 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. 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 (2009a), 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 et al., 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 (2006). 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.

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

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

Category	Factors/Conditions considered	Description	Sources
Source of the Recession	**Trigger** (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) (Shelburne, 2010) (Ali et al., 2009) (van der Heijden, Dol et al., 2011) (Verick & Islam, 2010)
Government Response	**TsFStim:** 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: Demand-Based Stimulus per Country	The size of the "demand" fiscal stimulus package in this country as % of its 2008 GDP 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. (Fischer & Justo, 2010)- Tables 3 and 5.
Economic Impact	**Unemp:** 2007–2009 Unemployment rate Change	Change in the unemployment rate between 2007 and 2009	World Bank Data (Our World in Data, n.d.)
	GDP: 2007–2009 GDP Growth	Change in GDP growth between 2007 and 2009	
	Econ: 2007–2009 Economic Impact	Combined economic impact metric considering both change in GDP growth (2007–2009) and change in Unemployment (2007–2009)	Author's calculation, detailed in the calibration section.
Change in ruling Party	**PartyChange:** Change in governing political party (Y/N)	Did the governing political party change before and after the recession	The ParlGov 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: 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 2009. Hence, we recorded the GDP change for Australia (2007–2009) to be -1.9%, as reported in Table 3.3. 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 ParlGov Project data (Parl-Gov, 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

5 OECD (2009b) 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

(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
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).

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

Country	Trigger/Source of the Recession	Description
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 in 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 factors (Trigger = 1: the Netherlands, Russia, Spain, Ukraine, and the United States; see Table 3.4) 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 OECD 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 (OECD, 2009a). 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 demand-side measures made up 50% or more of the total stimulus package; DsFStim = 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 leads 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.[6]

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

Table 3.5: Variables and related calibration thresholds – Main Analysis

Variable	Desc.	Comments
Country	Country in scope	
TMd	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
GDP	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)
TsFStim	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%)

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
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 includes 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, 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 the fsQCA tool, the following Prime Implicants are identified:

	~Trigger PartyChange Econ ~TsFStim ~DsFStim	~Trigger ~PartyChange Econ TsFStim ~DsFStim	~Trigger ~PartyChange Econ ~TsFStim DsFStim
~TsFStim	x		x
~Trigger ~DsFStim	x	x	
~Trigger ~PartyChange		x	x

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 it7. 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" counterfactuals. 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 & Sonnett, 2005). 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 & Sonnett, 2005).

7 https://thomaselliott.me/pdfs/fsqca2.pdf

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 in terms of set relations (Ragin & 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 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 and Wagemann (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 if the change in GDP growth was better than the OECD average of -6.1% or the increase in the unemployment rate stayed below the OECD average of 2.5%, 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: Share of demand-based measures in the total fiscal stimulus package, 2008–2010 (1: 50% or more; 0: less 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 if the change in GDP growth was better than the OECD average of -6.1% or the increase in the unemployment rate stayed below the OECD average of 2.5%, 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: Share of demand-based measures in the total fiscal stimulus package, 2008–2010 (1: 50% or more; 0: less 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 are four sufficient configurations that are associated with a positive change in tax morale (TMd = 1). Solution consistency and coverage are both 1.00, indicating that the listed configurations capture all positive-change cases in the sample. The solution terms (i.e., paths) identified in Table 3.9 do not align neatly with the hypotheses formulated at the start of the chapter and provide a more nuanced picture. The first path (Trigger*PartyChange) points to an internal trigger of the recession, associated with change in the ruling party. This path supports the second hypothesis, which states that the ruling party change during the Great Recession is 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 is 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) points to an external trigger for recession accompanied by no change in ruling party, and is observed in Australia, India, Malaysia, Poland, Sweden, and Turkey. The third path (~TsFStim) points to a smaller-sized total stimulus package in a given country as being associated with an increase in tax morale. This configuration is observed in India, Japan, Mexico, Netherlands, Poland, Sweden, Turkey, and Ukraine. Finally, the fourth path (~Trigger*~DsFStim) points 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 is observed in Australia, India, Japan, Malaysia, Mexico, Poland, and Turkey.

The two solution paths involving fiscal stimulus contradict the expectations in Hypotheses 3a–3c. The single-condition path ~TsFStim indicates that not having a very large total stimulus package is sufficient for a positive change in tax morale, which goes 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 shows 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 is contrary to the positive association posited in Hypothesis 3b. Furthermore, it is worth noting that the economic impact condition (Econ) does not appear in any of the parsimonious solution paths. This result does not support Hypothesis 1.

The intermediate solution (Table 3.8) provides additional insight into the role of conditions that are simplified out of the parsimonious solution. Notably, the economic impact condition (Econ) appears 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 or relatively higher GDP growth) contribute 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 are irrelevant, but rather that they play a contributing role alongside more central conditions. The core conditions — the political variables (Trigger and PartyChange) and the fiscal stimulus variables (~TsFStim and ~DsFStim) — remain present across both solution types, confirming their centrality to the configurations associated with increased tax morale. The intermediate solution also reveals that for the two internally triggered paths, the configurations diverge: Path 5 (Trigger*PartyChange*~Econ*~DsFStim), covering Spain and Ukraine, combines 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, combines party change with favorable economic conditions and demand-focused stimulus. This within-group variation suggests that while the political mechanism of party change is consistently central to internally triggered cases, the economic and fiscal context in which that change occurs differs meaningfully across countries.

Taken together, the QCA thus suggests that the combinations of conditions associated with increasing tax morale during the Great Recession differ 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 two 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 & Wagemann, 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 confirms the centrality of political conditions while revealing important nuances in the role of fiscal stimulus variables. In the parsimonious solution (Table 3.11), PartyChange emerges 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) reproduces the key political configuration identified in the main analysis, covering the Netherlands, Spain, the U.S., and Ukraine. This confirms that internal crisis origins paired with a change in governing party are robustly associated with increases in tax morale. However, the external trigger paths did not reproduce a simple "external + continuity" pattern. Instead, the parsimonious solution shows that among externally triggered cases, the relevant configuration is 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 is not political continuity per se but rather a restrained yet demand-oriented fiscal response that forms part of a sufficient configuration for stable or increasing tax morale.

The intermediate solution (Table 3.12) adds further nuance by introducing favorable economic conditions (Econ) as a contributing condition in three of the four paths. Notably, DsFStim appears as a present (non-negated) condition in two intermediate paths —Path 2 (~Trigger*Econ*~TsFStim*DsFStim) and Path 3 (Tr igger*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 conflicts 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) remains consistently absent from successful configurations, demand-focused composition plays a more constructive peripheral role than the main analysis suggests. The Ukrainian case (Path 4: Trigger*PartyChange*~Econ *~TsFStim*~DsFStim) stands 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 demonstrates that the core political configurations — particularly the role of PartyChange — are robust even when using Tosmana-based thresholds, while the intermediate solution reveals that economic conditions and stimulus composition play meaningful peripheral roles in shaping sufficient configurations for tax morale increases. Both solutions achieve perfect consistency (1.0) and identical overall coverage (0.78). Consistency of 1 means that every single case (country) that matches a given configuration also exhibits the outcome — an increase in tax morale. In set-theoretic terms, the solution is

a perfect subset of the outcome. There are no contradictory cases where a country matches the conditions but fails 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 follow 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 & Sonnett, 2005; Ragin, 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 3.5). The QCA solution is reported in parsimonious form. * denotes logical AND and ~ denotes negation (NOT). Coverage and consistency are interpreted as in Table 3.8. 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 3.5). The QCA solution is reported in intermediate form. * denotes logical (AND), and ~ denotes negation (NOT). Coverage and consistency are interpreted as in Table 3.8. 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 & Wagemann, 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 reveals a clear causal asymmetry. The combination of conditions that are sufficient for the presence of high tax morale are 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 3.5; coverage and consistency are interpreted as in Table 3.8.

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

3.7 CASE STUDIES

This study combined QCA with case studies. While QCA allows 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 Tables 3.8 and 3.9, 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 in 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 an 18% 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 second-largest increase in tax morale among the countries considered in this paper, after India. This case study and related process 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 OECD 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 is 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 process 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 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 supports the QCA result and the second hypothesis in the theoretical framework, which stipulates that a change in ruling party when the trigger of the recession is internal is associated with a positive change in tax morale. Meanwhile, Spain also matches the fifth intermediate solution path (Table 3.8) 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 is counter to Hypothesis 3b in the theoretical framework, which proposes 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 developmental 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 2% of its 2008 GDP, compared with the United States, which had the highest fiscal stimulus package in the western hemisphere (5.6%). Approximately 25% of this package was demand-focused, with a per capita demand-focused package of only $199, quite smaller than the OECD 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 by 5.0 percentage points while the unemployment rate increased by only 0.4 percentage points (Table 3.3). 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 state 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, and 65% of it was demand-focused, with a demand-stimulus of ~$680 per capita, which was 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, 2012; 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. At the same time, five dichotomous conditions define 32 logically possible configurations, of which only a subset is observed among the 14 cases—the limited diversity that is common in small-N QCA. The perfect solution consistency reported in the main analysis should be read partly in this light, and the solution paths are accordingly interpreted as structured descriptions of the observed cases rather than as generalizable claims of sufficiency.

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 does 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 does not fully resolve the possibility that political change and public sentiment evolve 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 contributes 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 identifies, using QCA, four configurational paths associated with changes in tax morale during a recession.

The QCA analysis points to four parsimonious paths associated with an increase in tax morale during the Great Recession. The first path (Trigger*PartyChange) combines an internal trigger for the recession with a change in the ruling party,

while the second path (~Trigger*~PartyChange) combines an external trigger with no change in the ruling party. These solution paths align 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 is demonstrated in the case of Spain, which had an internal trigger of the recession and a change in ruling party, and it contrasts with the case study of Sweden, which had an external trigger of the recession and no change in ruling party. These examples demonstrate 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 are also consistent with citizens holding governments accountable when the incumbent government is 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) points 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 is observed in India, Japan, Mexico, the Netherlands, Poland, Sweden, Turkey, and Ukraine. Finally, the fourth path (~Trigger*~DsFStim) points 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 is observed in Australia, India, Japan, Malaysia, Mexico, Poland, and Turkey. The two solution paths involving fiscal stimuli contradict the expectations in Hypotheses 3a–3c. The single-condition path ~TsFStim indicates that not having a very large total stimulus package could be part of a sufficient configuration for a positive change in tax morale, which goes 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 shows 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 is contrary to the positive association posited in Hypothesis 3b. Furthermore, the economic impact condition (Econ) does not appear in any of the four parsimonious solution paths, which does not support Hypothesis 1. However, the intermediate solution (Table 3.8) reveals that Econ appears as a condition in four of the six intermediate paths, consistently in its positive form. Following Fiss (2011), this indicates that favorable economic conditions function as a peripheral rather than core condition — contributing to sufficient configurations but not essential to them. In this sample, the re-

sults suggest that the perceived source of the recession (internal versus external trigger), together with political and fiscal-response conditions, plays a more prominent core role in the identified solution paths than the economic impact condition.

Taken together, the QCA suggests that the combinations of conditions associated with increasing tax morale during the Great Recession differ 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 is 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.

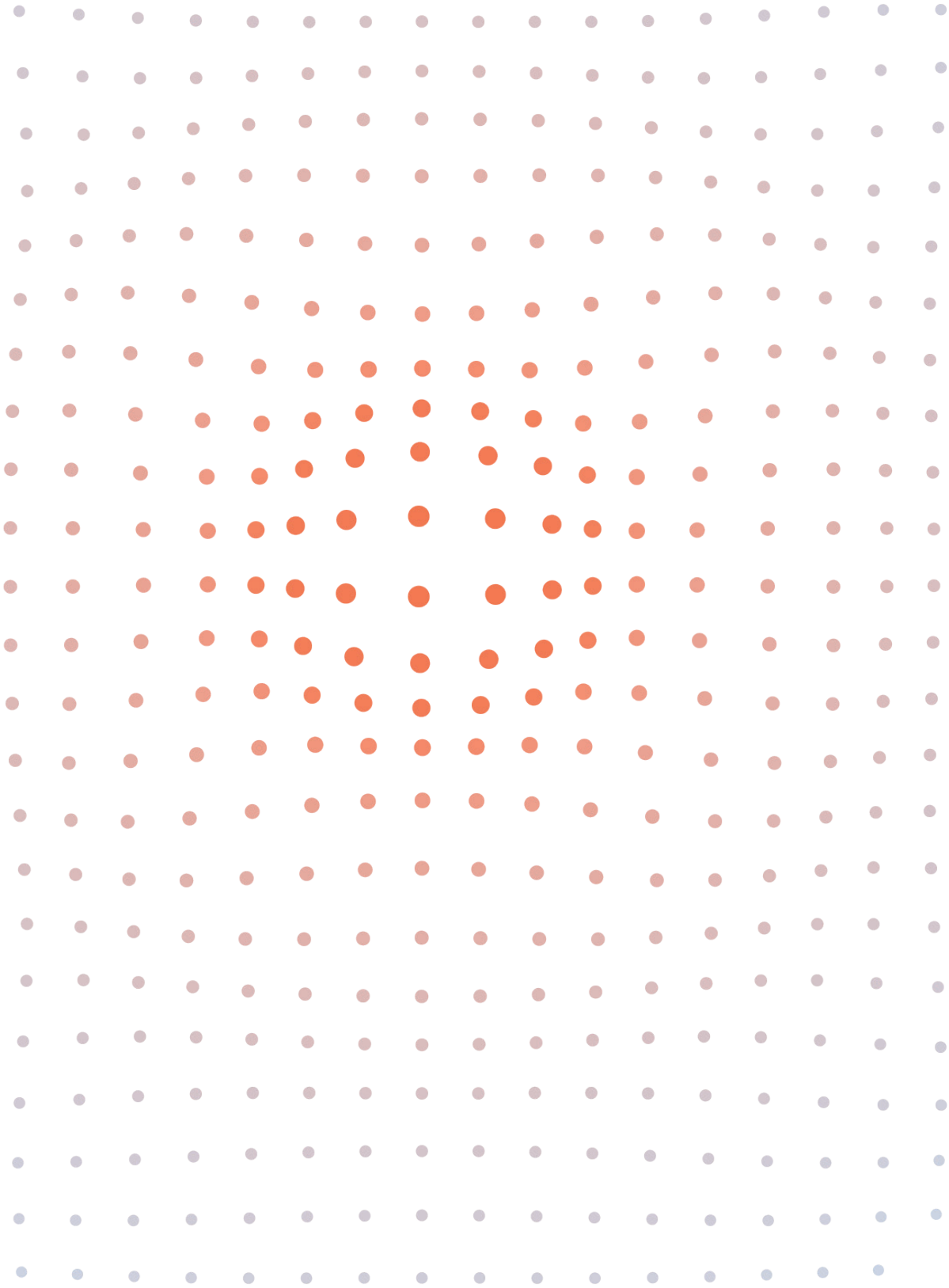
The chapter shows the benefit of using QCA as a technique to study a more complex notion of causality as this method can identify different factors that constitute sufficient configurations for an outcome of interest (Greckhamer et al., 2018). This is especially useful in the cross-country analysis in this study as it allows 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 allows for the identification of a combined presence, or lack, of specific conditions that are 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 is 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 is 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) are 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

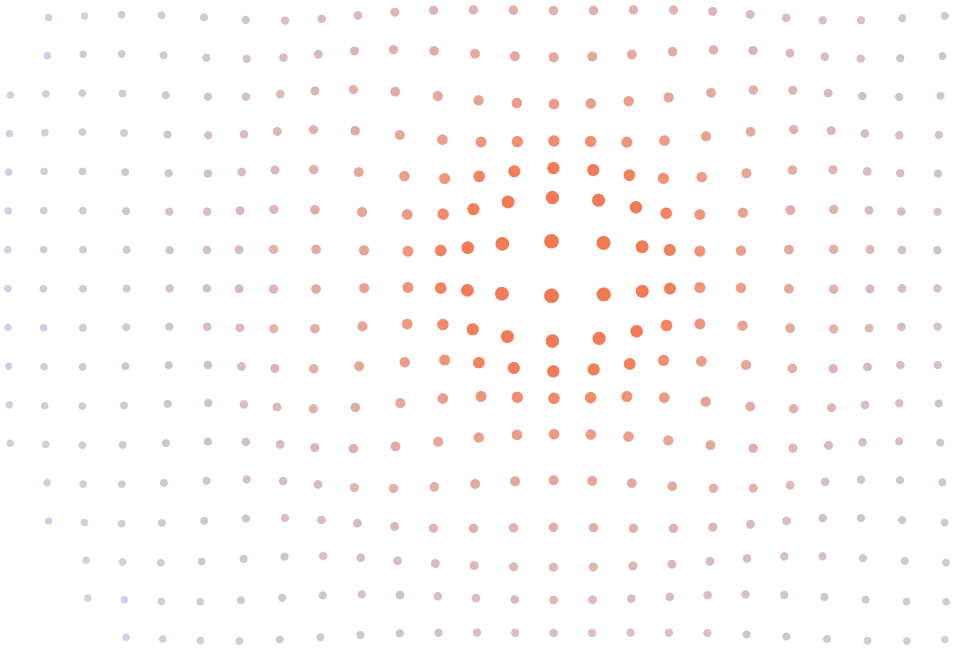
fiscal responses are observed as part of configurations associated with stable or rising tax morale, and the underlying mechanisms warrant further investigation. Fourth, the peripheral role of economic conditions revealed by the intermediate solution suggests that while favorable macroeconomic outcomes 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 will 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 suggests that accumulated dissatisfaction with long-standing incumbents could translate a crisis into an opportunity for renewed citizen engagement, while South Korea's experience indicates 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 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 implies that while there is no statistical difference in the tax morale of the employed versus the unemployed, tax morale among retirees, housewives, and students seems to be higher than among the unemployed, although these differences are not statistically significant. Furthermore, the total size of the stimulus packages in each state does 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, show a small negative association with tax morale, although this association is only marginally significant once inference accounts for the small number of state clusters.

4.2 LITERATURE REVIEW

4.2.1 Tax Compliance and Tax Morale

Tax morale is a proxy for attitudes toward 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 toward 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 toward 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 (Soman & 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 et al. (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 (ARRA) 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, 2009a).

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 ARRA 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 ARRA 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 nonfinancial 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 ARRA included the following allocations in its allotments of transfers to households: The temporary increase in states' Federal Medical Assistance Percentage (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, p. 2).

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

4.3 THEORETICAL FRAMEWORK

Building on the literature in Section 4.2, 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.

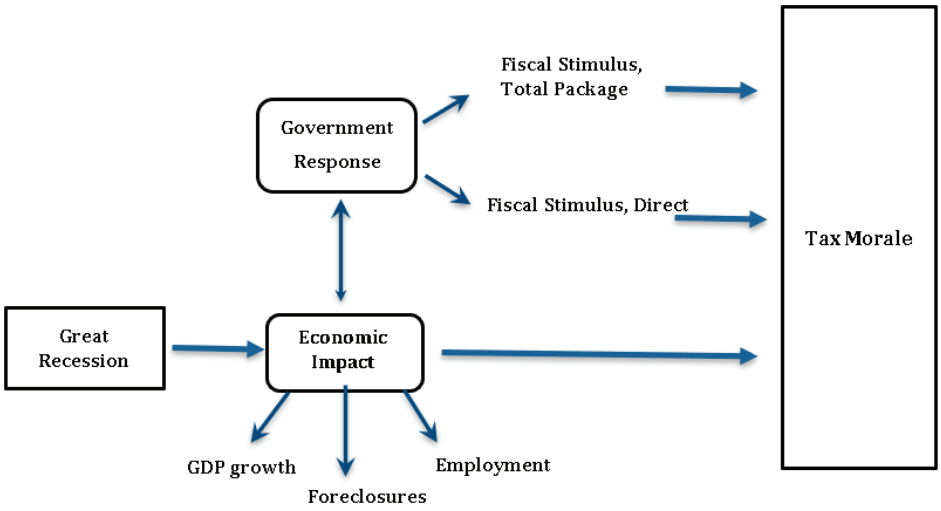


Figure 4.1: Theoretical Framework, channels linking the Great Recession in the US to changes in tax morale (economic impact, and government response).
Source: Author's illustration, based on the literature reviewed in Chapter 4.

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 total 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 toward 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 the government's 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 Soman 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 1,859 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 United 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 a 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, 2012). 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. Average tax morale in 2011 varied little 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 in the form of accelerated depreciation of business assets and properties. 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.gov,[8] 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 varies between $1,880 and $934. This is 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.

8 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. Table shows all 36 states with ARRA data; the 29 states in the estimation sample are listed in A2.Table 1.**

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[9].

9 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
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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 (CBPP). 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 varies between $1,433 and $829. This is 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. Table shows all 36 states with ARRA data; the 29 states in the estimation sample are listed in A2.Table 1.**

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 in 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.

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	1,859
GDP	Change in GDP growth per state[9]	0.12	0.05	0.02	0.25	29
UnEmp	Change in Unemployment rate per state[10]	4.19	1.64	2.20	9.30	29
Forcs	Change in Foreclosure rate per state[11]	0.55	0.56	0.07	2.14	29
StimTpCT	The size of the fiscal stimulus funds per State per Capita (2008-2011), nominal (current) USD	1,310	187	934	1,880	29
StimDpCT	The size of direct fiscal stimulus funds (Household Transfers) per State per Capita (2008-2011), nominal (current) USD	1,028	119	829	1,433	29

4.4.1.5 Descriptive Statistics for Key Variables

4.4.2 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 et al., 2014),

10 Change over 2006-2011 period.
11 Change over 2006-2011 period.
12 Change over the 2005-2008 period.

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.

4.4.2.1 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,[13] $Unemps$ was the change in the unemployment rate between 2006 and 2011 in state s as per U.S. Bureau of Labor Statistics,[14] 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.[15] TM_d^{2006} was baseline tax morale in 2006, measured as the division-level average in WVS Wave 5 for division d (9 U.S. Census 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

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

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 2.1 set $\beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$. Model 2.2 added $WelfarepC_Avg_s$. Model 2.3 added the tax-change indicators.

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.

In Models 1–3, the regressors of interest varied only across the 29 states in the sample. Hence, clustering at the state level was necessary to account for the within-state correlation of disturbances that aggregate regressors induce (Moulton, 1990). Twenty-nine clusters is, however, a modest number, and conventional cluster-robust standard errors may over-reject the null hypothesis in such settings (Cameron et al., 2008; Cameron & Miller, 2015). The significance levels reported in Tables 4.5–4.8 are based on conventional cluster-robust standard errors. Inference for the key stimulus coefficients is therefore re-assessed with the wild cluster bootstrap in Section 4.6 as part of the robustness checks.

4.4.2.2 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.

4.5 RESULTS

4.5.1 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)—show 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 is no statistically significant difference in tax morale between employed and unemployed respondents (the omitted category). The coefficients for retirees and for housewives/students are positive relative to the unemployed category, suggesting higher tax morale on average; however, these differences are 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 4 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 display patterns consistent with the tax morale literature. Age is positively associated with tax morale, and women report higher tax morale on average (Doerrenberg & Peichl, 2017). Income is 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 show weak evidence of lower tax morale ($p \approx 0.06$), and Hispanic and Other non-Hispanic respondents report significantly lower tax morale (coefficients not reported in the table). Relative to Republicans (omitted category), self-identified Democrats and respondents in the Rest category (e.g., independents/other) report significantly lower tax morale.

4.5.2 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) is negatively associated with tax morale in Model 2.1 ($p = 0.003$). Interpreting StimTpCT in thousands of USD, the point estimate implies that an additional $1,000 per capita in total stimulus is associated with approximately a 0.36-point lower tax morale score on the 10-point scale. However, this relationship is not statistically significant once welfare spending is included (Model 2.2), and it remains statistically insignificant when adding the tax-policy controls (Model 2.3). In Model 2.3, a personal income tax rate increase is positively associated with tax morale, while the sales-tax increase indicator is 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) shows 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 is somewhat attenuated once the full set of controls is included, but the estimated relationship remains statistically significant. These significance levels were based on conventional cluster-robust standard errors. As reported in Section 4.6, under wild cluster bootstrap inference, which accounts for the modest number of state clusters, the direct stimulus estimate in the full specification (Model 3.3) remains negative but is only marginally significant (bootstrap $p = 0.075$).

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.

4.6 ROBUSTNESS CHECKS

Four different robustness checks were conducted as part of this paper; the first three concern the specification of the models and the fourth concerns statistical inference. First, the main results measured the economic impact of the recession as the change in GDP growth and in the unemployment rate between 2006 and 2011, to align with the timing of the WVS waves. As a robustness check, I re-estimated Model 1 using changes over the narrower 2007–2009 window, the period of greatest volatility and the one closest to the Great Recession itself. The results are unchanged in that neither state-level changes in unemployment nor changes in GDP growth show a statistically significant association with tax morale.

Second, I re-estimated the stimulus models with a binary dependent variable, coded 1 for respondents who answered that tax evasion is never justified and 0 otherwise. This isolates respondents who expressed no willingness at all to evade taxes from those who expressed some willingness. The results are broadly similar to the main specifications. Direct stimulus remains negatively and statistically significantly associated with high tax morale ($p = 0.031$), with an average marginal effect of approximately 18 percentage points per $1,000 per capita, after controlling for welfare spending and changes in state tax policies. Total stimulus is also negative, with an average marginal effect of approximately 13 percentage points but is only marginally significant in the full specification ($p = 0.062$).

Third, I addressed the possibility that the stimulus estimates reflected the severity of the downturn rather than the stimulus itself, since federal stimulus was partly directed toward harder-hit states. I re-estimated the total and direct stimulus specifications with the state-level economic-impact indicators (changes in GDP growth and unemployment over 2006–2011, and foreclosure rates) added as controls. As Table 4.8 shows, the negative associations for both total and direct stimulus remain statistically significant, while the economic-impact indicators themselves remain insignificant. The stimulus–tax morale association therefore does not appear to be simply proxying the observed severity of the downturn.

Table 4.8: Robustness Check – Stimulus and Tax Morale Controlling for State-Level Economic Impact

	(1) Total stimulus	(2) Direct stimulus
Total stimulus per capita	-0.449***	—
	(0.111)	
Direct stimulus per capita	—	-0.855***
		(0.228)
Change in GDP growth per state (2006–2011)	-1.137	-0.418
	(0.799)	(0.821)
Change in unemployment rate per state (2006–2011)	-0.021	-0.014
	(0.032)	(0.032)
Foreclosures (2005–2008)	-0.066	-0.045
	(0.093)	(0.079)
Baseline tax morale (division average, 2006)	-0.187	-0.245
	(0.306)	(0.295)
Age	0.226***	0.225***
	(0.034)	(0.034)
Income	-0.159**	-0.163**
	(0.077)	(0.077)
Female	0.256***	0.252***
	(0.073)	(0.072)
Ethnicity indicators	Yes	Yes
Ideology indicators	Yes	Yes
Observations	1,859	1,859
R-squared	0.0518	0.0534
Clusters (States)	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; 29 clusters). Both specifications include division-level baseline tax morale (TM_Div2006) and demographic controls; ethnicity omitted category is White, non-Hispanic; ideology omitted category is Republican. * p<0.10, ** p<0.05, *** p<0.01.

Finally, the inference for the stimulus coefficients is reassessed to account for the modest number of clusters available in the main analysis. With 29 state clusters, conventional cluster-robust standard errors can over-reject the null hypothesis, particularly for regressors that vary only at the state level (Cameron et al., 2008; Cameron & Miller, 2015). I therefore re-tested the total and direct stimulus coefficients from Tables 4.6 and 4.7 using the wild cluster bootstrap with the null hypothesis imposed, Rademacher weights, and 9,999 replications, clustering by state (Roodman et al., 2019). As shown in Table 4.9, the total-stimulus coefficient in the full specification (Model 2.3) is not statistically significant under the bootstrap (bootstrap p = 0.572), consistent with the conventional result. In the baseline specification (Model 2.1), the coefficient is significant at conventional levels (p = 0.003) but not under the bootstrap (bootstrap p = 0.106). Once the small number of clusters is taken into account, therefore, total stimulus is not significantly associated with tax morale in either specification.

For direct stimulus, the coefficient remains significant at the 5% level in the specifications without the state tax-policy controls (Model 3.1: bootstrap p = 0.031; Model 3.2: bootstrap p = 0.017), but only at the 10% level in the full specification (Model 3.3: bootstrap p = 0.075, compared with a conventional p = 0.043), with a 95% bootstrap confidence set of [-2.115, 0.074] that narrowly includes zero. These robustness checks carry two implications. First, the negative association between total stimulus and tax morale in the baseline specification should not be counted as a finding of this chapter, since it survives neither the addition of state-level controls nor small-cluster-robust inference. Second, while the negative association between direct stimulus and tax morale is robust to the checks in this section, its statistical strength depends on the specification: it is robust at the 5% level before the state tax-policy indicators are added and only marginally significant afterwards. The evidence therefore supports a negative association between direct household transfers and tax morale, but not a precise or definitive one, and Sections 4.7 and 4.8 interpret it accordingly.

Table 4.9: Empirical analysis – Robustness Check: Wild cluster bootstrap inference for the stimulus specifications (29 state clusters)

	(1) Model 2.1	(2) Model 2.3	(3) Model 3.1	(4) Model 3.2	(5) Model 3.3
Coefficient tested	StimTpCT	StimTpCT	StimDpCT	StimDpCT	StimDpCT
Coefficient	-0.362***	-0.212	-0.813***	-1.017***	-0.809**
	(0.112)	(0.307)	(0.231)	(0.335)	(0.381)
Inference					
Conventional p-value	0.003	0.496	0.002	0.005	0.043
Wild cluster bootstrap p-value	0.106	0.572	0.031	0.017	0.075
95% bootstrap confidence set	[-0.587, 0.206]	[-1.318, 0.525]	[-1.900, -0.466]	[-2.020, -0.227]	[-2.115, 0.074]
Specification					
Welfare spending control	No	Yes	No	Yes	Yes
State tax-policy controls	No	Yes	No	No	Yes
Observations	1,859	1,859	1,859	1,859	1,859
Clusters (states)	29	29	29	29	29

Notes: Dependent variable: tax morale in 2011 (TM, 1–10). Coefficients and conventional standard errors (in parentheses, cluster-robust by state) are reproduced from Table 4.6 (total stimulus per capita, StimTpCT) and Table 4.7 (direct stimulus per capita, StimDpCT); all specifications are weighted OLS (S018) and include division-level baseline tax morale (2006) and the demographic controls (age, income, gender, ethnicity, and ideology); Model 3.3 additionally includes employment status. Bootstrap p-values and confidence sets are from a wild cluster bootstrap-t with the null hypothesis imposed, Rademacher weights, and 9,999 replications, clustering by state (Cameron et al., 2008; Roodman et al., 2019). Stars denote conventional significance levels: *** p<0.01, ** p<0.05, * p<0.10.

4.7 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.

A related identification concern stemmed from the non-random allocation of stimulus funds across states. Federal stimulus was, by design, partly directed toward states experiencing more severe economic downturns, so the states that received larger stimulus — particularly direct household transfers — were also

those in which residents faced greater economic hardship. The negative association between stimulus per capita and tax morale should therefore be interpreted with caution, as it may partly reflect the severity of the underlying downturn and the related disappointment among affected households, rather than an adverse effect of the stimulus itself. Controlling for division-level baseline tax morale (2006), average welfare spending per capita, and concurrent state tax-policy changes mitigates, but cannot fully eliminate, this concern. As an additional check, the stimulus specifications were re-estimated with the state-level economic-impact indicators (changes in GDP growth and unemployment over 2006–2011, and foreclosure rates) added as controls; the negative associations remain statistically significant for both total stimulus (-0.449, $p < 0.001$) and direct stimulus (-0.855, $p = 0.001$), while the economic-impact indicators themselves remain insignificant (see Table 4.8 in Section 4.6). This suggests that the stimulus–tax morale association is not simply proxying the observed severity of the downturn, although unobserved dimensions of economic hardship cannot be ruled out. Accordingly, the stimulus estimates are interpreted as associations rather than causal effects of the policy response, consistent with the overall approach in this chapter. Consistent with this cautious reading, wild cluster bootstrap tests (Rademacher weights, 9,999 replications) that account for the limited number of state clusters indicate that the direct-stimulus estimate is only marginally significant (bootstrap $p = 0.075$), while the total-stimulus estimate is not statistically significant (bootstrap $p = 0.57$). These results reinforce that the stimulus–tax-morale associations documented in this chapter are suggestive rather than definitive. The bootstrap procedure and the full results, including the bootstrap confidence sets, are reported in the robustness checks section.

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.

4.8 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 is 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, has no effect on the tax morale of citizens of the states considered. Meanwhile, retirees, students, and housewives have a higher tax morale compared to the unemployed in point estimates, although these differences are not statistically significant. There is no statistically significant difference in tax

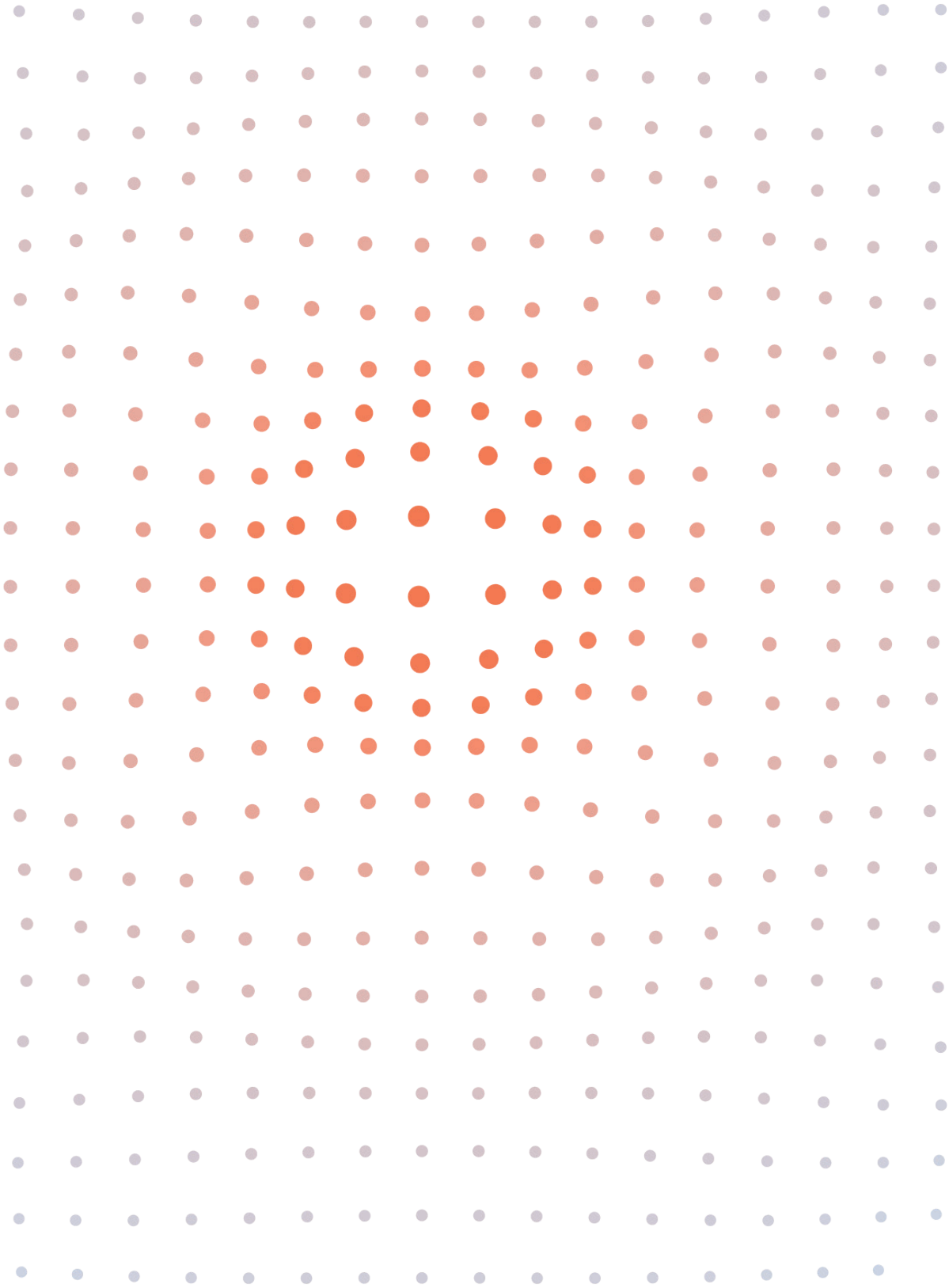
morale between employed and unemployed respondents. This effect could be rationalized by the retirees continuing to receive social benefits regardless of the recession since other individuals who were not active in the labor market (e.g., students and housewives) were also not as impacted by the recession compared to the unemployed. This could also explain why there is 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 is that the total size of the stimulus package in each state shows a small negative association with tax morale in the baseline specification; however, this relationship is not statistically significant once additional state-level controls are included, nor does it survive small-cluster-robust inference even in the baseline specification (Section 4.6). This could be interpreted as signaling that while citizens may have appreciated the benefits from the stimulus packages, there was also 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. A later Pew (2015) survey showed that citizens believed 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) have a negative association with tax morale, and this association is robust to controlling for the severity of the state-level economic downturn. This can 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. This association is, however, only marginally significant once inference accounts for the small number of state clusters (wild cluster bootstrap $p = 0.075$

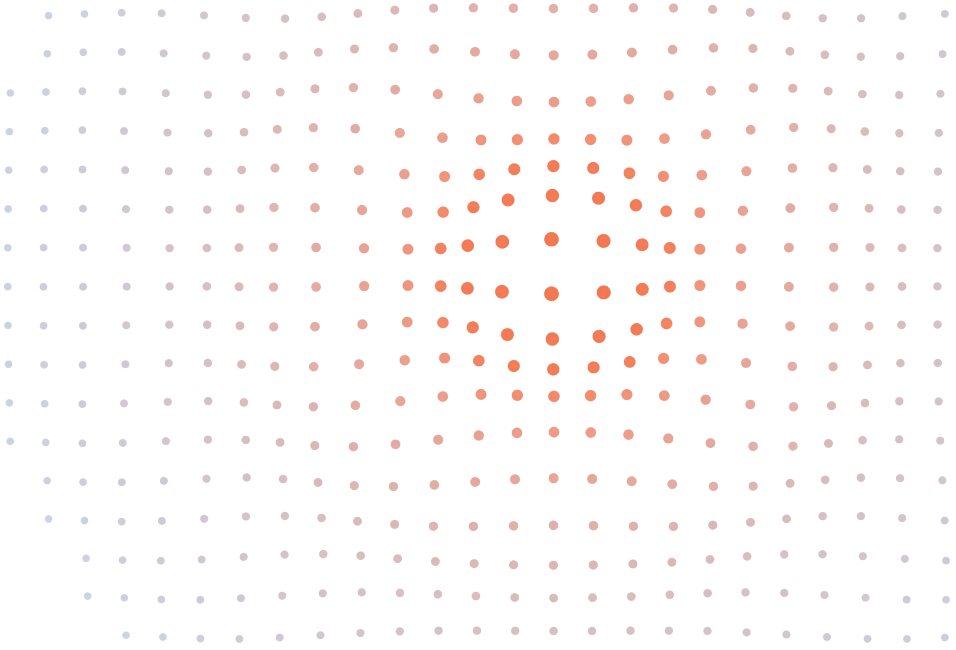
as reported in Section 4.6), and it should therefore be read as suggestive rather than definitive.

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, 2011a; 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 this chapter, I 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.

This chapter considers 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 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 nine 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 June 2013 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 shows that while the occurrence of the Arab Spring has a negative association on tax morale, the intensity of the protest per governorate seems to have a positive association on tax morale. We also see that embracing democracy has a positive, though not statistically significant, association with tax morale. Introducing the embrace of democracy dilutes the effect of protest intensity. We also see 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 (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 19, 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.

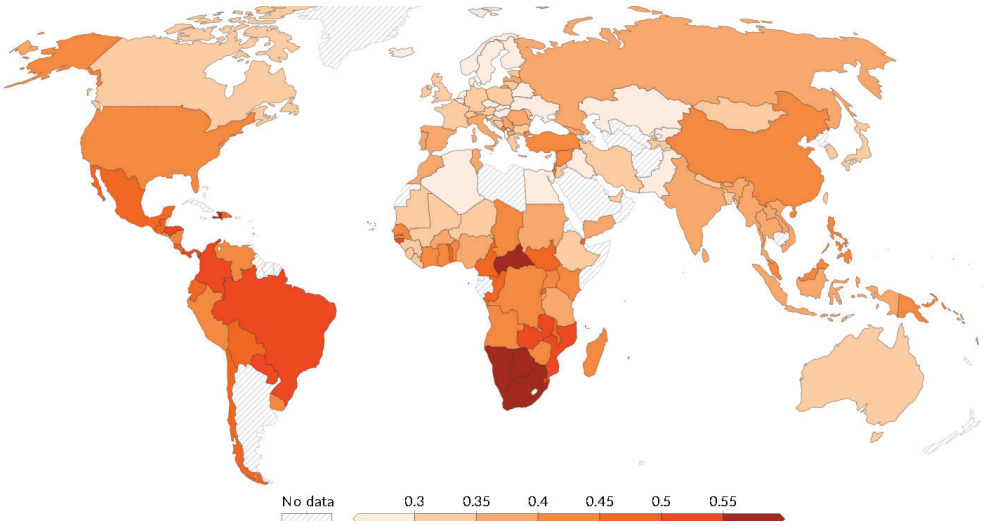


Figure 5.1: Gini Coefficient across the world in 2011

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.[16] 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,[17] 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 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 have 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

16 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

17 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

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 so-

ciety 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. Anderson et al. (2005) examined the impact of election outcomes on democratic legitimacy and explored how losing elections affects individuals' attitudes toward 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 toward 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–af-

ter 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, 2012). 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 importance 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. 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 June 2013 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 morale has dropped across almost all of the governorates considered.

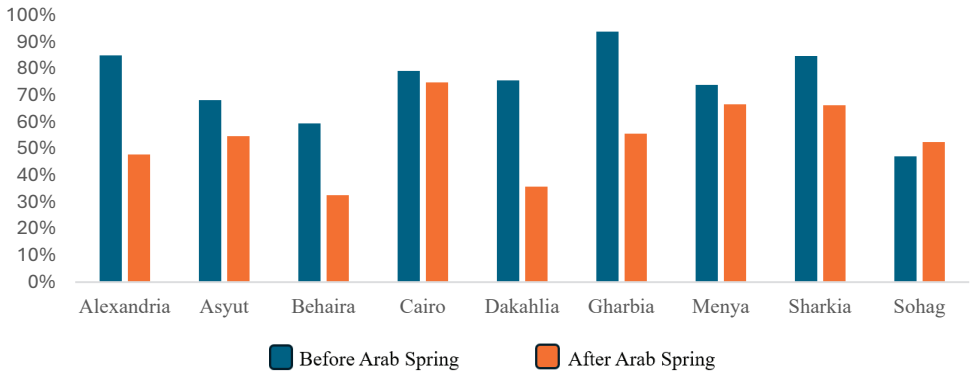


Figure 5.2: Tax Morale (TM) per Governorate before and after the Arab Spring

Source: Author's own using WVS data from Waves 5 (2008) and 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 is heterogeneous across space: the top-box share increases notably in Cairo (≈ +11.1 pp) and Behaira (≈ +7.4 pp) and increases modestly in Sohag (≈ +4.3 pp). By contrast, the top-box share declines in several governorates, most sharply in Menya (≈ -12.5 pp) and Alexandria (≈ -11.4 pp), motivating the subsequent regression analysis.

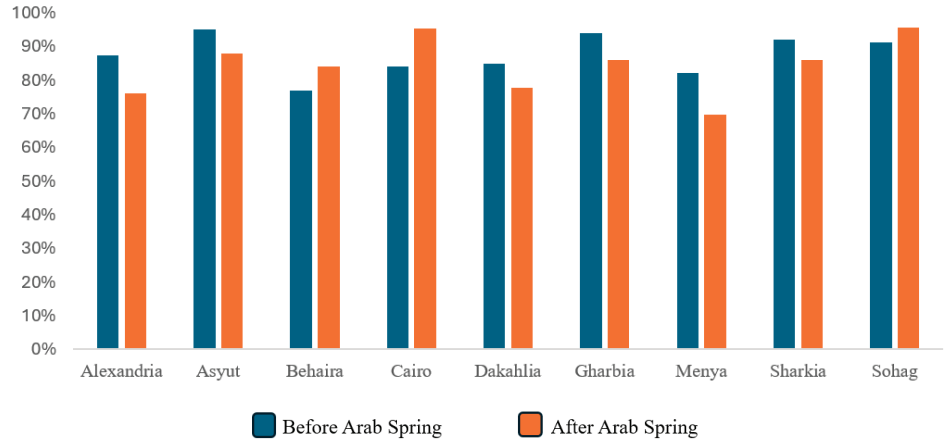


Figure 5.3: Share rating democracy as highly important (8–10) by governorate: pre- vs post-Arab Spring.

Source: Author's own using WVS data from Waves 5 (2008) and 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,[18] 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 injuries 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 casualties, but it could still serve as a proxy for local conflict intensity and level of exposure to Arab Spring events at the local governorate

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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. It should also be acknowledged that casualties per capita reflected both the scale of protest activity and the severity of the state's response to it; the measure was therefore interpreted as capturing the overall intensity of political confrontation to which a governorate was exposed, rather than protest participation alone.

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 has the majority of casualties, followed by Alexandria, Egypt's second largest city.

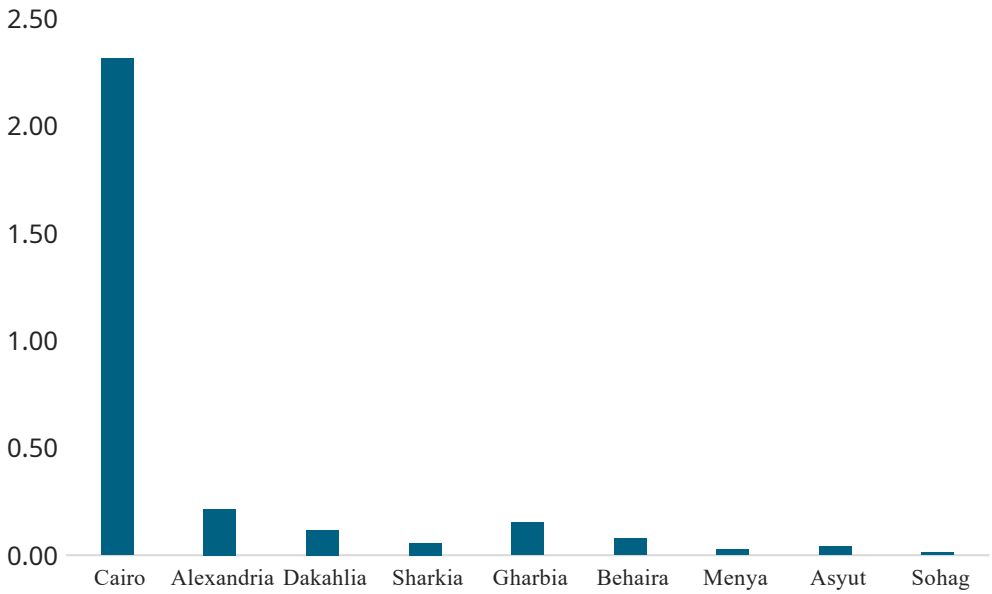


Figure 5.4: Protest Index: Casualties per 1,000 Persons per Governorate during the Arab Spring (2011–2013)

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.

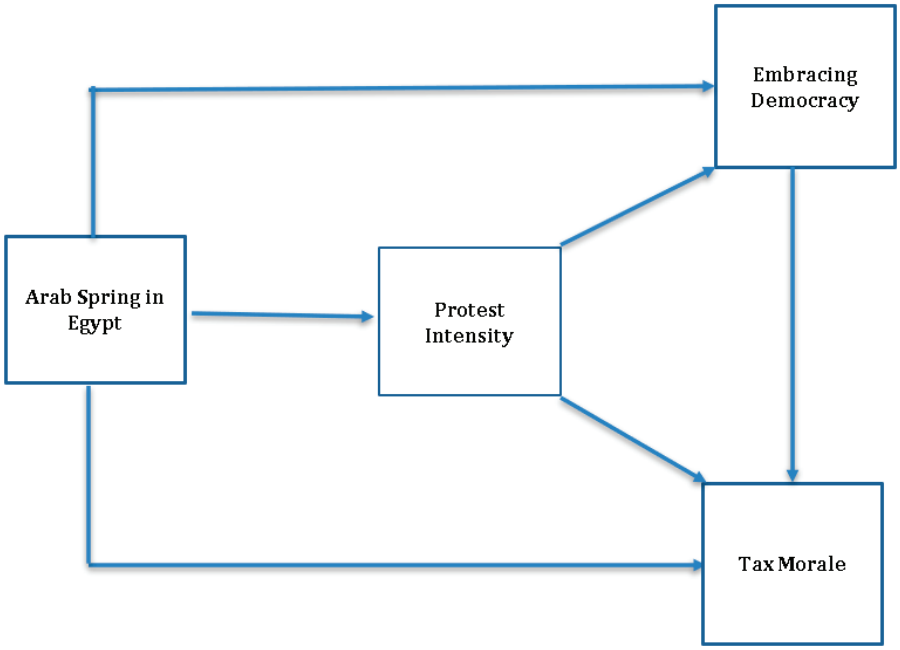


Figure 5.5: Proposed Theoretical Framework
Source: Author's own building on literature review in Chapter 5

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 β_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, δ_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 2013, 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).

α_g: Governorate fixed effects (i.e., a full set of governorate dummy variables) to account for time-invariant differences across governorates. $\varepsilon_{igt}$and ν_{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) is negatively associated with tax morale. In Model 1.3, the average marginal effect implies that moving from before to after the Arab Spring is 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 is positively associated with tax morale. In Model 1.3, the protest intensity index remains positive and statistically significant; the marginal effects indicate that a one-unit increase in the protest intensity measure is associated with about a 6.4 percentage-point higher probability of high tax morale (AME $\approx$ 0.064). This pattern is consistent with Hypothesis 1, although, as discussed in Section 5.5.4, inference on the protest-intensity coefficient should be treated with particular caution given the small number of governorate clusters.

Democracy enters with a positive coefficient, but it is not statistically significant in Model 1.3 (AME ≈ 0.087; p ≈ 0.14). So, while the sign is in the direction predicted by Hypothesis 3, the evidence is not strong enough in this specification to conclude that embracing democracy is independently associated with higher tax morale once protest exposure, governorate fixed effects, and demographics were included. Introducing Democracy also slightly attenuates 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 accounted for (VAF) is calculated by dividing the indirect effect by the 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 is an important channel linking protest exposure to tax morale. For *minor protests*, neither the total effect nor the indirect effect is statistically significant. For *mild protests* (relative to no protests before the Arab Spring), the total effect on tax morale is clearly negative and statistically significant, and this is driven almost entirely by the direct effect. The indirect effect through Democracy is very small and not statistically significant. Hence, there is no evidence of mediation in this case. For *large protests*, the total and direct effects are again negative and statistically significant, but the indirect effect is positive and statistically significant. This meant that the "democracy channel" moves in the opposite direction and slightly offsets 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	Obs
Minor Protests	-0.029 (0.047)	-0.003 (0.011)	-0.032 (0.050)	9.20%	No (TE n.s.; NIE n.s.)	2,237
Mild Protests	-0.318*** (0.037)	-0.002 (0.006)	-0.319*** (0.037)	0.60%	No (NIE n.s.)	2,237
Large Protests	-0.043*** (0.006)	0.003*** (0.001)	-0.040*** (0.006)	-7.80%	No — **suppression** (opposite-sign NIE)	2,237

Mediation effect tested: Protest exposure → Embracing democracy (Democracy) → Tax morale (TMb)

Base category: **Before Arab Spring – No Protest**

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) is not statistically significant on its own once governorate fixed effects and controls were included. When protest intensity was added, however, protest intensity is positive and highly statistically significant, indicating that governorates that experienced more intense protests are associated with a higher likelihood of embracing democratic values after the Arab Spring. At the same time, the Time coefficient becomes negative and marginally significant, suggesting that the overall post-period shift in Democracy is slightly negative once differences in protest exposure are accounted for. We return to the interpretation of these results in Section 5.5.3.

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 equals 1 for 2013 (post-Arab Spring; Wave 6) and 0 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 suggest a contrast between the overall post-Arab Spring shift and the variation across governorates by protest intensity, when it comes 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 emerges.

First, we consistently observe a *negative association* between the post-Arab Spring period and tax morale. In the probit specifications, the Time coefficient remains negative and statistically significant, indicating that—on average—tax morale is lower after the Arab Spring than before it, holding constant demographics and governorate fixed effects. At the same time, we observe a positive association between protest intensity and tax morale: governorates that experienced more intense protests tend to show a higher probability of high tax morale after the Arab Spring (relative to lower protest intensity governorates), which is 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 points to *no clear overall before/after shift* once governorate fixed effects and controls were included. However, when protest intensity was introduced, it is positively and strongly associated with Democracy, indicating that—after the Arab Spring—governorates exposed to more intense protests are also more likely to report strong support for democracy. This is 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 enters with a positive sign but is not statistically significant once protest intensity, fixed effects, and controls were included. This means that while the direction is consistent with Hypothesis 3, the evidence is 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 reinforces this interpretation. With Democracy as the mediator (and governorate-clustered standard errors), the results do not support Democracy as a meaningful mediating channel for the mild-protest contrast: the total effect remains negative and statistically significant, but the indirect effect is small and not statistically significant. For large protests, the indirect effect is statistically significant but runs 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 does not explain the negative association; it slightly counteracts it). Overall, these patterns suggest that protest exposure is associated with both tax morale and democratic values, but that the link between protest

exposure and tax morale is not primarily operating through Democracy in the mediation framework.

Turning to why the Arab Spring period itself is 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. In such settings, conventional cluster-robust standard errors can over-reject the null hypothesis, and wild cluster bootstrap procedures have been proposed as a more reliable basis for inference (Cameron et al., 2008). As a check, the coefficient on the post-Arab Spring indicator (Time) in Model 1.3 was re-assessed using the score wild cluster bootstrap with Webb weights and 9,999 replications; the negative association remains statistically significant (bootstrap $p = 0.014$), suggesting that this result is not an artifact of the small number of clusters. The protest-intensity coefficient, by contrast, is not statistically significant under the same procedure (bootstrap $p \approx 0.35$ in both Models 1.2 and 1.3). This contrast is expected: protest intensity varies primarily at the governorate level, which is precisely the setting in which conventional cluster-robust inference is most prone to over-rejection, whereas the Time indicator varies within every governorate. The protest-intensity findings should therefore be read as suggestive rather than conclusive evidence for Hypothesis 1. 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 (Inglehart et al., 2014). Adding these two waves extended the timeframe of the Arab Spring to include Morsi's toppling in July 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.

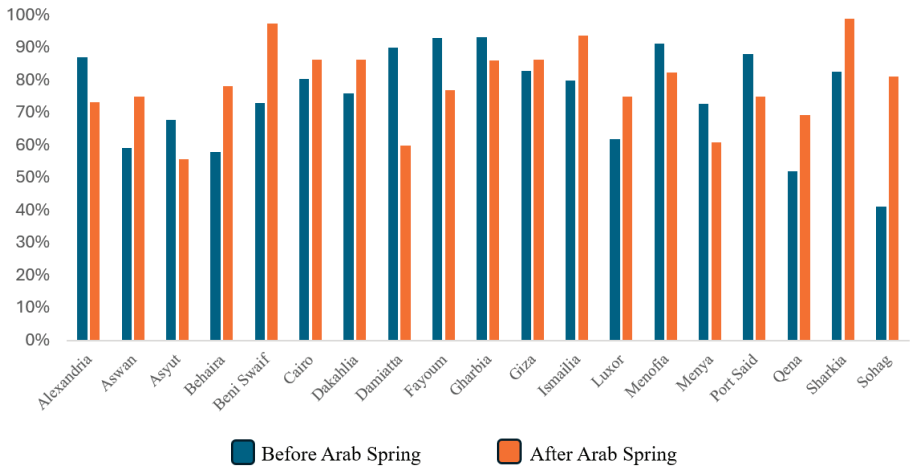


Figure 5.6: Share rating democracy as highly important (8–10) by governorate: pre- vs post-Arab Spring.

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 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 per 1,000 people in this period of all the governorates, including Cairo, mainly due to one major incident in 2012 called the Port Said Stadium riot, which saw 74 people killed and more than 500 injured.

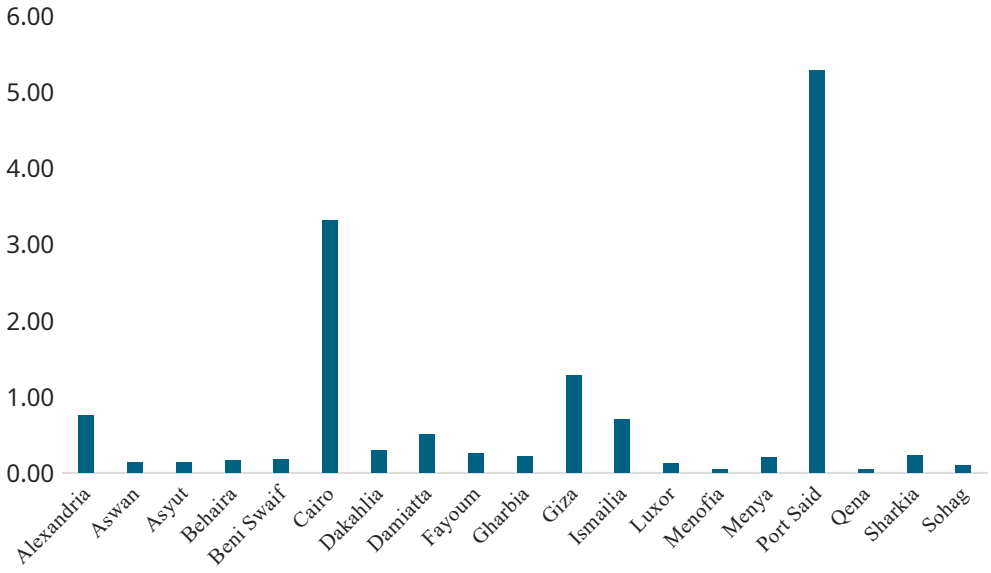


Figure 5.7: Protest Index: Casualties per 1,000 Persons per Governorate during the Arab Spring (2011–2014)

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 shows that the occurrence of the Arab Spring and the protest intensity per governorate have no statistically significant impact on tax morale, so we find no support for Hypothesis 1. Embracing democracy has 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 is statistically significant in explaining tax morale. When we added the updated democracy measure (Democracy), its coefficient is positive and marginally statistically significant (10% level), suggesting a positive association between embracing democracy and tax morale, which was positive but not statistically significant in the main analysis (Table 5.1).

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 not 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.

Fourth, the survey-based attitude measures may themselves have been affected by the political environment in which they were collected. Willingness to answer sensitive questions—such as the justifiability of cheating on taxes or the importance of democracy—may have differed between 2008, under the Mubarak re-

gime, and 2013, in the aftermath of the revolution. Echoing the social desirability considerations discussed in Chapter 2, part of the measured before/after change could therefore have reflected changes in reporting behavior rather than changes in underlying attitudes. This concern could not be ruled out with the available data, although it applied primarily to the overall pre/post comparison; the cross-governorate protest-intensity gradient would be affected only if reporting behavior changed differentially across governorates. 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

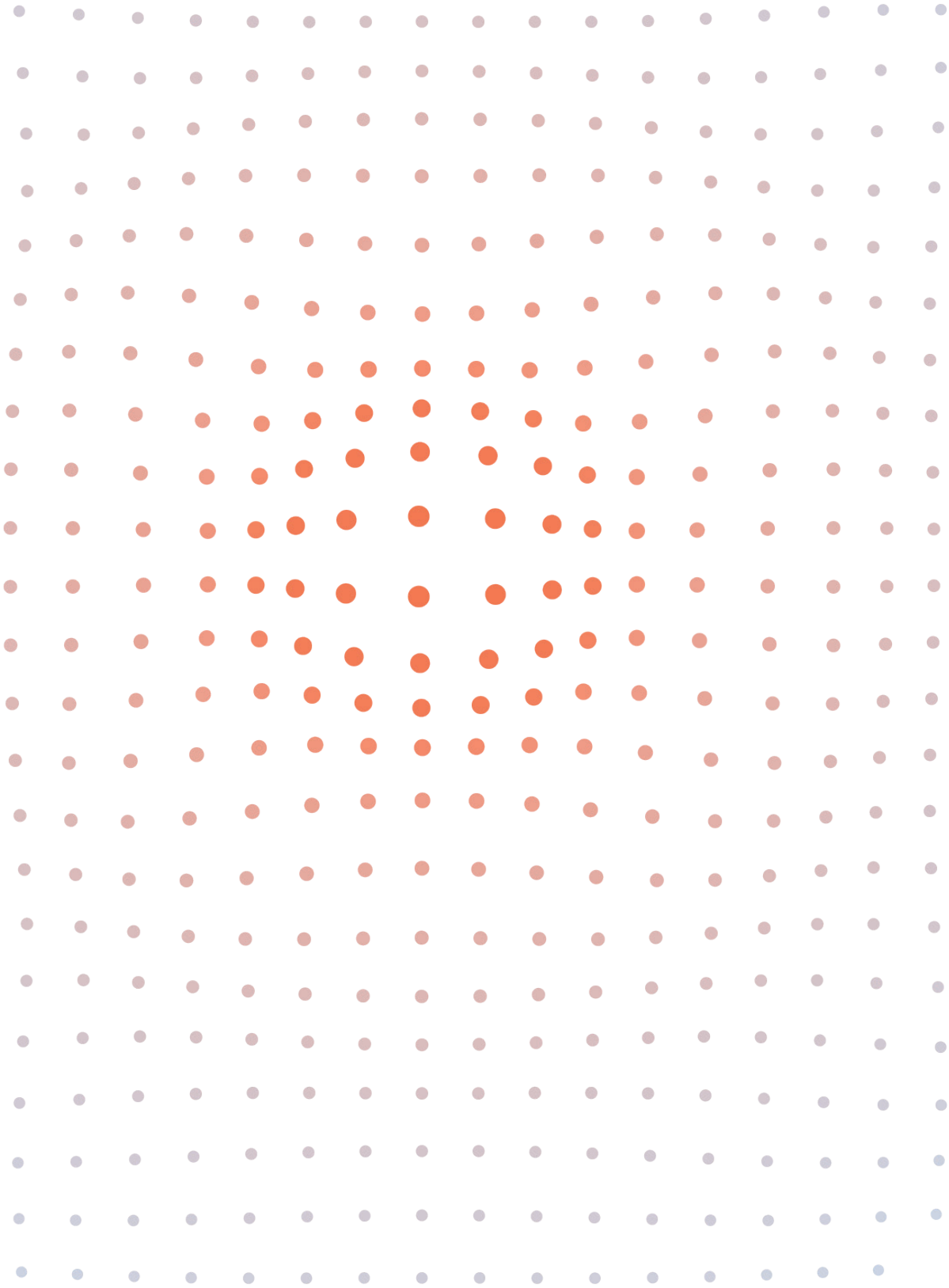
The Arab Spring in Egypt reveals a complex and non-linear relationship between economic realities, democratic aspirations, and tax morale. In this chapter, tax morale is lower in the post-Arab Spring period overall, yet protest intensity is positively associated with tax morale. Support for democratic principles points in the same positive direction, although the association is 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) exhibit higher tax morale, and protest intensity is also positively related to embracing democratic values. This protest-intensity association should, however, be read as suggestive rather than conclusive. This is because the protest intensity estimate is not statistically significant under wild cluster bootstrap inference (see Section 5.5.4), even though the overall post-Arab Spring decline in tax morale is robust to the same procedure. Yet, when democratic attitudes were examined as a potential channel, the mediation results do not provide strong evidence that they explain the relationship between protest exposure and tax morale. Where the indirect effect is statistically significant, it even operates 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 contributes to the

negative association between tax morale and the post-Arab Spring period, insofar as citizens' expectations for rapid economic improvement and fairer governance remain 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.

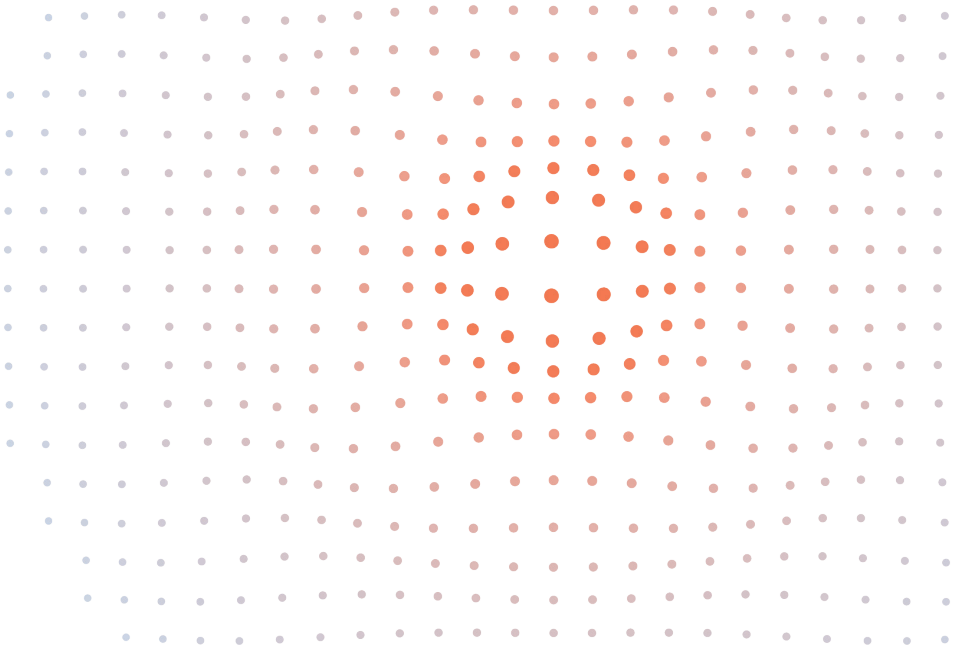
These findings have several implications for tax policy and governance in transitional democracies. First, they underscore the importance of managing economic expectations during political transitions. When citizens are mobilized around promises of social justice and improved living standards, the failure 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 highlight 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 limits strong causal claims, the patterns documented here indicate 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 show 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 (28 of which were classified as ex-communist), the analysis shows that individuals living in ex-communist countries tend, on average, to report lower tax morale than individuals in other countries, even many years after the end of communist rule. The negative association is particularly evident for ex-communist countries that are 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 is also negatively associated with tax morale: longer periods under Communism are linked to lower tax morale in the post-transition period. Because the duration specifications were estimated on a modest number of country clusters (31), this duration result was re-assessed with wild cluster bootstrap inference as part of a robustness check, under which it remains statistically significant.

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. The mediation analysis does not indicate that they fully account for the negative association between the communist heritage and tax morale. In other words, the results show a robust association between ex-communist status (and duration of communist rule)

and lower tax morale, but they do not pin down a single dominant mechanism. These findings are consistent with a broader literature that found persistent effects of regime history on contemporary political attitudes and preferences (e.g., Alesina & Fuchs-Schündeln, 2005; Pop-Eleches & Tucker, 2017), but the thesis itself remains cautious and confines 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 identifies four configurations (paths) that are 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, 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 finds 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 do 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 (Hypotheses 3 and 4). 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 shows a negative association with tax morale in the simplest specification, but this relationship becomes statistically insignificant once welfare spending and tax-policy controls are included. By contrast, direct stimulus per capita is consistently negatively associated with tax morale across specifications: higher per-capita direct stimulus is associated with slightly lower reported tax morale, even after controlling for welfare spending and state tax changes. Overall, the U.S. analysis suggests that neither the severity of the recession nor the total size of state-level stimulus packages has a robust positive association with tax morale. If anything, higher levels of direct stimulus correlate with slightly lower reported tax morale, once controls are included. These results do not provide evidence that larger stimulus packages or less severe local economic conditions systematically strengthen tax morale. Given the modest number of state clusters (29), the direct-stimulus association was re-assessed with wild cluster bootstrap inference (Section 4.6), under which it remains negative but is only marginally significant; in line with the interpretation adopted in Chapter 4, it is therefore best read as suggestive rather than definitive.

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 shows three central patterns. The post-Arab Spring period (time dummy) is negatively associated with tax morale: on average, reported tax morale is lower after the Arab Spring than before. Protest intensity at the governorate level is positively associated with tax morale; governorates with higher casualties per capita tend to show higher tax morale, conditional on other factors. This particular association is, however, sensitive to the small number of governorate clusters and does not remain statistically significant under wild cluster bootstrap inference, so it is best interpreted as suggestive. Meanwhile, the negative association between the post-Arab Spring period and tax morale is robust to that more conservative test. Embracing democracy (measured as a binary indicator based on the WVS question about the importance of living in a democracy) is positively, though not statistically significantly, associated with tax morale. When embracing democracy was

introduced as a potential mediator between protest intensity and tax morale, the results do not provide strong evidence that democratic attitudes explain the positive association between protest exposure and tax morale. Where indirect effects are statistically significant, they sometimes operate 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 suggests a layered picture: the Arab Spring as an event is associated with lower overall tax morale, but within that context, more intense protest exposure is associated with higher tax morale and stronger democratic aspirations. The results support 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 rely on observational data and are 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 suggest 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 remain negatively associated with tax morale even after controlling for corruption and inequality, and the mediation analysis finds no meaningful indirect effect through trust in government, expectations of government responsibility, or 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 is particularly pronounced among ex-communist democra-

cies 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) show that the link between crisis conditions, government response, and tax morale is weaker and more conditional than the initial hypotheses suggested. From a comparative perspective, the QCA in Chapter 3 finds four sufficient configurations associated with an increase in tax morale, but economic impact does not appear in any of the parsimonious solution paths — though the intermediate solution reveals it as a peripheral rather than core condition, appearing in four of six intermediate paths in its positive form. This means that, in the 14-country sample, countries with milder macroeconomic shocks are not systematically the ones where tax morale holds up. Likewise, the two paths involving fiscal stimulus — smaller total stimulus and, in externally triggered crises, smaller demand-based stimulus — contradict 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 appears more regularly among the paths where tax morale increases — pointing to governance and accountability dynamics as more prominent configurational factors than economic or fiscal conditions alone.

The U.S. analysis in Chapter 4 reinforces this message. State-level indicators of recession severity—the change in GDP growth, change in unemployment, and foreclosure rates—are not significantly associated with tax morale in 2011. Similarly, individual employment status (employed vs. unemployed) does not show significant differences in tax morale, although retirees and housewives/students have 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 is negatively associated with tax morale only in a simple specification and becomes insignificant once welfare spending and tax-policy controls are introduced, while direct stimulus per capita is consistently negatively associated with tax morale across models, although this association is only marginally significant under small-cluster-robust inference. Taken together, these results imply two major findings within the range observed in the data. First, there is 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 increase tax morale. Second, in the QCA, some countries with *smaller* and less demand-focused packages appear in configurations where tax morale holds up, and in the United States, higher direct stimulus per capita is associated with slightly lower reported tax morale. For policy debates, the contribution of Chapters 3 and 4 is 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 does 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 is associated with lower tax morale: the post-Arab Spring time dummy enters with a negative and statistically significant coefficient in the main specifications, implying a sizable decline in the probability of reporting that tax evasion is "never justified." This indicates that, in this case, a major democratic opening and change in regime type do not translate into higher average tax morale over the period covered by the surveys. Second, within that overall decline, there are positive associations between protest intensity, democratic aspirations, and tax morale. Governorates with higher protest intensity (measured by casualties per capita) have higher tax morale on average, although this association does not survive small-cluster-robust inference and is best read as suggestive; protest intensity is also positively related to embracing democracy. Embracing democracy itself is positively, though not statistically significantly, associated with tax morale, even though the mediation analysis shows that it does not operate as a straightforward channel explaining the protest–tax morale link. Where an indirect effect appears, 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 points 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 makes three 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 is 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 are subject to several limitations that follow 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 identify associations rather than causal effects. Although models incorporated relevant controls and, in some cases, alternative specifications, unobserved heterogeneity and reverse causality cannot be ruled out. The QCA analysis, similarly, identifies combinations of conditions that are consistent with outcomes in the observed cases, but does 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 capture stated attitudes toward tax evasion rather than actual behavior. They may also be 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 relating directly to tax compliance behavior. Third, institutional and contextual variables are necessarily simplified. Key elements such as communist heritage, protest intensity, and crisis responses are operationalized in ways that allow for cross-case comparison, but they inevitably abstract from local nuance. For example, the ex-communist dummy and duration measure cannot capture within-region variation in institutional experience; the fiscal stimulus indicators summarize complex policy packages; and the protest-intensity index cannot represent the full diversity of political mobilization across Egyptian governorates. Fourth, timing constraints limit the scope of inference. The Great Recession analyses relied on the timing of available WVS waves, meaning that changes in tax morale are captured over relatively long intervals rather than immediately before and after key policy events. Similarly, the Arab Spring analysis captures the early phase of Egypt's transition rather than a long post-transition trajectory. The results therefore describe patterns during specific windows, not permanent legacies. Fifth, in each of the three regression-based studies, at least some of the key specifications rely on a modest number of clusters (31 countries in the regime-duration specifications of Chapter 2, 29 states in Chapter 4, and nine governorates in Chapter 5). Standard errors were clustered at the level of the shock in all cases. To address this issue, I introduced a robustness check in each of these chapters whereby inference for the key coefficients was assessed with wild cluster bootstrap procedures (Sections 2.5, 4.6, and 5.5.4). The duration-of-communism result in Chapter 2 survives this more conservative test. Where the bootstrap results diverge from conventional inference, for the protest-intensity gradient in Egypt and, more mildly, for direct stimulus in the United States, the thesis calibrates its claims accordingly, distinguishing associations that survive small-cluster-robust inference from those that are suggestive. These limitations also suggest 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 demonstrates 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 show that neither the depth of the macroeconomic shock nor the size of stimulus packages systematically explains variation in tax morale, and that relationships between stimulus design and tax morale run counter to prominent expectations. The Egyptian case illustrates 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. 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			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
Ethiopia	Africa			X	
Georgia	Central Asia and Southern Caucasus			x	X
Hungary	Eastern and Southern Europe			x	
Kazakhstan	Central Asia and Southern Caucasus				X
Kyrgyzstan	Central Asia and Southern Caucasus		X		X
Latvia	Eastern and Southern Europe	X			
Lithuania	Eastern and Southern Europe	X			
Macedonia	Balkan	X	X		
Moldova	Balkan	X	X	X	
Montenegro	Balkan	X	X		
Poland	Eastern and Southern Europe			X	X
Romania	Eastern and Southern Europe	x		X	X
Russia	Central Asia and Southern Caucasus	x		X	X
Serbia	Balkan	X	X	X	
Slovakia	Eastern and Southern Europe	x			
Slovenia	Eastern and Southern Europe			X	x
Ukraine	Eastern and Southern Europe	x		X	x
Uzbekistan	Central Asia and Southern Caucasus				X
Venezuela	Latin America		X		
Zimbabwe	Africa		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, reverse-coded from the original 10-point WVS scale ("never justifiable" = 10; "always justifiable" = 1).	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.

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

Role	Variable	Coding / scale	Description (as used in analysis)	Source
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 between communist heritage and tax morale.	WVS, Waves 2–6.

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

Role	Variable	Coding / scale	Description (as used in analysis)	Source
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**	Binary: 1 if E037 = 10; 0 if 1–9	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).

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

Role	Variable	Coding / scale	Description (as used in analysis)	Source
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") and reverse-coded for the analysis. 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.

A1.Table 3: 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
AgeComm: Years lived under a communist regime	-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)

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 CommDr 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 AgeComm have p-values of approximately 0.10 (0.101 and 0.099, respectively) and are therefore treated as not statistically significant at conventional levels.

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

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

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
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

Notes: Table shows all 36 states with ARRA data; the 29 states in the estimation sample are listed in A2.Table 1.

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

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

US State	Personal Income Tax (TaxPI)	Sales Tax (TaxSales)	Business Tax (TaxBiz)
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

Notes: Table shows the 36 states covered in the source data; the 29 states in the estimation sample are listed in A2.Table 1.

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	2
	Broaden tax base	
	Increase for existing top bracket + Broaden tax base	
	Increase tax for all	
	Increase for all + Broaden tax base	

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	1
	Broaden tax base and/or increase for some goods	
	Permanent increase	
	Permanent increase + Broaden tax base	

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 2009	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

A2.Table 9: Welfare per state 2006–2011 and Average of Welfare spending within this duration (*continued*)

US State	Welfare per Capita 2006	Welfare per Capita 2008	Welfare per Capita 2009	Welfare per Capita 2011	Welfare per Capita_Avg
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 (2006–2011): Finance – Survey of Local Government Finances – Table 2[19], specifically amount of "public welfare" expenditure per state under **Social services and income maintenance. Table shows 35 states; the 29 states in the estimation sample are listed in A2.Table 1.**

19 For example: 2007 State & Local Government Finance Historical Datasets and Tables for 2007

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	4,607	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'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	TM	Binary: 1 if 'tax evasion is never justifiable'; 0 otherwise	Tax morale in Egypt (WVS question on 'cheating on taxes'). Recoded 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–Jun 2013 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).

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

Role	Variable	Coding / scale	Description (as used in analysis)	Source
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

Research: purpose, main results and conclusions

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 a 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 demonstrates 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 show that neither the depth of the macroeconomic shock nor the size of stimulus packages systematically explains variation in tax morale, and that the relationships between stimulus design and tax morale run counter to prominent expectations. The Egyptian case, which considers the political and economic dynamics of the Arab Spring, illustrates 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 of how these attitudes may evolve in moments of institutional and political change.

Relevance: contribution to science and to societal challenges

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. For example, 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 as a short-lived shock. Another chapter shows that 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 assum-

ing 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. Instead, they suggest that the effect of a political shock/opening on tax morale depends on the conditions in which it unfolds. In Egypt, a democratic opening coincided with an overall decline in tax morale where it was accompanied by economic deterioration, a closely contested and polarizing election, and unmet expectations of material economic improvement, even as protest exposure remained positively associated with democratic aspirations. For policymakers, the relevant lesson is therefore not an institutional prescription but a warning that a transition that fails to deliver on economic expectations, or that leaves large groups feeling they are on the losing side, can erode willingness to pay taxes even as civic engagement rises.

Methodologically, the thesis extends the toolkit available to tax morale research in three ways. First, it applies qualitative comparative analysis to existing literature that has relied almost exclusively on regression analysis. Second, the thesis constructs new empirical measures, notably the duration of communist rule and a governorate-level protest-intensity index. Finally, the thesis reports small-cluster-robust (wild cluster bootstrap) inference alongside conventional inference wherever the number of clusters is modest, distinguishing findings that survive that more conservative test from those that are suggestive.

Target group: to whom the findings are relevant, and why

The findings are relevant to four groups. First, politicians, finance ministries and tax administrations in post-communist and transition economies, for whom the results on regime legacies and on the limited short-run effect of formal democratization on tax attitudes bear directly on the design and sequencing of tax reform and taxpayer-engagement strategies. Second, policymakers designing fiscal responses to economic crises, for whom the Great Recession chapters offer evidence that the composition of stimulus packages, and citizens' perceptions of fairness in how a crisis is managed, may matter more for tax morale than the size of the response. Third, international organizations that advise on domestic revenue mobilization and tax reform, for whom the cross-national comparison provides a cautionary note against transferring policy expectations between countries with different political histories. The fourth target group is the academic community working on tax compliance, political economy, and post-transition societies, for whom the assembled data sets, the new measures, and the configurational approach provide material for replication and extension.

Activity: how these groups can be involved and informed

A substantial part of the work behind this thesis consisted of identifying, cleaning, harmonizing, and merging secondary data from many sources into analysis-ready data sets, one for each empirical chapter, and these data sets are themselves a product that can be used by others. For Chapter 2, individual-level responses from five waves of the World Values Survey (WVS) were combined with country-level indicators of corruption and inequality and with a newly coded classification of regime history, including the start and end dates of communist rule, from which the duration measure was constructed. For Chapter 3, in addition to having a country-level view of tax morale before and after the Great Recession from the WVS, country-level data on the economic impact of the recession (World Bank), fiscal stimulus packages (OECD), changes in ruling party (ParlGov), and the trigger of the recession were assembled and calibrated for the fourteen countries in the qualitative comparative analysis. For Chapter 4, state-level stimulus allocations in the United States were recovered from the internet archives of Recovery.gov, since this website and related data are no longer readily available online, and combined with data from the Bureau of Economic Analysis, the Bureau of Labor Statistics, foreclosure data reported to Congress, state welfare-spending and tax-policy records, and the World Values Survey for 29 U.S. states. For Chapter 5, governorate-level casualty records from the Egyptian Revolution Database compiled by the Egyptian Center for Economic and Social Rights were matched to governorate populations and to World Values Survey responses from before and after the Arab Spring to construct the protest-intensity index.

These data sets, together with the code used to produce the results and the robustness checks, will be deposited in the UNU-MERIT Dataverse so that researchers and analysts can replicate the analysis, extend it to further survey waves, or apply the new measures in other settings. The academic community will further be reached through publication of the individual chapters as journal articles and presentation at academic conferences. Policy audiences will be reached through shorter, non-technical outputs prepared with the UNU-MERIT communications office, such as policy briefs and blog posts that translate the findings for tax administrations, crisis policymakers, and international organizations, with emphasis on the cautions the evidence supports rather than on prescriptions it cannot. Finally, the thesis's central message, that citizens' willingness to pay taxes is shaped by history, by the perceived fairness of crisis management, and by the dynamics of political transition, and not by economic conditions alone, will inform my own teaching and executive-education work on public policy and organizational transformation, where it offers a grounded case for treating institutional trust as a resource that is slow to build and quick to spend.

CURRICULUM VITAE

Dina Kamal has worked for more than twenty-five years across technology, business strategy and economics. She holds a Bachelor of Electrical Engineering with honors from Alexandria University in Egypt, an MBA with distinction from the joint program of Cornell University and Queen's University, and a Master of Public Administration with distinction from the London School of Economics and Political Science. In 2017 she joined the dual-career PhD program at UNU-MERIT and Maastricht University, where she wrote this thesis on how economic and political shocks relate to citizens' willingness to pay taxes.

Dina's career spans working in more than a dozen countries and collaborating and leading teams across many cultures and geographies, always applying her multi-faceted academic background to bridge the worlds of business, public policy and technology. Dina mentored AI ventures at the Creative Destruction Lab at the University of Toronto and served on the boards of the Toronto Mendelssohn Choir, where she chaired the Governance Committee, and of Girl Guides of Canada. She is also on the advisory boards of Dialogue Action and of the Lassonde School of Engineering at York University. Dina is currently Field Chief Technology Officer and Chief Revenue Officer at DataBahn.ai in Toronto. She also teaches part time in the Rotman School of Management's executive program on Generative AI and Organizational Transformation.

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This thesis examines how economic and political shocks relate to citizens' tax morale, their willingness to pay taxes. It draws on four studies: of the communist heritage, of the Great Recession across fourteen countries and in the United States, and of the Arab Spring in Egypt.

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