Title

Trust and Taxes: Public Perceptions of Property Tax Legitimacy in Urban Mexico

Author

Echavarria, Aurora Del Carmen

Publication Date

2025

Peer reviewed|Thesis/dissertation

UNIVERSITY OF CALIFORNIA

Los Angeles

Trust and Taxes:

Public Perceptions of Property Tax Legitimacy in Urban Mexico

A dissertation submitted in partial satisfaction of the

requirements for the degree Doctor of Philosophy in

Urban Planning

by

Aurora Del Carmen Echavarria

2025

ABSTRACT OF THE DISSERTATION

Trust and Taxes:

Public Perceptions of Property Tax Legitimacy in Urban Mexico

by

Aurora Del Carmen Echavarria
Doctor of Philosophy in Urban Planning
University of California, Los Angeles, 2025
Professor Paavo Monkkonen, Chair

Property taxes are the primary own source of revenue for local governments, enabling them to provide services and infrastructure that better respond to the needs of urban residents. Yet, this tax is highly unpopular. Weak public support for property taxes erodes the political will of government officials to update cadaster bases and apply measures that motivate compliance. This ultimately weakens revenue and the ability of local governments to invest in urban infrastructure and services. The result is a negative feedback loop in which inadequate service provision erodes the trust of urban residents and further escalates the political costs of property tax increases.

This dissertation explores the factors that contribute to the weak public support for this

tax. Using the case of Mexican cities, it investigates the specific challenges of property tax collection in contexts where there is low trust in local government. Across three essays, the dissertation addresses the questions: What influences support for property taxation? How do public perceptions of local government influence support or opposition for this tax?

The first essay uses a conjoint experiment in large Mexican municipalities to study the multidimensional character of property taxes. It examines how urban residents' expectations of benefits, and the appropriate use of funds influence their support for more accountable property tax policy. The second essay examines how the challenges to accurately assess property value in Mexico City create vertical and horizontal inequities in property assessments and property taxes. It draws on an experimental field survey to investigate how the presence of inequities undermines the perceived legitimacy of property taxes. The third essay examines the use of property taxation as a tool that both limits and constitutes property rights. This study focuses on how urban residents perceive instruments that constrain the full exercise of property rights and the factors that influence this. The dissertation finds through these three essays that property taxes reflect a relationship between urban residents and local government, which is largely defined by trust in local government and perceptions of fairness.

The dissertation of Aurora Del Carmen Echavarria is approved.

Darin Christensen

Diane Davis

Veronica Herrera

Paavo Monkkonen, Committee Chair

University of California, Los Angeles

2025

Contents

1 Introduction **1**

2 Essay 1 **5**

2.1 Introduction . . . 6
2.2 Perceptions of Property Taxes . . . 8
2.2.1 Credible Commitment . . . 9
2.2.2 Policy design for accountability . . . 11
2.3 Institutional Context . . . 16
2.4 Empirical Strategy . . . 18
2.4.1 Survey design . . . 19
2.5 Analysis . . . 20
2.5.1 Perceptions of property taxes . . . 20
2.5.2 Conjoint analysis . . . 22
2.5.3 Main Effects . . . 23
2.5.4 Heterogenous effects: Perceptions of government . . . 27
2.5.5 External validity . . . 34
2.5.6 Discussion . . . 35
2.5.7 Conclusions . . . 37

3 Essay 2 **39**

3.1 Introduction . . . 40
3.2 Theoretical Setting . . . 42
3.2.1 Inequity in property taxation . . . 42
3.2.2 Consequences of tax inequity . . . 44
3.2.3 Property tax context: Mexico City . . . 48
3.3 Current assessment and rate system . . . 52
3.4 Qualitative Findings: Top-down and bottom-up evidence on inequity . . . 60
3.4.1 Government official interviews . . . 60
3.4.2 Focus groups . . . 61
3.5 Methodology . . . 64
3.5.1 Experimental design . . . 64
3.5.2 Outcome Variables . . . 69
3.5.3 Hypotheses . . . 70
3.5.4 Analysis and Results . . . 70
3.5.5 Treatment effects . . . 72
3.5.6 Discussion . . . 75
3.5.7 Conclusion . . . 76

4 Essay 3 **78**

4.1 Introduction . . . 79

4.2 Perspectives on Property . . . 81
4.2.1 Limits to property rights and ownership . . . 83
4.2.2 Limits to land use . . . 84
4.2.3 Land value capture mechanisms . . . 85
4.3 Socioeconomic and social characteristics . . . 87
4.4 Mexico City Context . . . 88
4.5 Research Design . . . 90
4.5.1 Qualitative evidence . . . 90
4.5.2 Experimental Survey . . . 93
4.5.3 Distribution of responses . . . 95
4.6 Analysis . . . 98
4.6.1 Commonality Analysis . . . 98
4.6.2 Models . . . 100
4.6.3 Matching on Quality . . . 105
4.6.4 Discussion and Conclusions . . . 107

5 Annex: Essay 1 **109**
5.1 Essay 1: Annex 1 . . . 109
5.2 Essay1: Annex 2 . . . 110

6 Essay2:Annex **116**
6.1 Essay 2: Annex 1 . . . 116
6.2 Essay 2: Annex 2 . . . 119
6.2.1 Essay 2: Annex 3 . . . 123
6.3 Essay 3: Annex . . . 126
6.3.1 Essay 3: Annex1 . . . 126
6.3.2 Essay 3: Annex2 . . . 129

7 References **131**
7.1 Introduction . . . 131
7.2 Essay 1 . . . 131
7.3 Essay 2 . . . 135
7.4 Essay 3 . . . 138

List of Figures

1 Analytical Framework: Two Routes towards Credible Commitment 15
2 Motivations for property tax payments 21
3 AMCE of Main Effects 24
4 Heterogenous effects of trust in government competence and performance . . 29
5 Heterogenous effects of trust in government competence and performance . . 30
6 Support for use of revenue 31
7 Heterogenous effects of perceptions of government honesty 32
8 Heterogenous effects by category 33
9 Cadaster land values in neighborhood of Del Valle, Mexico City 54
10 Relationship between listing values and cadaster land values by zone 56
11 Ratio of cadaster land values to listing values 56
12 Ratio of cadaster value to land listing value grouped by market value of zone 57
13 Average treatment effects of horizontal inequity 74
14 Trend of distribution of responses 96
15 Preferences by category 97
16 Shared and unique variance by group with commonality analysis 99
17 Distribution of responses by quality of services and infrastructure 106

List of Tables

1 Accountability in Property Tax Process 12
2 Policy Designs for Accountability and Experimental Categories 15
3 Conjoint dimensions and attributes with baseline categories 23
4 Vertical and Horizontal Inequities in Mexico City's property assessments . . 59
5 Participants by group assignment 67
6 Distribution of participants by census block socio-economic level 68
7 Distribution of participants by census block segregation level 68
8 Balance table 71
9 Summary Statistics of Outcome Variables and Covariates 72
10 Comparison of Treatment Effects on Outcomes 73
11 Correlation Matrix of Policy Preferences 95
12 Results of linear regression model (Models 1-4) 101
13 Results Model 5-7 104

Aknowledgements

I am deeply grateful to my dissertation committee, whose encouragement and guidance have made this dissertation possible. Paavo Monkkonen demonstrated consistent openness, patience, and steadfast support throughout the development of this project. I am especially grateful for his early encouragement of my interests on land value and property taxation. His generous feedback and insights helped shape many of the questions at the core of this dissertation. Darin Christensen continually helped me synthesize complex ideas into clear arguments. His guidance provided me with great comfort and confidence to tackle new methodologies in this study– he never hesitated to pull out a pen and paper to work through a problem with me, and for that, I am incredibly grateful. My conversations with him represented a grounding force throughout this journey and are some of the most cherished aspects of my PhD experience. Veronica Herrera encouraged me early on to integrate a political science perspective into my approach as a scholar. An early field paper I wrote on bureaucracy under her guidance exposed me to new ways of thinking about local government and taxation, setting the foundations for this dissertation project. Her encouraging words and support have been a beacon of light for me throughout this process. Diane Davis has nurtured my passion for urban planning from the beginning. Her push to contextualize my research and think about how history and place influence current conditions made this study more grounded and richer than it would have been without her mentorship. I am also deeply grateful for the feedback and insights from Michael Manville at the beginning of my PhD studies and of this dissertation.

Throughout the process of defining my research, I had many conversations with brilliant scholars who helped shape how I understood and approached this project. I am particularly grateful to Nestor Castañeda, José Loya, Edith Jiménez, Alisha Holland, Emma French, Ivan Verbel, Clara Salazar Cruz, and Julian Michel. I am grateful to Isaac Martin, who provided guidance and feedback on parts of this dissertation, and Monica Unda, whose work served as a strong foundation for the development of this research. I thank her for sharing feedback on early versions of my survey and for conversations that helped guide my research path. I greatly appreciate the feedback from Darin's student advising group and the insights from Frank Wyer, Daniel Carnahan, and especially Kevin Grieco, who provided comments on my field survey and was always willing to talk about proeperty taxes with me. I am also grateful

to participants in the APSA Political Economy Workshop, ACSP, and the Political Economy of Land and Property writing group who provided feedback to different components of this dissertation.

My field research would not have been possible without the generous financial support of the Fulbright-Hays Scholarship and the C. Lowell Harriss Dissertation Fellowship from the Lincoln Institute of Land Policy. During my time in Mexico City, I was a visiting scholar at the Colegio de México, an experience that enriched this study in countless ways. I am especially grateful to Mariano Sánchez Talanquer and the Center of International Studies in the Colegio for their generous welcome. This experience was intellectually invigorating and I deeply benefited from conversations with Alejandra Trejo Nieto, Alice Krozer, Gerardo Esquivel, Vicente Ugalde, and Diego Castañeda. I am also grateful to Antonio Azuela for conversations at different points throughout this project, as well as Camilo Saavedra Herrera, Carlos Morales Schechinger, Lidia Gonzalez Malagon, Jorge Gallegos Contreras, Andres Reyes Rodriguez, Nicolas Zuñiga Espinoza, Abril Varela Varela, Gorka Zubicaray, Alejandra Lopez Galvan, and Ramiro Rios.

I am profoundly grateful to Selene Galeana Cruz, a dear friend, whose support was invaluable for the organization and undertaking of focus groups. Thank you to Lorelei Ramirez for sharing this experience with me, laughing with you has been one of the ways I have found sanity in this process. Dima Ayyash has been a steady source of guidance from the outset of my interests in urban planning and I am grateful for her care and thoughtful advice. I am also grateful to Katherine Pineda, Maria Carolina Lopez, and my PhD colleagues, particularly AnMarie Mendoza, Chris Giamarino, and Irene Farah.

I am infinitely grateful to each of the 3,303 individuals throughout Mexico that interacted with this research through surveys, focus groups, or interviews. There was not a single interaction that did not leave me humbled and absolutely in awe of people's generosity in sharing their experiences and views with me. I am deeply indebted to their participation and will ensure that this research makes their way back to them.

This PhD journey has truly been a group effort, and I am indebted to my loved ones whose support has been indispensable throughout this process, particularly in moments when life seemed to come up against the research. I am grateful to my grandmother for housing and caring for me at multiple points throughout the writing of this dissertation and to my grandfather for instilling in me an interest in taxes and the labyrinth of land use regulations in Mexico. Thank you to Margot and Nadir for their motivation and patience. I am also

grateful to my father, who has been a model of gumption and perseverance throughout my life. My brother, who helped pave the way for me and, by doing so, gave me the confidence to pursue my own passions. He always encouraged me to go at my own pace and take care of myself. I am deeply indebted to my wonderful partner and best friend, whose companionship and love carried me through this intellectual journey. Finally, I am eternally grateful to my brilliant mother who accompanied me in every step of this adventure and who has always believed in me and the beauty of my ideas.

VITA

2015	MS Urban Development Planning, University College London
2014	BA in Geography, George Washington University
2014	BA in International Affairs, George Washington University

PUBLICATIONS

Echavarria, A., Monkkonen, P. (2025). Challenges to Equitable and Effective Land Value Capture: Lessons from Mexico City. *Urban Affairs Review*, 0(0).

https://doi.org/10.1177/10780874251323896

Monkkonen, P., Barrall, A., Echavarria, A. (2024). Meaningful Action: Evaluating Local Government Plans to Affirmatively Further Fair Housing in California. *Housing Policy Debate*, 1–25. https://doi.org/10.1080/10511482.2024.2337033.

Monkkonen. P., Echavarria, A., and Cañez, J. "Planificación Urbana En México: La Aplicación de Los Nuevos Lineamientos Federales En Los Procesos Municipales." *Vivienda Infonavit* 6 (2022): 66–72.

Echavarria, A., Agrawal, M and Hebbert,M. (2021). Chapter 1: Planning and Development Standards: Challenges for Planning with Informality in the Global South. Conversations in *Planning Theory and Practice Booklet Project*. Dortmund, Germany: Association of European Schools of Planning-Young Academic Network. AESOP.

Pereira, L., Echavarria, A., Mazorra, A., Mireles, R., Mejia, S. Pena, P. (2020, September 2) Patrones de movilidad con perspectiva de genero en la Ciudad de Mexico. Caracas: CAF. http://scioteca.caf.com/handle/123456789/1635

1 Introduction

For the past 18 years, Carolina and her husband have resided in the Mexico City borough of Magdalena Contreras, where they share a lot of land with her in-laws.[1] Every year, their family pulls together enough money to pay their property taxes, which they say increase annually. When asked about their tax payment, they express a lack of trust that funds are actually used by the government to provide services, citing corruption and the deteriorated services in their neighborhood. These factors, along with the separate fees they pay for services like street lighting and water, contribute to their weak association between tax payments and public services. Throughout our conversation, the couple also voiced confusion about how the government calculates their tax, sharing their concern that their property is incorrectly classified as being within a 'residential zone'. They see these inconsistencies as part of a systemic issue in property tax administration where "those who have more pay less than they should, while others pay what they should". Overall, they express a general frustration with this tax, which they perceive less as a contribution for public services than as a rent to the government for something they already own or a way to continuously affirm their connection to their property.

Urban residents, like Carolina and her husband, demand basic goods and services, such as responsive police services to address their security concerns, efficient drainage systems to prevent flooding, consistent water services, well-maintained sidewalks and streets, sustained street infrastructure, and general government responsiveness to the needs of its citizens. And while they recognize that property taxes are an essential source of revenue for local governments to achieve these objectives, they generally perceive a lack of clarity in tax calculation and spending, leading them to be weary of increases and changes.

Although property taxes represent the most important source of own revenue for local governments, officials recognize that the tax lacks public support, making them weary of the potential political cost of increasing this tax or updating cadaster bases (Christensen and Garfias 2021; Jibao and Prichard 2015). This ultimately weakens local government's ability to collect revenue and effectively address the needs of their residents (Canavire-Bacarreza and Espinoza 2015; Bird and Slack 2006; Weingast 2009). Thus, there arises a tension in which local governments need funds but are hesitant to increase property taxes by updating

[1] Names have been changed.

cadaster bases or applying stronger enforcement measures. Currently, most municipalities motivate compliance by offering early payment discounts and holding raffles for taxpayers.

Policy recommendations to strengthen property tax revenue focus on actions such as maintaining accurate cadaster bases, promoting administrative capacity, and facilitating payment methods (Esquivel 2024; Rios 2021; Unda 2017; Bird and Bahl 2008). However, these recommendations overlook the relational and communal aspects of property taxes, which are predicated not on technical improvements, but on government trust and perceptions of legitimacy. Overall, urban residents lack trust in local government processes and the use of funds, concerns that are often overlooked in property tax collection strategies.

These contradictions, tensions, and perceptions are the focus of this dissertation. Here, my objective is to draw attention to three elements of property taxation that are often overlooked or neglected in the literature.

First, property taxes play a central role in shaping the relationship between urban residents and their local government. This functions as a type of exchange that is based on a mutual set of expectations between residents and the government. In this exchange, the government is expected to apply taxes fairly and use the collected revenue towards services and infrastructure. Meanwhile, residents are expected to pay their taxes. This is a fragile equilibrium that would erode if any party began to act in a fully self-interested way (Timmons 2008). For example, if the government began abusing its collection powers, minimizing costs by not spending funds appropriately, or stopped enforcing the tax (Levi 1988). Alternatively, if residents wanted to free-ride and avoid contributing. Taxpayers are therefore motivated to pay into this system only if they believe that they will be treated fairly and that government will use funds appropriately. In this dissertation, I analyze the multiplicity of factors that contribute to establishing the government's legitimacy to tax property. I therefore use property taxation as a way to examine the relationship between urban residents and their local government.

Secondly, because property taxes are a distinctively local tax, scholars have often referred to this tax as a "benefit tax" (Fischel 2009; Oates 1969). This U.S.-based scholarship contends that property owners are motivated to pay this tax by the direct benefits they will receive in the form of services and infrastructure or tax capitalization in property values. However, limited scholarship from outside of the U.S. has considered whether this characteristic of property taxes holds in different contexts. In low-trust contexts, it remains unclear whether taxpayers prioritize direct benefits from their tax payments over ensuring the proper use of funds that might generate broader indirect benefits. In this dissertation, I challenge and

expand on the benefit view of property taxation.

Thirdly, an often overlooked characteristic of property taxation is the role it plays within broader property relations. For example, I identify that in Mexico urban residents view property taxes as both an instrument to solidify property rights and a tool that the government uses to limit their full property rights. Thus, property rights are both a consequence of property rights and a way to constitute property rights (Goodfellow 2018). This characteristic of property taxes, which has received little attention in urban scholarship, is a central point of analysis in this study.

This dissertation addresses these concerns by drawing on 53 interviews with urban residents, over a dozen interviews with past and current government officials, 5 focus groups with over 40 participants overall, and two surveys with more than 3,200 total respondents. I organize this study in three essays.

In the first and second essays, I specifically consider property tax preferences, as well as the ways that government establishes the legitimacy to tax property. These essays detail the ways that urban residents demand more legible tax policy in terms of both how the government calculates property taxes and spends property tax revenue (Scott 2020). The first essay uses an experimental conjoint survey to study preferences for property tax policy design and presents evidence to support the argument that accountable property tax policy design can support the establishment of credible commitment. I initially expected to find that urban residents dislike property taxes and could only be incentivized to support them through the promise of increased individual benefits. However, I find that residents are not particularly concerned with the direct benefits they receive from their tax payments. Instead, residents are consistently concerned about whether their tax payments will be used properly.

In the second essay, I demonstrate how the attempt of local governments to make property value knowable and legible can result in gross oversimplifications that propagate inequities. I trace the history of this tax in Mexico City in order to show the evolution of assessment practices of measuring value in order to tax it. This leads to an analysis of the current assessment practices in Mexico City, which have numerous systemic inconsistencies that propagate horizontal and vertical inequities. Vertical and horizontal inequities are common throughout the city and at different levels of property value. Through an experimental survey, I demonstrate that the presence of inconsistencies in taxation, such as its inequitable application, can undermine the legitimacy of this tax, particularly among individuals with the highest levels of support for the tax.

Finally, the third essay of this dissertation focuses on property taxes as a mechanism for local governments to apply limits to property rights. I examine how demographic, built environment, and governance factors relate to the level of acceptance that residents have of instruments that governments use to apply limits to property, such as expropriation, land use regulation, and land value capture mechanisms. In this essay, I consider property taxes within a broad range of instruments that limit what people can and cannot do with their property. In this way, this study broadens the conceptualization of property rights and motivates urban scholarship to approach the study of property outside the context of informality.

These essays combined reflect my view that property taxes are fertile ground for study within urban planning scholarship. Although this dissertation is situated in the context of Mexican municipalities, the implications extend beyond these geographies. Findings from this study are relevant to understanding the use of this distinctive form of taxation in other developing contexts characterized by low trust or where political factors take precedence over technical considerations. My hope is that this study also contributes to previous studies that situate questions of property at the center of property tax research, insofar as it works to demonstrate that individuals do not only perceive property taxes as a fiscal instrument, but also as a way the state defines and redefines property rights (Goodfellow 2017; Goodfellow and Owen 2018).

2 Essay 1

Can Policy Design Establish Trust in Local Taxation? Experimental Evidence from Mexican Municipalities

> The revenues of the state are a portion of that each subject gives of his property in order to have the security of the rest.
>
> — Montesquieu, *The Spirit of the Laws*, 1748

Abstract

Property taxes, the primary source of local revenue for municipal governments, are crucial for improving urban service provision and resident welfare. Yet this tax is widely unpopular and often at the center of resident protests and political push-back. In this study, I ask: Can policy designs increase support for property taxes? And can property tax design serve as a path for establishing credible commitment when there is low trust in the government's ability to provide benefits? I address these questions using an experimental conjoint survey with over 2,000 property owners in 35 urban municipalities in Mexico. I analyze their preferences across seven dimensions of property tax policy. Findings demonstrate that property owners prefer property tax policies that increase the accountability of how the government calculates, administers, spends, and enforces property taxes. For example, the implementation of a strategy that integrates citizen oversight in the use of funds increases the support for a policy by 11 percentage points. In particular, the data indicates that the respondents preferred strategies that improved transparency in government's funds management than those that made the benefits of their tax payments more direct. In an analysis of heterogeneous effects, I identify that individuals with low levels of trust in the government's ability to provide benefits are significantly more likely to oppose property tax increases and more likely to support policies that redirect a portion of funds back to the neighborhoods in which they are collected. The findings of this study prompt important questions for urban scholars about the trade-offs that local governments may face in promoting property tax support and compliance while simultaneously preserving the redistributive character of property taxes.

2.1 Introduction

As urban populations expand and demands for services increase, local governments in Latin America face mounting pressures to meet the basic service and infrastructure needs of their residents. Indeed, only 34 percent of Latin American residents reported being satisfied with their municipally provided services (LAPOP 2023).[2] Issues such as long commute times, inadequate security, limited housing accessibility, and poor maintenance of roads and public services negatively affect the daily lives of residents and have exacerbated the fragmentation of urban spaces as wealthier individuals increasingly seek to satisfy these service needs through private means (Libertun De Duren 2006). Budget constraints that hinder infrastructure investment in the region exacerbate these challenges (Fay et al. 2017).

Many local governments in the region depend on transfers from the central government and face substantial limitations in collecting local revenue. Reliance on central government transfers, many of which are earmarked, restricts the autonomy of local governments to decide how they spend their revenue and ensure that expenditures best reflect the needs of their population (Jibao and Prichard 2015). Property taxes, the most important own source of revenue for local governments, enable municipalities to leverage local land and property wealth to fund urban services and infrastructure. However, property owners strongly dislike property taxes due to their direct collection and frequent increases based on changes in property values that are difficult to perceive (Cabral and Hoxby 2012).

Adequate property tax collection requires coordination among different actors, each with distinct incentives and motivations. Politicians want to be reelected, bureaucrats want to ensure revenue is efficiently and effectively collected to carry out the necessary government actions, and property owners want to receive better public services without increasing their tax burden (Steinmo 1993). Concerns of property owner opposition and the political costs of increasing property tax collection make local politicians reluctant to support increases to property tax bases and rates (Christensen and Garfias 2021). In Mexico, local politicians often approach property tax increases as a partisan issue and vote on increases based on party affiliation.[3] Additionally, they may support and promote citizen protests of property

[2]Optional questions only applied in Mexico, Guatemala, El Salvador, Honduras, Costa Rica, Panama, Ecuador, Peru, Paraguay, Chile, Uruguay, and Argentina.

[3]This exemplified in a speech in the Zapopan city council meeting from council member and previous mayor of the municipality Tlajomulco, Alberto Uribe Camacho: "As part of the opposition and additionally from Morena, I have to vote against (a property tax increase), but I don't know, I also have the soul of a public servant that understands that it is basic to get into the base value tables, it is not possible to take three years without changing them…". August 30,2022

tax increases as seen in the cases of several municipalities in Nuevo Leon in which opposition parties coordinated property tax protests (Chio 2021).

Local governments in Mexico face a challenge in that local residents demand improved service provision but resist the taxes that are necessary to fund them. At the same time, property owners do not believe that their municipal government will indeed use property tax revenues effectively, and for the objectives of improving municipal service provision, in other words, there is low credible commitment. I draw on the work from North and Weingast (1989) who demonstrate that credible commitment can be established through two paths, either by fortifying trust in government or through the use of institutional and structural factors that constrain government action and guarantee that it effectively fulfills its commitments.

I examine these concerns in the context of Mexico, a middle-income country whose cities face many of the same issues of cities in Latin America, such as high dependence on federal government transfers, populations with liquidity constraints, high levels of real and perceived corruption, and low satisfaction with municipally provided services and infrastructure. Mexico is a particularly insightful case study because it is one of the countries with the lowest rates of taxes from property by GDP among countries in the OECD and the Latin American region. Nonetheless, all countries in the region are behind many of their European and North American countries making the presented findings applicable beyond large urban municipalities in Mexico (Annex 1- Figure 1).

In this paper, I posit that property owners will support property tax policy designs that enhance the accountability of government, and thus enable structural conditions that establish credible commitment. I hypothesize that I will observe stronger support for policy that increases the accountability of government from property owners who have low certainty that tax payments will result in improvements and who have high perceptions of corruption. I use an experimental conjoint study of over 2,000 property owners in 35 urban municipalities in Mexico to study multidimensional preferences of property taxes.

I find that property owners more strongly support property tax policy that increases the accountability of government, particularly in terms of how it administers and spends property tax revenue. In contrast, I find lower levels of support for measures that increase the accountability in how government calculates this tax. Findings from this study also demonstrate that individuals with low levels of trust in government are less likely to support property tax increases in general and more likely to support property tax policies that redirect a portion of taxes collected in their neighborhood back to their neighborhood. Urban scholars

and policy makers should consider how local governments can adopt strategies that increase their credible commitment without compromising the potential of local taxes to redistribute property wealth. This case illustrates how local taxation is embedded in broader urban governance challenges.

This paper is organized as follows. In the first two sections, I review the relevant scholarship and present my analytical framework. I then contextualize property taxes in Mexican municipalities and justify my case selection. In the fourth section, I present the empirical strategy for analyzing the main and heterogenous effects of the conjoint survey. I show the results and offer a discussion of their implications in the fifth section. The final section concludes.

2.2 Perceptions of Property Taxes

Taxation is a fundamental part of the relationship between citizens and the state and often elicits strong opinions from taxpayers. One of the taxes that prompt the strongest opinions from taxpayers is property taxes. The dislikability of property taxes has been confirmed by previous survey-based research. For example, Carbal and Hoxby (2012) review surveys on tax preferences from 1972 to 2005 and find that the U.S. population consistently classifies property taxes as the most disliked tax with income tax being a distant second.

Opposition to property taxes partly stems from the fact that they are highly visible taxes across many dimensions (Slack 2001). Firstly, they are a direct tax that is actively paid annually, which makes the amount owed highly salient to taxpayers. Secondly, it taxes an object that is a very publicly visible asset. Furthermore, property tax revenue funds public services and infrastructure that are tangible to taxpayers. The local nature of property taxes further enhances their visibility since property owners can continually evaluate how the government uses their tax payments, a weaker consideration with federal taxes. Because of the payment-benefit connection, individuals may feel that an increase in their property assessments does not coincide with an increase in their property value, nor the reality of services and infrastructure provided. Finally, because property tax bases do not grow organically and base values require deliberate updates from government officials, changes are more noticeable to taxpayers (Bird and Slack 2004).

While scholarship on perceptions of property taxes is scarce, studies on the benefit view of the property tax offer some guidance as to how people may perceive this tax. The benefit view of the property tax establishes that property owners pay their property taxes with the

expectation that the funds will be used towards service and infrastructure improvements that will either benefit them directly or indirectly by uplifting their property values (Fischel 2005; Oates 1969). This perspective emphasizes the local character of the tax and frames property taxes as a direct payment for benefits received. While this is useful for understanding property owner motivations, this scholarship has primarily emerged from the U.S. context, which limits its usefulness in interpreting these conditions in other settings. In particular, U.S. based scholarship largely overlooks concerns about how the expectations of benefits could influence perceptions of property taxes. This point is particularly relevant in low-trust contexts, where residents may have significant doubts about the appropriate use of funds by their local government. Additionally, U.S. based scholarship on property taxes largely assumes that all taxpayers act in self-interested ways and always seek the most direct benefits. However, motivations for tax payments may be more socially focused than economists assume in some settings.

2.2.1 Credible Commitment

The expectation of receiving benefits from taxation is a central tension within taxation. Paradoxically, governments are incentivized to collect as much revenue as possible while simultaneously minimizing the costs of providing benefits and applying enforcement (Levi 1988, Irigoin and Grafe 2013). Meanwhile, taxpayers are incentivized to free ride on the goods and services that they receive from the government if they can avoid punishment for non-payment. It is therefore most convenient for governments to provide goods and services to motivate compliance, rather than to punish every single non-complier. However, the ability to uphold this equilibrium largely depends on ensuring that taxpayers believe that government will not defect. In this case, this means that taxpayers need to credibly believe that payments that they make will indeed be used for benefits and not diverted (Timmons 2010). Credible commitment is thus the expectation that government will not act arbitrarily, but that it will take actions that are consistent with its established promises.

In their seminal work on credible commitment, North and Weingast (1989) contend that the state can establish credible commitments in two ways. The first is by demonstrating "responsible behavior", which refers to a government's demonstrated ability to carry out its promises. This component of establishing credible commitment refers to the expectations of what government is going to do based on how individuals perceive government and its past performance. Because credible commitment depends on the belief of government upholding its promises, it is usually stronger in contexts in which there is a high level of trust in government

and low levels of government corruption. Perceptions of credible commitment are strongly influenced by the experience of people of government and their predictions of future action.

Political factors are also important, particularly in democratic system (Fang and Owen 2011). Scholarship has demonstrated that political party alignment is fundamental for establishing credible commitment (Stasavage 2007,Timmons 2010). In a comparative country-level study of OECD countries, Timmons (2010) demonstrates that political alignment is important for motivating taxpayer support; thus, the political ideology of the government in power largely defines tax policy. He demonstrates that left-wing governments can more easily collect taxes from low-income groups because members of this group are more likely to believe that government will use funds in ways that will benefit them. This reveals that the willingness to pay taxes is not only determined by the liquidity of taxpayers, but also by taxpayers' expectations of how funds will be spent and the benefits that will result.

The second feature they identify as contributing to establishing credible commitment are institutional strategies that constrain government's arbitrary application of power. This second feature is more about the use of strategies that limit the government's ability to divert from its promises. Basing their claims on 17th century England's Glorious Revolution, the authors contend that arbitrary actions by the crown were managed through structural factors, among them are the establishment pf parliamentary powers to veto and monitor expenditures, a politically independent judiciary, and the earmarking of funds which constrained the crown's ability to spend.[4] These structural constraints limited the king's discretion which enhanced the credibility that the state would repay its debts. This, consequently, increased the state's borrowing capacities and significantly reduced interest rates. In this case, the establishment of proper institutions that increased accountability of the state were essential for establishing credible commitment of government and facilitating its access to public financing.

Institutional arrangements promote credible commitment by increasing the costs of breaking agreements and limiting the ability of parties to do so. These institutional arrangements are fundamental for facilitating collective action since they impose a direct cost on defection. Olivier and Schlager (2022) find that factors like active reviews, the presence of monitoring mechanisms, and explicit consequences for breaking agreements ensure that different levels of government cooperate for common goals even when it would be more beneficial for each

[4]Parliamentary veto over expenditures, combined with the right to monitor how the funds the had voted were spent, placed important constraints over the Crown. Politically independent judiciary greatly expanded the government's ability credibly to promise to honor its agreements. By earmarking taxes beforehand, parliamentary interests limited the king's discretion each year over whether to pay bondholders their interest.

individual level of government to free-ride. Similarly, in regard to taxation, since the state is incentivized to collect the most money possible while spending the least, institutional arrangements can motivate taxpayer buy-in, resulting in higher willingness to pay (Scholz and Lubell 1998).

At the urban scale, credible commitment is useful for analyzing issues or policies whose implementation require citizen support. For example, Manville and King (2013) argue that the challenge of garnering public support for congestion charges lies in the public's incredulity that government will use the collected funds in the ways that it says it will. To circumvent this challenge, they suggest focusing efforts on gathering support by communicating the benefits of reduced congestion, rather than the use of funds. Unlike congestion charges, property taxes are typically not earmarked for specific uses. Yet individuals expect that the revenue generated from this tax will be used to support the provision of public goods in their municipality and ultimately enhance their property values. Low credible commitment that the government will use this revenue transparently and effectively can reduce public support for this tax.

This study examines whether property owners support property tax policy designs that enhance government accountability thereby establishing credible commitment. I further explore how trust in government shapes this relationship by analyzing whether individuals with lower trust levels are more likely to support policy designs that strengthen government accountability. I center this analysis on property taxes, a uniquely local tax that is multidimensional and highly visible to taxpayers.

2.2.2 Policy design for accountability

When taxpayers do not believe that the government is sufficiently constrained to adhere to its promises and not act arbitrarily, they may support tax policy designs that increase the accountability of government and constrain it from taking arbitrary actions.

I define accountable property tax policy design by breaking down the property tax process into four parts.[5] The four parts of the process are: tax calculation, management of funds, use of funds, and enforcement. Increasing credible commitment through property tax design refers to increasing the accountability of property tax design across each of these four dimensions. Specifically, this means (1) increasing the simplicity in how government calculates taxes

[5]This classification emerged from focus groups with property owners in Mexico and the multidimensional ways in which they broke down the property tax process.

and who pays, (2) promoting transparency in the way that government manages funds, (3) making the use of funds more tangible and direct, and (4) reducing government discretion in how it enforces compliance. I present these factors in the following table.

Tax Process	**Accountability Characteristic**	**Reform to Increase Accountability**
How is the tax calculated and who pays?	Simple	Reduced complexity in tax calculation formulas and reduced government discretion in setting formulas.
How are funds administered?	Transparent	Increased transparency in how government spends tax revenue.
How are funds used?	Tangible	Tax revenue is linked to specific goods and benefits and specific locations.
How is tax collection enforced?	Rule-based	Institutional constraints limit government's ability to arbitrarily apply power.

Table 1: Accountability in Property Tax Process

Importantly, tax designs are complex, and policies that increase the accountability of government may not always result in the most efficient and equitable taxes (IFS and Mirrlees 2018). In this study, I focus specifically on identifying citizen preferences of property taxes, which may admittedly be at odds with efficient or equitable tax design. At the conclusion of this paper, I discuss trade-offs that government may have to make in negotiating how to promote property tax support while ensuring that the tax can benefit the largest number of people.

How is the tax calculated and who pays?

Property taxes are unique with respect to other taxes in that the tax base requires a continuous reassessment by the government. Additionally, many local governments, particularly in Latin America, often employ special discounts and subsidies to reduce the tax payments of certain populations and also apply progressive tax rates. Complexity in a tax system can be important for ensuring that it satisfies the different needs of the population and that it is equitable, e.g., using progressive rates (Partlow 2013). However, complexity can also prompt confusion around taxes, contributing to non-compliance and the inequitable application of the tax (Krause 2000). Tax scholars agree that a simple system is typically preferable to a complex one that may increase discretion, which could introduce further complexity (IFS and Mirrlees

2018). Simple tax systems are easier for taxpayers to understand and are administratively straightforward (ibis). When trust in government is low, individuals tend to favor policies that simplify the calculation process and minimize exceptions.

How are funds administered?

Transparency in the administration of tax revenue can enhance government accountability in the use of public funds. Research on the impact of transparency strategies in low-trust contexts provides substantial support for this view. Flores-Macías (2018) finds that implementing active oversight strategies raises support for a national tax by seven percentage points. He demonstrates that passive oversight strategies, such as audit reports and public expenditure databases, are often deemed inadequate by taxpayers who distrust the government. These taxpayers tend to favor more active citizen involvement in oversight processes through strategies such as a citizen comptroller program. Scholars have found similar trends at the local level. In their study of willingness to pay local school taxes, Martin and Nations (2018) find that citizens were more likely to support payment increases when they are more actively involved in the decision making process. These findings are important because they demonstrate that citizens not only prefer tax policy that increases the accountability of how government administers and makes decisions about funds but that these types of policy designs actually have the potential to increase willingness to pay.

How and where are funds spent?

Tax scholarship has demonstrated that earmarking increases support for a tax by strengthening the perception of the link between tax payment and use of funds (Flores-Macías 2018; Martin, Mehrotra, and Prasad 2010). Focusing directly on political behavior, rather than preferences, Martin et al. (2019) find that California voters were more likely to support tax referenda that earmarked revenues. Support for earmarking was accentuated when funds were directed towards infrastructure and emergency services.

While earmarking is the most common way for increasing the visibility in the use of funds, a variety of different strategies can be employed. For example, Timmons and Garfias (2015) examine randomized audits in Brazil and find that higher levels of revealed corruption correlate with a decrease in property tax revenue, while lower levels correspond with an increase. Although the authors cannot fully establish causality due to potential confounders, they observe that revealed corruption drives greater demand for participatory budgeting strategies, which makes spending more democratic and thus increases individual perceptions

of active participation in spending decisions. This can be pivotal in garnering taxation support, particularly when taxpayers have little confidence in the appropriate use of funds.

Increased visibility in the use of property tax revenue can specifically refer to obtaining a more direct and observable connection between tax payment and benefits received. This could potentially be created by ensuring that tax revenue is spent in an ultra-local way, thus strengthening this connection more. One alternative explanation for this is that individuals may act in self-interested ways and demand direct benefits from their contributions. However, if self-interest were the primary driver for demanding direct benefits, then one would expect for all property owners to demand tax policy that uses property tax revenue regardless of their political ideology, trust in government, or belief in credible commitment. I will examine this in the analysis of heterogenous effects.

How is the tax enforced?

It is too costly for governments to actively enforce compliance from all taxpayers and must therefore rely on taxpayers engaging in semi-voluntary compliance (Levi 1988). At the same time, however, in contexts of low trust and particularly where there are weak property rights, individuals are weary of a government that uses enforcement strategies that rely on demonstrating its force and power (Wahl, Kastlunger, and Kirchler 2010). Feld and Frey (2002) demonstrate that in more democratic and participative contexts, taxpayers are more likely to voluntarily comply without the need to have harsh enforcement measures. In contexts of trust and stable governance, taxpayers expect to be treated respectfully because they are engaged in an unspoken psychological contract with the taxing authorities (ibid). When this psychological contract is breached, one can expect individuals to demand tax policy that makes it more difficult for the government to arbitrarily apply power.

In the following diagram (Figure 1), I sketch out the paths for establishing credible commitment. The first is through trust in government, which typically involves past behavior and perceptions of government's ability to comply with its promises. The second, which implies higher transaction costs, is through structural designs that increase the accountability of government. This diagram demonstrates that when there is low trust in government, demand for property tax reform will increase.

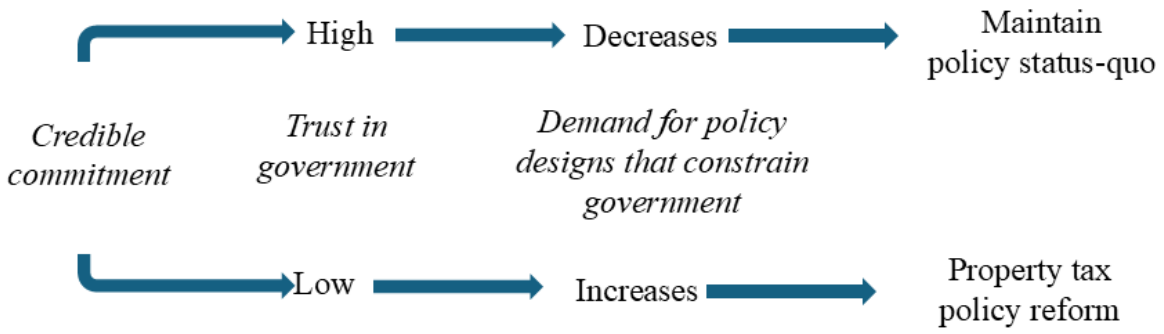


Figure 1: Analytical Framework: Two Routes towards Credible Commitment

I will test this framework through a conjoint survey with six dimensions related to the four categories of the property tax process. I present these four parts in the following table along with the corresponding conjoint survey category and the choices that participants were presented with.

Part of Tax Process	**Impact on Tax Policy**	**Conjoint Category**	**Choices**
Calculation	Reduced complexity in tax calculation and reduced government discretion	Who pays and how much?	Flat increase for everyone vs. differential increase for some groups based on property value
		How is the base calculated?	Current system vs. new calculation based on real values
Administration of tax	Increased transparency in how government manages and spends funds	Will administration of funds be transparent and how?	Status quo vs. implementation of transparency strategy
Use of funds	Revenue is linked to specific goods and benefits and specific areas	Where are funds used?	General expenditures vs. specific use of funds
		How are funds used?	Municipal level vs. localized benefit
Enforcement	Constraints in government's ability to arbitrarily apply power	How will government promote compliance?	Harsh government punishment vs. incentives

Table 2: Policy Designs for Accountability and Experimental Categories

I test the following hypotheses:

H1: Property owners will prefer policies that increase the accountability of property tax

policy, including how the tax is calculated, administered, spent, and enforced.

H2: Property owners who have lower levels of trust in government performance and higher perceptions of corruption will more strongly oppose property tax increases.

H3: Property owners who have lower levels of trust in government performance and have higher perceptions of corruption will be more likely to support property tax policy that increases the accountability of government, thus establishing credible commitment through policy design.

2.3 Institutional Context

Mexican history is dotted with reforms that have attempted to increase the autonomy of municipal governments, symbolically or tangibly. The most significant of these were the 1982 reforms to Article 115 of the Constitution. These changes gave municipalities new responsibilities in land use planning, urban service and infrastructure provision, and most significantly, they granted municipalities the power to collect all property related taxes. Since the establishment of these changes the federal government has offered different levels of technical support to local governments to support cadaster modernization efforts, and even reformed redistribution formulas for federal government participations in order to incentivize local property tax collection (Unda 2017).

Despite their increased powers, municipalities continue to depend on the federal government for their financial needs. For example, in 2024 about 65% of revenue for local governments of over 100,000 residents came from earmarked and unearmarked federal government transfers (25% and 40% respectively). I include the distribution of local revenue for these municipalities in Annex 1, Figure 2. Dependence on federal government transfers can reduce regional inequalities, but can also increase the vulnerability of local governments and limit their spending autonomy and ability to provide services and infrastructure that best reflect the needs of their populations (Jibao and Prichard 2015). In fact, Mexican municipalities that receive more earmarked transfers invest more in public works, suggesting that local governments largely rely on nonlocal sources of revenue to fund local infrastructure.

Scholars have pointed to multiple potential explanations for why property tax collection

by Mexican municipalities has remained low. For example, Canaivre-Bacarreza and Zuniga Espinoza (2015) point to "fiscal sluggishness" of local governments fueled by the guarantee of federal government transfers. This vision contends that in the face of the potential resistance and high political costs of increasing property taxes, local governments officials have limited incentives for increasing tax collection or reforming tax collection practices (Weingast 2009). In a longitudinal analysis, Unda (2021) finds that low property tax collection is influenced not only by dependence on federal governments, but also by factors such as party affiliation, electoral competition, and socio-economic variables. She also finds that the weak administrative capacity of municipal cadasters contributes to low collection. Her study is important because it begins to point at how political factors, such as party affiliation may influence support for taxation.

Concerns for the political cost of property tax increases may limit the willingness of local politicians to approve assessment updates. Rather than keep assessment bases up to date, many local governments have focused their efforts to motivate compliance by employing discounts for early payment. Municipalities offer discounts that range from four to forty percent for early payments made from January to April. These discounts have the benefit of increasing money in public coffers early on in the year but also have the drawback in that they limit total revenue collected by the municipality. Many local governments also hold raffles which allow property owners to win prices such as cars, motorcycles, or electric appliances for complying with their property tax payments. These strategies have focused on enticing property owners to pay their taxes based on the possibility of receiving individual rewards, rather than the promises of improved collective services and infrastructure. While these strategies may be important for motivating some people to pay, they may not be enticing enough for individuals with the most valuable properties. Additionally, the reliance on raffles to motivate compliance makes payment appear optional to taxpayers and sidesteps what many property owners consider the core objective of the tax, which is to improve conditions in their municipality and provide essential services. This could undermine the fiscal relationship between citizens and the state and minimize the collective foundations of taxation.

While many experts have emphasized the importance of increasing property tax collection in the country (Esquivel 2024; Leiva and Santos Maradiaga Aguilar 2022; Unda Gutiérrez 2021), limited research has considered factors that contribute to property tax preferences from the perspective of property owners. Specifically, research has not considered whether property owners' perceptions of their local government influence their property tax preferences. Additionally, this scholarship has not considered whether support for property taxation is

completely inelastic or whether policy design could increase support for this tax. This is a particularly relevant question in a context like Mexico, where individuals have low satisfaction with municipal public services and infrastructure and low trust in government.[6]

2.4 Empirical Strategy

My first approach to this study was to conduct focus groups with property owners in four different municipalities in Mexico: Merida, Guadalajara, Zapopan, and Tlajomulco de Zuniga. These focus groups, which included 19 property owners, were fundamental for understanding how property owners perceive property taxes and their main concerns regarding this tax. Focus groups provide evidence that individuals perceived property taxes in a multi-dimensional way. Not simply in terms of the amount of tax they paid, but in terms of how their tax was calculated, how the tax was administered, how the tax is enforced, and how funds are used. This exercise revealed that property owners did not believe that their tax payments were reflected in investment in their municipality. Participants often expressed that "they did not mind paying", but that they wanted to make sure that revenue collected was used appropriately. Input from focus groups was essential for better understanding the different dimensions of property tax that people prioritize and their main points of opposition to this tax, not necessarily the amounts paid, but the lack of accountable measures.

I expanded on these initial findings by employing a choice-based conjoint survey experiment of property tax design. The conjoint design facilitates this study of the multi-dimensional character of property taxes and demonstrates what features of property tax policy design individuals prioritize on the whole. This design is also optimal for studying tax preferences because ,as scholarship has demonstrated, their design reduces social desirability bias (Horiuchi, Markovich, and Yamamoto 2022).

I conducted surveys during a three-week period between November and December 2023 via an online platform. I surveyed a total of 2,026 property owners who self-identified as heads of household in 35 Mexican municipalities with populations of over 450,000. Participants were recruited through a panel with the online survey company, Netquest. I include a map and list of participating cities in Annex 2, Figure 1.

[6]For example, an overwhelming majority (92%) of the population has personally, or knows someone who has, been asked for a bribe in the process of carrying out a government process (ENCIG 2023).

2.4.1 Survey design

The survey asked respondents a series of pre-treatment questions about their socioeconomic conditions, property taxes, housing, and perceptions of their municipality and government. I include information of these responses in Annex 2 Figures 2-3. I included demographic questions (gender, age, education level, income) at the end of the survey to reduce respondent fatigue. The central activity of the survey, which took the largest portion of participant's time was the conjoint survey, the experimental component of the survey.

In the conjoint portion of the survey, I asked participants to choose between two pairs of policy profiles seven different times. In this component of the survey participants were presented with the following prompt along with two policy profiles.

> *Suppose that your municipal government is considering applying a property tax increase and applying changes to its property tax policy. Taking into account all the different dimensions, select, out of the two, the policy that you would support*

Thus, each participant viewed 14 out of 5,184 possible profiles, which is the total possible number of profiles obtained through the randomization process of all attributes. Each profile had seven total dimensions and three to four potential attributes. In addition to randomizing the attributes included in each profile I also randomized the order of dimensions presented by respondent in order to control for order effects while reducing the cognitive load on respondents. In total, I obtained measures of support for 28,364 profiles, which is the n in this study. The profile selection variable served as the dependent variable for the study: "Selected profile"=1 and "Profile not selected"=0. I label this variable as "Policy Support".

Furthermore, I employed uniform distribution of profiles and did not account for the likelihood of each profile appearing in the real world as is common of conjoint studies of political candidates (Bansak et al. 2023). I considered this decision appropriate since profiles represented hypothetical policy choices with no single choice more likely than the other. I additionally did not put any controls on profile combinations because no attributes were extreme enough to make a profile completely implausible. To ensure engagement with the conjoint components of the survey, I used a quality control method which forced respondents to stay at least 6 seconds with each profile pair and ensured that they scrolled completely so they saw all profile dimensions.

Participant characteristics

This study examines the preferences of residential property owners who are heads of household

or who share this responsibility. Although this omits commercial property, residential property owners are more likely to protest property tax increases and residential property makes up the largest percentage of property tax bills. Moreover, there is no available sample frame for commercial property owners. Additionally, I consider current property owners as opposed to potential or future property owners, because the latter are impossible to identify reliably. In Annex 2, Table 1, I present the general characteristics of participants and the distribution of their demographics in terms of age, gender, income level, education, property type, and ownership status and compare this to census data on property owners in large urban municipalities in Mexico.

I crafted the survey to be as balanced as possible of property owners in urban Mexican municipalities by gender, socioeconomic level, and age. However, due to the online nature of the survey, the survey does not have accurate representation of property owners by age. According to census 2020 data, individuals over 65 years old represent 25% of property owners in Mexican municipalities. However, because the survey was carried out online this population is largely underrepresented in the sample size. This could admittedly present limitations to the external validity of the results.

2.5 Analysis

I analyze responses to survey questions and the conjoint experiment to examine how property owners perceive property taxes and their expectations about how government will use funds.

2.5.1 Perceptions of property taxes

Some of the responses to the initial survey questions provide evidence that there is low credible commitment among the population that property taxes will be used appropriately. While property owners know that property taxes should be used to support infrastructure and service provision, something repeatedly expressed in focus groups and other parts of the survey, this does not appear to currently motivate property owners to pay property taxes. Responses to a question of motivations to pay property taxes demonstrate that the primary motivating factors for paying their taxes were related to ensuring that they could sell or pass on their property and so that their property rights wouldn't be undermined. These reasons are more closely related with the protection of their property rights than with how government uses tax payments. On the opposite side of the spectrum, the least popular choice after "Nothing" was to support the municipality's provision of services and infrastructure. I

present the distribution of responses in Figure 2.

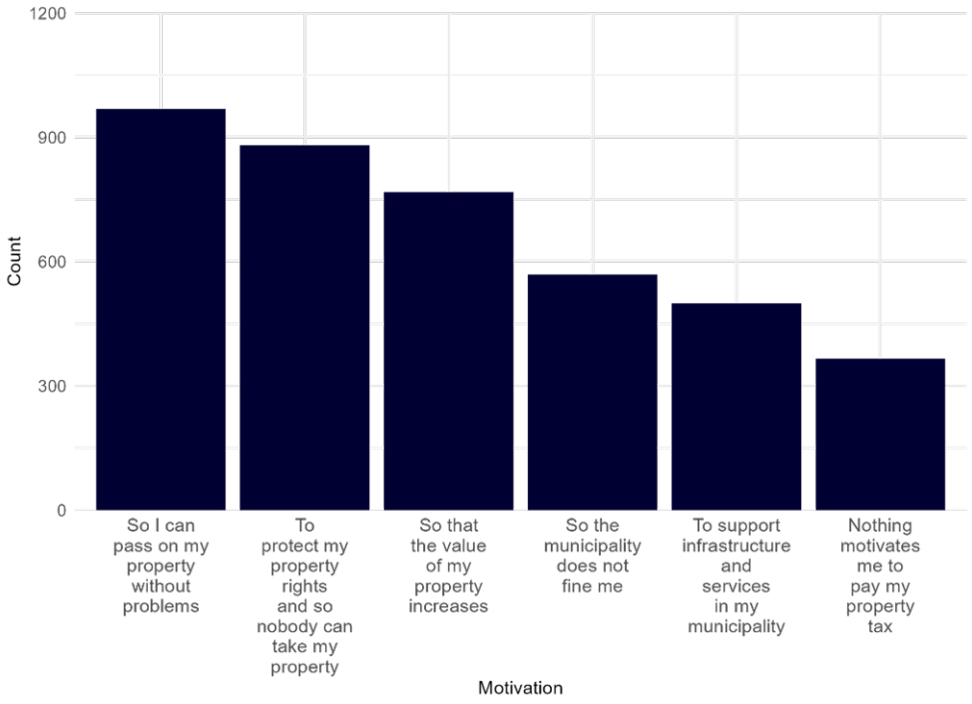


Figure 2: Motivations for property tax payments

While these questions are not experimental, they suggest a breakdown in credible commitment and the current expectation that even if individuals were to contribute to property tax payments, this would not necessarily translate to invesment in the municipality's services and infrastructure. These responses demonstrate a weak credible commitment of government in two ways. Firt, there is weak credible commitment that government will protect property rights. Individuals feel they need to use their property tax receipts as a way to demonstrate their connection to their property, ultimately motivating their payment. This is an understudied topic of property taxation. Secondly, even though individuals believe that property taxes have the purpose of supporting service and infrastructure provision, the responses to this survey question demonstrates that they do not believe that their funds are currently used towards this end and thus, this does not motivate their payment. Responses to this research question offer potentially important insights into understanding results from the conjoint survey, the main source of data for this study.

Importantly, responses to open-ended questions also revealed a strong desire from urban residents to have space to discuss perceptions of government, taxation, and public services.

Many respondents shared their concerns about specific issues in their municipalities related to public services and increases in taxes, which revealed inadequate communication channels between citizens and their municipality. Respondents expressed affinity with the themes of the survey and gratitude for the opportunity to communicate their opinions about taxes, service provision, and the quality of their local governments.

2.5.2 Conjoint analysis

The primary source of data for this study and through which I will address my research questions is a conjoint experiment. I first consider the main effects of the experiment to address the question of whether property owners prefer property tax designs that increase the accountability of government.

My measure of interest in testing these effects is the Average Marginal Component Effect (AMCE). This measure captures the causal effect of the presence of a given attribute on the probability that respondents would support or oppose the profile relative to a baseline and averaging over all respondents (Leeper, Hobolt, and Tilley 2020).The AMCE is therefore a causal measure of each attribute over the baseline level, which in this case is equivalent to the status quo. In Table 3, I present the different conjoint categories and dimensions, including a label for baseline categories. In this case, the baseline category which is the category that I measure the effects over, is equivalent to the status quo. In other words, the baseline measure represents "0" and all increases of decreases in support are calculated in relation to that value.

Dimension	Attribute	Base category
Percentage increase:	20%	
	15%	
	10%	
	5%	X
Who pays:	Higher increase applied to properties of over $20,000,000 MXN	
	Increase will not apply to housing below $350,000 MXN	
	Increase will apply equally to all properties	X
Calculation of tax base:	Updated to closely align with land values	
	Free adjustment to accurately reflect square meters	
	Updated to align with market values	
	Government will not adjust cadaster base calculation	X
Transparency strategy:	Yearly information on the use of pt revenue	
	Citizen oversight group:	
	No additional action	X
Scale	20% of revenue spent at the neighborhood level	
	20% of revenue spent within cadaster zone	
	100% spent at the city-wide level	X
Use of funds:	Security	
	Street and sidewalk infrastructure	
	Park and public space maintenance	
	General expenditures	X
Compliance strategy:	Small additional discount after 8 years of continuous payment	
	Potential to seize property after 5 years of non-payment	
	Letter reminders and small fines for non-payment	X

Table 3: Conjoint dimensions and attributes with baseline categories

2.5.3 Main Effects

To calculate the AMCE, I regress the dependent variable of "Policy Support" on dummy variables for each of the non-baseline attributes in the seven dimensions of each property tax profile and cluster standard errors at the respondent level (Ballard-Rosa, Martin, and Scheve 2017; Hainmueller, Hopkins, and Yamamoto 2014). Regression coefficients show the effect of the policy attribute on the probability that a property owner would choose one tax policy over another. The bars indicate 95% confidence intervals, and the point indicates the baseline attributes. Figure 3 presents results for the AMCE estimates for each attribute in each of the seven categories.

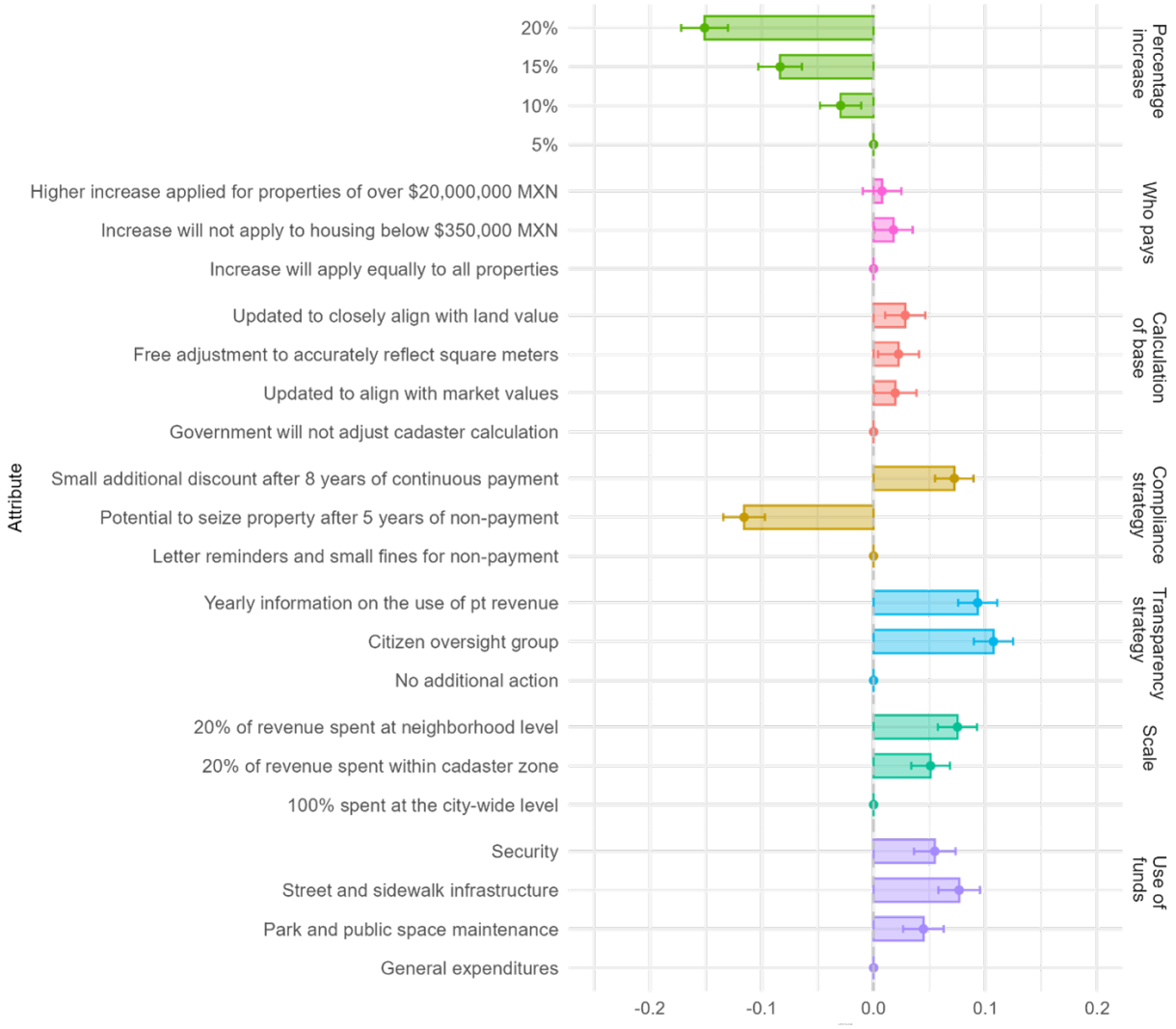


Figure 3: AMCE of Main Effects

The first category I include in the conjoint survey considers the willingness of individuals to support policy that has 20%, 15%, 10%, or 5% increases. For this dimension participants were presented with profiles including one of four percentage increases as an actual monetary value calculated based on their answer to a previous survey question which asked them to make their best estimate of the amount, they were charged in their last property tax bill. Participants were able to choose one of ten possible continuous range values. I originally defined these ranges based on responses to the property tax payment question in the national expenditure survey for 2020 (ENIGH). I include the distribution in Annex 2, Figure 3. I then used the midpoint of these ranges and applied the percentage increase for each possible range.

Results for this first category indicate that respondents are responding to the conjoint survey as expected. Property owners oppose higher increases of property taxes. For example, property owners were 15 percentage points more likely to oppose a 20% increase over a 5% increase. They were also 8 percentage points more likely to oppose a 15% increase over a 5% increase. These measures facilitate interpretation of the rest of the results.

I find minimal effects in the second and third categories, which relate to increasing the accountability of government in terms of who pays and how the tax base is calculated. Making property tax policy more progressive by either eliminating the potential of an increase for properties with values below $350,000 pesos (the amount that the government uses to define social housing) or applying a higher increase to properties over $14 million pesos. This could suggest that individuals prefer simplified tax calculations. However, it is possible that individuals have no consistent preference over the progressivity of taxes, particularly when it's not as relevant to them. I do find a small, but insignificant, additional opposition to more valuable properties receiving a higher increase from higher income individuals when I consider heterogenous effects by income (Annex 2, Figure 4).

I also find small effects in consideration of how the government calculates the assessment base. Individuals demonstrate a slight preference for using an alternative method of calculation that is based on a concrete value, such as market value or land value, as opposed to the cadaster value that government currently uses. These changes result in an increased probability of choosing a policy by two percentage points, which demonstrates that property owners do not currently prioritize this component of property tax policy or alternatively that they do not believe that these changes could have a significant impact in making property taxes fairer or more transparent.

Respondents reveal the strongest support for adopting property tax policy designs that reform how government administers and uses funds. For example, using a passive or active oversight strategy increases support for a policy by 9 to 11 percentage points. This is consistent with previous scholarship which demonstrates that taxpayers more strongly support more active oversight strategies that involve intentional citizen involvement as opposed to reporting of how funds are spent. The significance of support transparency strategies becomes more apparent when one considers that the positive response they received rivals the negative responses elicited by the policies proposing a 15% or 20% increase. From a descriptive perspective, I also find that individuals were significantly more likely to support policies with higher levels of increases when these included active or passive oversight strategies. I present the marginal

means for these in cases in Annex 2 Figure 5. This is important because it suggests a higher willingness to pay taxes when the use of funds is made more transparent. This is consistent with the findings of Martin and Nations (2018).

Property owners also reveal strong preferences for where and how the government spends funds. The fourth dimension of this study presented property owners with the option to select policies in which a portion of the revenue from property taxes paid in their neighborhoods could be spent in their neighborhoods (a scale of about 10,000 homes) or cadaster zone (about 30,000 homes). I find that more direct use of funds increased support for a policy by 5 to 8 percentage points. These findings also revealed that individuals are sensitive to geographic scale and prefer policies that benefit them directly. While this view is consistent with the benefit view of the property tax (Fischel et al. 2005), previous scholarship has not explicitly considered whether this benefit preference has a spatial dimension and whether support increases as the benefit gets more direct. This finding gets to a core challenge in local tax policy which is how to motivate support for property taxes by ensuring that taxpayers perceive that benefits are visible and direct, while simultaneously ensuring that the tax can be an effective mechanism for redistributing property wealth.

Results from the dimension of how funds are spent, the fifth dimension, reveal that property owners are also more likely to support earmarking a portion of property tax revenue. Property owners are 6 to 8 percentage points more likely to support policies that direct funds towards specific publicly provided goods, particularly road and sidewalk infrastructure. This finding is also consistent with previous scholarship, which has demonstrated that taxpayers prefer tax policy that directs portions of revenue to specific areas, particularly infrastructure (Martin, Lopez, and Olsen 2019). These findings demonstrate that property owners have a stronger level of support for property tax policy that gives them a level of certainty of how funds will be used for the improvement of their municipality, rather than getting lost in the blender of revenue. Indeed, respondents gave equal priority to ensuring that they receive more direct benefits in terms of scale and to funds being directed towards specific government actions, their visibility.

The final dimension reveals that individuals have a stronger preference for property tax policies that encourage compliance through rewards rather than punitive government measures. Despite the fact that most municipal governments can seize the property to pay back debt after five years of non-payment[7], property owners are significantly opposed to such enforcement

[7]Statute of limitations

strategies. In fact, the prospect of punishment reduces support for a policy by 12 percentage points, nearly equivalent to the effect of a 20% tax increase. This opposition persists even though only 38% of respondents believe that in their neighborhood, nearly all property owners pay their property taxes, highlighting a disconnect between perceptions of compliance and the preferred mechanisms for enforcement.

Combined evidence suggests that property owners more strongly support policies that increase the accountability property tax revenue is administered and spent, and less concerned with how the government calculates this tax and how much others pay. This may result because property owners are less familiar with current calculation methods but have strong feelings about how they believe funds are currently spent. Notably, property owners prioritized policies that increased the transparency in the use of funds and limited excessive punishment for non-payment, over policies that would bring benefits more directly to them. This may indicate that individuals are more concerned with the proper use of funds than with getting more direct benefits. This contrasts with what U.S. property tax scholarship has demonstrated about perceptions of property taxes (Fischel 2001).

2.5.4 Heterogenous effects: Perceptions of government

North and Weingast (1989) defined two possible paths for establishing credible commitment. The first path is through trust in government, which emerges through positive evaluations of government performance, trust in government action, and perception of qualities of government, such as honesty. The second path is through the implementation of structural and institutional factors that restrain the government's ability to take arbitrary actions. I argue that individuals have a stronger preference for property tax policy that increases the accountability of government and establishes its credible commitment. In analyzing heterogenous effects, I expect that individuals who have lower levels of trust in government performance and higher perceptions of corruption will more strongly support property tax policies that limit government discretion and increase government accountability.

I present heterogenous results using the AMCE measure, rather than marginal means, which is often used as a measure of interest in studying heterogenous effects. I do this while taking into consideration the reservations presented in Leeper et al. (2019). They contend that because conjoint surveys typically use arbitrary baseline categories (such as, male or female) the AMCE measure is not adequate for sub-group analysis since this would show the group difference in the effects of having one attribute over the arbitrary baseline measure. In

this conjoint survey, I defined the baseline measure as the current status quo of nearly all municipalities in Mexico, while the additional attributes represent policy reforms. The AMCE measure therefore reveals the subgroup effects of the differences in support for policy reforms over the status quo, making it an adequate measure for this policy design.

Trust in government action

The first sub-group category that I examine focuses on trust in government action, which assesses the belief that increased tax payments will result in improvements throughout the municipality. This is measured through evaluations of government behavior and expectations of future performance. I defined this category with an index based on the following four variables that corresponded to different survey questions. The four variables are the following: (1) Evaluation of government performance as measured by municipal services and infrastructure, (2) perception of municipality's improvement, (3) belief that increase in taxes would result in government actions that improve conditions in the municipality, (4) belief that property tax increase would result in an uplift in municipality property values. I then use the index to divide individuals into three groups by levels of trust: low, medium, and high. I selected these four variables because they directly evaluate people's trust in the ability of government to bring about tangible actions and improvements by measures of past behavior and future expectations. This importantly measures expectation of benefits to the municipality in general and not specific benefits for the respondent.

Figure 4 presents the general results for this category.

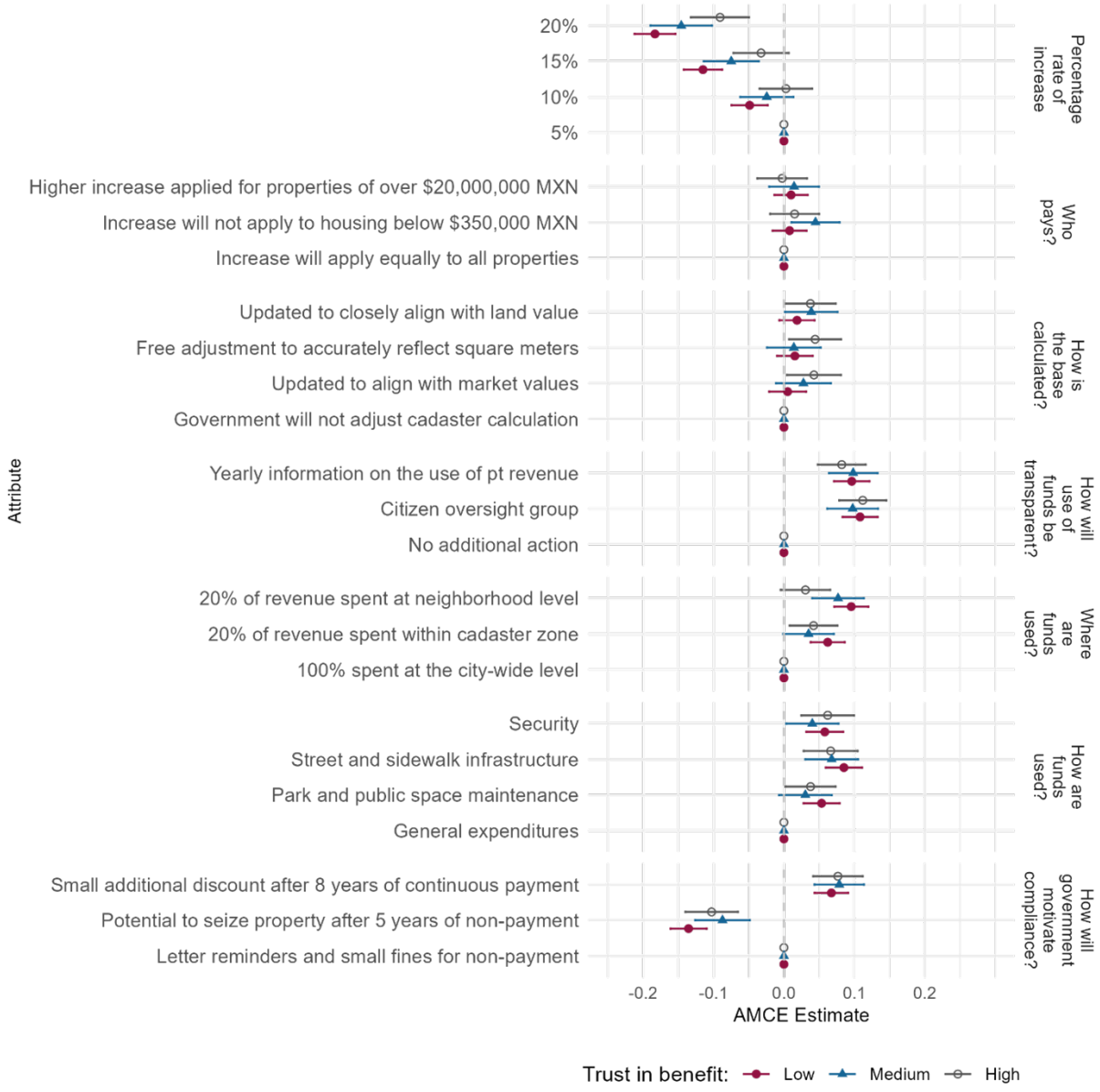


Figure 4: Heterogenous effects of trust in government competence and performance

The most significant results are evident in the first category which measures support for different levels of property tax increases. In Figure 5, I present a more detailed view of these results. I find that as trust in government performance decreases, individuals are less likely to accept property tax increases. This trend becomes more pronounced as the size of tax increase gets higher. For example, a high-trust individual is 9 percentage points more likely to choose a policy with a 20% increase than the baseline category of a 5% increase. Meanwhile a low-trust individual is 19 percentage points less likely to choose a 20% increase over a 5%

increase. The greatest divergence between subgroups is at the 20% increase, meanwhile the sub-group difference at a 15% and 10% increase are less notable, although still significant. These findings suggest that individuals with low trust in government actions, who believe that government has low credible commitment, are less likely to support higher property tax increases. This is likely because their experience with government prompts them to have low expectations for the future and weak beliefs that the government will use property tax funds for the intended purpose.

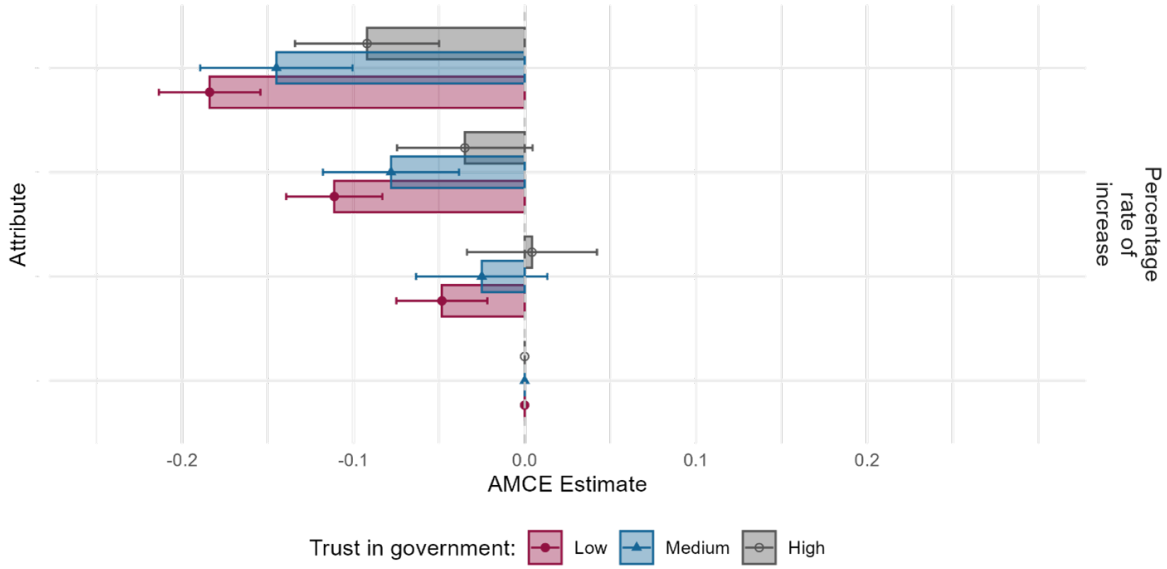


Figure 5: Heterogenous effects of trust in government competence and performance

Another category with significant sub-group differences is the measure of scale in the use of funds. Results, which are presented in detail in Figure 6, reveal that property owners that have a low or medium trust in government actions are significantly more likely to support policies that return a portion of their property taxes back to their neighborhood. Specifically, individuals who have high trust in government performance are 3 percentage points more likely to prefer a policy that reinvests a portion of property tax payments back to their neighborhood. In contrast, individuals with low and medium trust are about 10 percentage points more likely to prefer these policies. Interestingly, there are no significant differences when one considers the cadaster area level, which suggests that there is a spatial dimension in which people prefer specifically direct benefits.

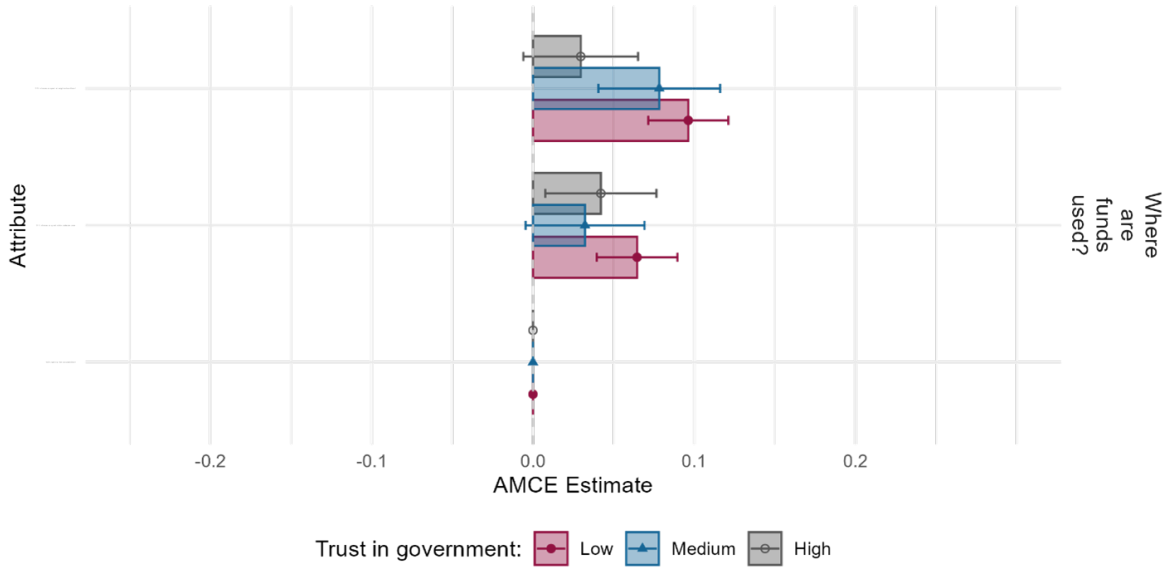


Figure 6: Support for use of revenue

These results are important because they indicate that skepticism about the government's ability to effectively use funds may lead to support for less redistributive policies. This suggests that implementing measures that increase accountability could be important for decreasing spatial inequalities, which should be a line of study for further research. Additionally, these findings suggest that support for policies that redirect a portion of property tax revenue back to individuals is not necessarily a result of self-interest but could also be influenced by distrust in government's effective use of funds. No other category had significant subgroup effects for this trust category.

Perception of corruption

I study the heterogeneous effects of perceptions of government corruption. I created an index using two variables, the first is an individual's assessment of the predominance of corruption in their municipality. In this paper I argue that there are two ways of establishing credible commitment- either by establishing trust in government through actions and honest behavior, or through the use of policy designs that constrain government actions and ensure they fulfill their promises. I therefore expect that individuals that have a perception that government is more corrupt will more strongly support policies that increase government accountability.

I measure corruption through an index made up of two variables. I coded individuals who answered that more than half of employees in their municipality were corrupt (72% of

respondents) as 1, and everyone else as 0. The second variable was based on a question about the top problems in their municipality. I categorized individuals as 1 if they chose corruption and the lack of financial honesty as the most significant issues in their municipality (18% percent of respondents) and 0 if not. I created a three-level index of government honesty by combining these variables and presenting the heterogeneous effects analysis in Figure 7.

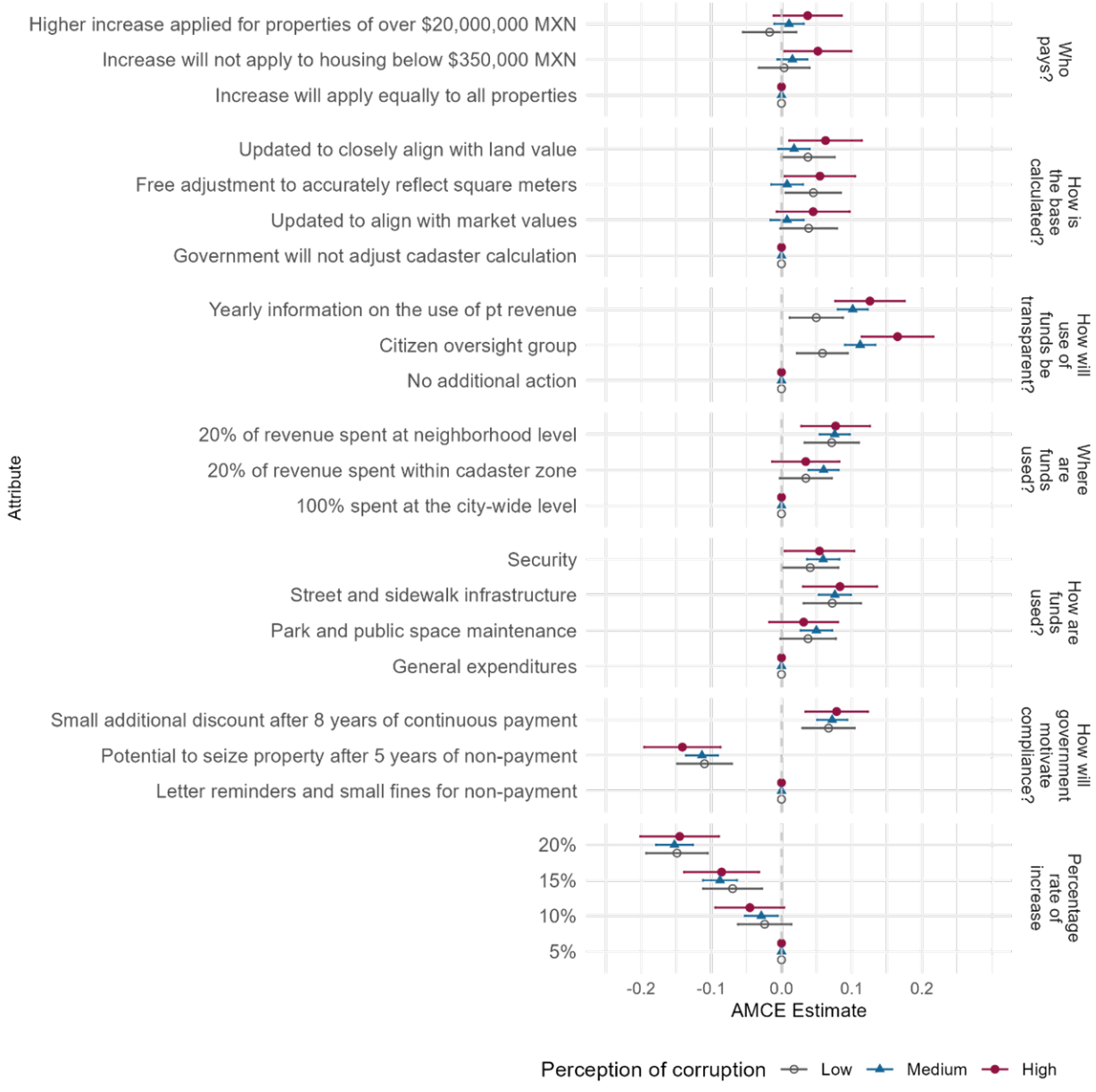


Figure 7: Heterogenous effects of perceptions of government honesty

Overall results present the strongest subgroup differences in the category of transparency

strategy. Property owners with a higher perception of corruption are more likely to prefer property tax preferences that integrate a transparency strategy, such as the information sharing or the use of property taxes as well as an active citizen oversight strategy. Individuals who perceive corruption at the highest level are a significant 12 percentage points more likely to prefer a policy with an oversight strategy than individuals who have the lowest levels of perception of corruption. The integration of oversight strategies (an active transparency strategy) appears to be very important for individuals concerned with high levels of corruption in government and mismanagement of funds. These strategies are attractive to this subgroup because they constraint how their municipality is able to spend funds, which addresses one of their main concerns about property taxation and revenue collection.

Interestingly, it appears that perceptions of corruption in government do not significantly lower willingness to pay a property tax increase as in the previous sub-group. I present a detailed view of these categories in Figure 8. Further analysis should consider whether individuals with high perceptions of corruption prioritized the presence of active or passive transparency strategies over a lower level of increase. This would indicate that individuals with a high perception of corruption are more likely to select a higher increase if oversight strategies are present.

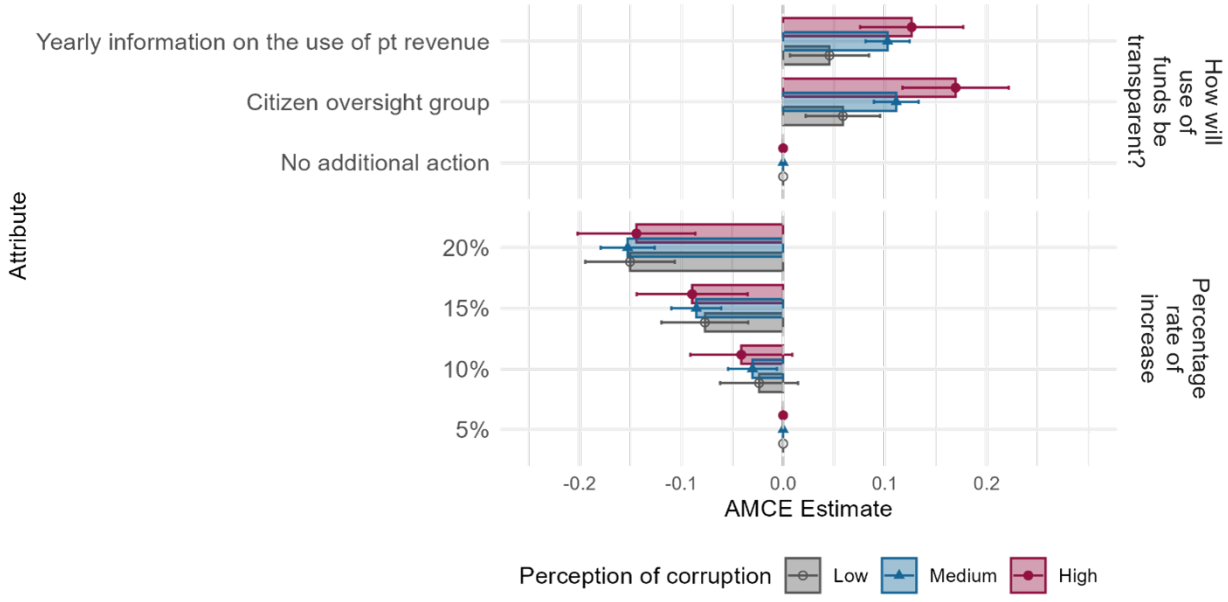


Figure 8: Heterogenous effects by category

Additionally, a higher perception of corruption does not necessarily increase demand for

earmarking of funds, nor the use of funds in a more localized way.

Since heterogenous effects are not causal, but rather reveal subgroup effects, I consider the influence that other variables could potentially be having on these effects. I identify that factors such as age, political party affiliation and alignment with current local government party, income, level of education, and size of the municipality all influence an aggregate variable capturign trust in government (perception of corruption, trust in government competence, and perception that municipality is improving) and could also be driving the results, at least in part. I present these results in Annex 2, Table 1.

The strongest connection of trust in government is with the variable of political party alignment. Being aligned with the political party in power decreases the likelihood of being a government skeptic by 64%. I coded this variable by looking at which party was in power for each municipality at the time that the survey was carried out. I then checked political party alignment by considering respondent's response to question on political party support.

The importance of political party alignment is consistent with previous research that shows that the ideology of governments is important in determining the types of tax policy they can employ for no other reason that they can more easily credibly commit to bringing benefits to the group they intend to tax (Timmons 2010). However, no single one of these characteristics can explain all of the results to the same extent as the variable of trust in government. I include regression results in Annex 2, Table 2.

Even though these are not directly part of the analysis, I consider the heterogenous effects of individual variables that may be of interest. I include heterogenous effects of variables including gender, income level, and party affiliation in Annex 2 Figures 5-7. There are no particular relationships that stand out as significant and that suggest could be driving the entirety of the results.

2.5.5 External validity

Three design components of this study could jeopardize its external validity, which I will address here. Firstly, as previously mentioned, the sample is not fully representative of property owners in large Mexican municipalities because of the difficulties in reaching certain groups through an online survey. For example, the wealthiest and lowest income individuals who are the most likely to live in a condition of informality are difficult to reach through online methods. Therefore, their views are not fully represented in this survey. Additionally, older individuals who represent a significant majority of property owners in Mexico are less

likely to use online survey platforms than younger individuals. This survey exercise has limitations in presenting their views. I take these factors into consideration even though previous scholarship has demonstrated that online survey tools yield comparable results to samples from fielded surveys (Stantcheva 2023).

Secondly, this survey presented individuals with a hypothetical scenario of choosing which property tax policies they would be more willing to support. While this design is helpful in understanding the multidimensional ways that property owners define their property tax preferences, it is not a scenario that mimics reality as it is uncommon to have taxes on property tax policy in the Mexican context. Finally, since the data captured in this survey comes from stated preferences over hypothetical scenarios, they may not be consistent with tangible behavioral changes in the case that these policy changes were to be applied. Nonetheless, the findings from this study are still valuable for understanding what aspects of property tax policy taxpayers, as a whole, prioritize, as well as their preferences across different categories of property taxes. It additionally creates the opportunity to study property tax preferences across a variety of Mexican municipalities that may not be able to easily implement property tax changes.

2.5.6 Discussion

Latin America is a region of low fiscal effort that primarily relies on regressive consumption taxes (Flores-Macias 2019). Strengthening property tax collection represents a potentially important strategy for shifting to more progressive and redistributive taxes. This source of revenue can be particularly important in supporting local finances and ensuring that local governments can adequately satisfy the needs of their populations. Yet, low public support is often presented as a barrier towards increasing property tax collection. Evidence from this study suggests that support for property taxation is not fully inelastic and certain policy designs can even increase the willingness of individuals to pay a property tax increase. Nonetheless, increases must be accompanied by policy designs that increase the accountability of how government administers and spends funds.

Results are partly consistent with my initial hypothesis that individuals demand policy that increases the accountability of government. I found the strongest effects in categories pertaining to how funds are administered, used, and enforced. The results demonstrate that property owners are much less concerned with the amount of taxes that others pay, as well as the base of the tax. The core evidence demonstrates that property owners prefer

increased visibility in the administration of taxes, with the highest support for policies that increase transparency and accountability in how government spends funds. This category had the strongest connections with increasing the willingness to pay a higher property tax increase. In addition, the analysis of main effects reveals that individuals demand increased visibility in the use of funds by strongly supporting tax policy that directs a portion of funds towards specific uses and neighborhoods. Findings also demonstrate that property owners more strongly support policies that increase the transparency in the use of funds than those that bring them more direct benefits. This suggests that the U.S-based perspective that individuals view property taxes specifically as benefit taxes is inappropriate for interpreting property taxation in all contexts.

My second research question asks whether individuals with lower levels of trust in government action and higher perceptions of corruption are more likely to support property tax policy that increases the accountability of the government. The findings present some evidence indicating that policy design increases the accountability of how government manages the tax can establish credible commitment. For example, I find that individuals with lower levels of trust in government action are more likely to oppose higher levels of property tax increases. Furthermore, low trust individuals are more likely to support policy designs that more directly benefit their neighborhoods, which suggests that a relationship might exist between levels of trust and support for redistribution. This is a finding consistent with scholarship focused on preferences for redistribution and trust in government (Kuziemko et al. 2015; Marr and Tan 2014).

The study of heterogenous effects reveals that individuals with lower levels of trust in government prefer property tax policy that brings benefits more directly to them. This suggests that property tax preferences may not always translate to the best or most equitable property tax policy. While individuals may be motivated to pay by knowing that their taxes will be used in ways that more directly benefit them, this could undermine the redistributive character of the tax and perpetuate inequities. A number of Mexican municipalities have innovated with strategies to strengthen the link between property tax payments and service and infrastructure provisions. For example, the municipalities of Zapopan and Guadalajara in the Guadalajara metropolitan zone allow taxpayers to vote on participatory budget projects at the time of paying their property taxes (Martinez 2025). The municipalities also allocate 15 to 30% of property taxes collected to their participatory budget program, which strengthens the payment-benefit connection. Similarly, the municipalities of Colima and Mexicali have kickstarted initiatives to pave street roads in order of property tax compliance

by neighborhood (Jimenez 2024). These strategies could be important for increasing support for taxes amongst the general population, particularly low trust individuals. Additionally, they help to strengthen the payment-benefit relation, which is central to the fiscal contract. However, this appears with a tradeoff. Making benefits more direct to specific zones could potentially maximize revenue but may undermine the redistributive character of the tax by concentrating benefits in certain neighborhoods. Further studies should consider whether additional potential revenue from direct benefits compensates for the potential drawbacks of this strategy.

Overall, the most significant effects on levels of support are evident in support for increasing transparency in how funds are spent. Property owners clearly prioritize transparency and strongly support property tax policy that integrates this policy reform. However, carrying out transparency reforms in a broad way could have a high cost for local governments and they could hesitate to implement these changes in order to veer away from inviting public critique. Therefore, local governments might prefer to continue strategies such as offering broad discounts for early payment or using raffles. Nonetheless, there are system ways of integrating transparency measures that are accessible to local governments Municipalities throughout the country could benefit from following Mexico City's lead and implementing a citizen comptroller program that relies on citizen volunteers to monitor public funds (Martinez Llompart 2016). Cities could also increase transparency by sharing information about projects they carried out in the previous year in property tax bills or communicating to neighbors that a project was funded through property tax funds.[8]

2.5.7 Conclusions

This study seeks to address a puzzle, property owners demand better services and infrastructure in their municipalities, but do not want to pay taxes in order to fund them. This is attributed to a variety of factors, among them the fact that taxpayers do not believe that property tax increases would result in improved municipal conditions. In other words, there is weak credible commitment- the public does not believe that government will fulfill its promises and use funds appropriately. I use a conjoint experiment in order to study whether policy design can establish credible commitment, particularly in contexts of low trust.

[8]In the city of Zapopan, for example, 30% of property taxes are destined to funding participatory budgeting projects. However, in an interview with the municipality's director of participation, he shared that the city does not use plaques or banners to communicate to citizens that a project was funded through a participatory budget initiative, nor that the project was partially funded by property taxes.

This study highlights some of the challenges that local governments in Latin America face in strengthening local coffers and reducing their dependence on transfers from central levels of government. Results of the conjoint survey revealed high level of support for property tax policy that increases the accountability of government in the ways it administers and spends funds, as well as policies that decrease the potential of government to abuse its power in enforcement. The most significant results suggest that individuals prefer property tax policy that uses active oversight strategies to constrain how government spends funds over property tax policy that would redirect a portion of their payments back to their neighborhood. This is an important point because it reveals a stronger concern with the transparent use of funds than with more tangible benefits.

Findings from this study suggest that efforts to increase local property tax collection do not only imply technical reforms, such as modernizing cadasters. Rather, these efforts also must also involve the integration of more significant strategies that strategically address the concerns of taxpayers. Municipalities must demonstrate their credible commitment to using tax payments to bring forth tangible municipal improvements. This does not solely mean appropriately spending the money, but also that municipalities enact proper communication channels in place to transmit this information to taxpayers, as the survey's open-ended questions highlight. Several respondents demonstrated a strong desire to express their concerns with municipal services and infrastructure, as well as the perceived limitations of the property tax system.

This study offers some evidence to suggest that property tax policy design, particularly strategies that increase transparency and oversight in the use of funds, can be a viable path for establishing credible commitment and motivate support for taxation at the local level. As scholars and policymakers continue to emphasize the importance of increasing property tax collection in Mexican municipalities, greater attention should be paid to the accompanying policy designs that are essential for motivating property owner support and increases.

3 Essay 2

Tax Equity and Legitimacy: An Experimental Survey of Property Taxes in Mexico City

If you want to use land, pay for it, more for the good land, less for the bad land.
— Leo Tolstoy, *Resurrection*, 1899

Abstract

Property taxes are an important source of revenue for local governments, enabling them to provide essential services and infrastructure. Yet, effectively levying this tax requires accurately assessing the value of property. This assessment process prompts its own set of challenges, not only in calculating an unrealized value but also in the continuous updating of these values to reflect market changes. Technical and political difficulties can undermine tax efficiency and erode public trust in government processes. Mexico City provides a compelling case study of the difficulties that local governments face in accurately calculating and levying a tax based on unrealized values. Throughout the city's history, Mexico City officials have refined the city's property tax calculation processes to strengthen local revenue. This has resulted in ad-hoc policies that lack a coherent vision. This has contributed to a tax system is marked by inequitable assessments, an issue that residents often brought up in focus groups. These inequities can result in lower overall tax collection, perpetuate existing wealth inequality, and also undermine the perception of the government's legitimacy to tax property. In this study, I ask: Does evidence of property tax inequity affect urban residents' perceptions of government and its legitimacy to levy property taxes? I address this question using a mixed method approach that involves three focus groups in Mexico City, elite interviews with government officials, and an experimental survey of more than 1,200 residents fielded in Mexico City. The results show that exposure to inequities in property tax calculation processes has significant effects on shifting residents' perceptions of the legitimacy of the government to tax property. I find that exposure to inequities reduces the perceptions of the respondents that the government has the right to tax property by one unit in one third of the respondents in the treatment group compared to the control group. Treatment effects were particularly significant among respondents with the highest levels of support for this tax.

3.1 Introduction

In 2024, the luxury real estate firm Sotheby's presented a new property for sale within its premium collection. This property, located in the affluent Roma Norte neighborhood of Mexico City, was listed at an asking price of approximately one million dollars, accompanied by an annual property tax of $290 dollars. At current market rates, this is less than the cost of renting the property for one week. The low property tax associated with this property is common in Mexico City and is the result of a combination of factors, such as the discount rates that Mexico City applies based on the age of a property, subsidies based on cadaster values, and outdated cadaster assessments that do not track market assessments and promote tax inequity.

This final factor is a consequence of one of the principal difficulties in applying property taxes, which is that they require local governments to confront the challenge of levying an unrealized and ultimately unknown value. Property taxes are differentiated from other taxes by the fact that they are levied annually throughout the period of ownership, as opposed to the moment of sale (Bird and Slack, 2004a). Local governments must therefore identify a strategy to measure property value in order to tax it. To do this, local governments employ a myriad of methods that rely on different types of data in order to best mimic latent market property values. For example, local governments may use self- assessment, market-assessment, rent-based assessment, unit-assessment, among other practices. This diversity of assessment practices has led tax expert Enid Slack to assert that property taxes are not a single tax but a "complex array of taxes with hundreds of local variations" (2001, p. 269). Local governments use assessment methods that vary from those that oversimplify value calculations to those that, as one cadaster director described, "count fleas" or attempt to calculate value with exaggerated precision.

The challenges and imprecisions inherent in calculating property values often lead to inequitable property assessments and property taxes. These inequities can appear as properties of similar market values that have notably different property assessments (horizontal inequity) or properties of notably different market values having similar property assessments (vertical inequity). The presence of these inequities can have tangible consequences. For example, inaccurate assessments may reduce the tax base by limiting both how much is collected by some high-valued properties and by reducing compliance if individuals believe that they are being treated unfairly (Spicer and Becker 1980). They may also increase local government expenditures on legal fees that result from potential taxpayer claims. Additionally, inequities

in assessments can also exacerbate economic inequalities by collecting lower taxes from more valuable properties and higher taxes from less valuable properties. A much less studied effect of inequitable taxation is that it can decrease confidence in government and reduce the legitimacy of taxation (Castañeda 2021; Von Haldenwang 2010, Bird, Slack, and Tassonyi 2012).

In this study, I ask: do inequities (horizontal and vertical) in the application of property taxes affect perceptions of government and consequently the perceived legitimacy of property taxation? I hypothesize that evidence of property tax inequities will reduce trust in local government, reduce perceptions of government competence, and negatively affect people's perceptions of government legitimacy to tax property. I study these questions in the context of Mexico City, a city where the evolution of assessment practices reflects the challenges that cities throughout the world face in accurately and equitably levying taxes on unknown property values.

I address the research questions by drawing on seven interviews with government officials, three focus groups with 23 participants, and a field experimental survey of 1,202 Mexico City residents. Interview findings indicate that political considerations have sometimes taken precedence over technical concerns in calculating assessment values. In addition to political factors, overreliance on subsidies and a model of tax calculation that separates land and structure values has exacerbated inconsistencies in property tax calculation and collection. Focus groups revealed that Mexico City residents find property tax calculations difficult to understand. Participants expressed confusion over precisely what factors determine assessment values, when and why taxes increase, and how government spends funds.

Against this background, this paper makes four unique contributions. Firstly, this study presents a novel methodology for examining property tax inequity in situations where property value data is scarce. Secondly, it employs qualitative methods to provide both a top-down and bottom-up perspective on how government officials and property owners perceive the process of calculating property assessments. This is intended to address the fact that taxpayer perspectives on property taxes are understudied despite the valuable insights they can offer into behaviors such as compliance, willingness to pay, and support for taxation (Martin, Mehrotra, and Prasad 2010). Thirdly, this study presents experimental evidence that property tax inequity is consequential for reducing the legitimacy of government to tax property, particularly among the population that has the highest levels of support for this tax. Previous scholarship on the consequences of tax inequity has not examined the local

level, nor has it considered inequity in direct forms of taxation. In this way, this study weaves scholarship on the determinants of government legitimacy to tax (Levi 1988; Castañeda 2021; Castañeda 2024), property tax inequity (Berry 2021; Ross 2017; Avenancio-León and Howard 2022; Peña-Medina 2016), and the legitimizing strategies that local governments employ when applying mechanisms that limit the full enjoyment of property through either zoning, taxation, or expropriation (Hengstermann, McElduff, and Ritchie 2025; Barton 2003).

In this study, I find that the current assessment practices in Mexico City, which use a zone-based system to calculate property assessment values for property tax calculation, significantly underestimate and overvalue different city areas. To investigate further into the causal consequences of the assessment and tax inequity, I carry out an experimental field survey. I find that being exposed to evidence of inequity in property tax calculation processes significantly reduces the perception of government legitimacy to tax property. I find the strongest reductions among individuals with the highest levels of support for government's right to tax property. This suggests that high support for property taxes is fragile and could be easily undermined by evidence of inequity and the improper application of this tax.

The rest of the paper is organized as follows. In the first section, I present a review of the literature of property tax equity and the factors that establish a government's legitimacy to tax residents. Next, I offer a brief review of Mexico City's property tax history and assessment strategies, for the purpose of situating current challenges within the historical development of Mexico City's property tax collection practices. The third section discusses the current assessment methods that Mexico City employs and highlights inequities in the current assessment system. The following section introduces some of the initial findings from this study gathered through a set of elite interviews with present and past government officials and focus groups with urban residents. I present this as top down and bottom up inputs, which were fundamental for developing the survey experiment. Next, I present the methodological design of the survey experiment along with an analysis of the results. I continue with a discussion section that considers the implications of the study and offers strategies to increase the precision of the measurement. The final section concludes.

3.2 Theoretical Setting

3.2.1 Inequity in property taxation

Inequities in property tax assessments and payments often stemp from the techinal difficulties in accurately valuing property and the political challenges involved in mantaining updated

cadaster values. All cities that depend on property taxes grapple with this issue. For example, in evaluating the property tax systems in the state of New York, Netzer and Berne (1995) claim that variations in assessments among similar properties are "the rule, rather than the exception" (p. 42). Discrepancies in assessments are a built-in feature of the tax, which require constant re-assessments and the only way that property owners can confirm that their assigned cadaster value is accurate is at the moment of sale (Ahmad, Brosio, and Jiménez 2019). These discrepancies in property assessment can propagate horizontal and vertical inequities in property assessments and consequently in property taxes.

Horizontal and Vertical inequities

Horizontal inequities in tax assessments, have been a focal point of U.S. property tax debates and are often more challenging to address than vertical inequities (Cornia and Slade 2006). Specifically, these inequities have represented a core issue in U.S. Supreme Court cases that involve property taxation (see *Nordlinger v. Hahn 1992, and Allegheny-Pittsburgh Coal V. County Common 1989*). For example, in the U.S. Supreme Court case of *Nordlinger v. Hahn*, Stephanie Nordlinger argued that, following the passing of Proposition 13 in California, assessed values violated the Equal Protection Clause of the United States Constitution since similar, neighboring homes could have dramatically different assessments. This was a result of reassessment restrictions that limited the amount that property assessments could increase annually throughout the period of ownership. Ultimately, the court ruled against her with strong protest from Justice Stephens, who in his dissenting opinion described inequity in assessments promoted by this new law as "arbitrary and unreasonable".[9]

An important set of scholarship from the United States has also focused on measuring the presence of vertical inequity in the United States by examining differences in assessment value to sale value ratios across property value levels. For example, Berry (2021) compares the appraisal value-sale value ratio across all U.S. Counties and demonstrates the prevalence of higher ratios among low value properties in comparison to high valued ones. By evidencing that low-value homes pay a higher portion of their property values in taxes than high-value properties, he ultimately demonstrates the presence of vertical inequities. This finding is consistent with other studies that consider the relationship between the prevalence of assessment regressivity and additional demographic components, such as race (Avenancio-León and Howard 2022).

[9]Full quote: "such disparate treatment of similarly situated taxpayers is arbitrary and unreasonable. That a law benefits those it benefits cannot be an adequate justification for severe inequalities."

Inequities in property taxation are systematic and can be self-enforcing. For example, in the United States, perceived inequities in property taxes are likely to result in property tax appeals. However, evidence suggests that this practice is more common among high-value properties (Ross 2017). Limited appeals from low-valued properties can result in a more regressive tax system and further exacerbate vertical inequity. Furthermore, the overestimation of low-valued properties can impact the long-term wealth of low-income groups. For example, over-assessed properties of lower values tend to experience deflated housing prices in the long run, while underassessed, high-value properties experience a premium due to the impact of property taxes on home values (Hodge, Komarek, and McAllister 2024).

Property tax calculation challenges in Global South

In the United States, the presence of vertical and horizontal inequity is often the result of deliberate policy choices and democratic processes to apply limits to property reassessments, such as Proposition 13 in California and Proposition 2 $\frac{1}{2}$ is Massachusetts (Bradbury, Mayer, and Case 2001; Sears and Citrin 1982). However, cities in a developing context face unique challenges in accurately assessing property values, such as lack of information, low inter-agency coordination, and concerns for the political costs of cadaster re-assessments. For example, evaluating property tax equity in Ciudad Juarez, Peña-Medina (2016) demonstrates that the weak political will of municipal governments to update cadaster bases contributes to property tax regressivity in the city. In Nairobi, Kenya, excessive periods between property assessments result in assessment values that weakly resemble current market values (Nyabwengi 2019). Lack of coordination between government agencies also fuels property tax inequities. For example, simultaneous and uncoordinated property tax administration by different bodies of government in Lahore, Pakistan, has resulted in substantial discrepancy in taxes levied on properties of similar market values, resulting in horizontal inequities (Abbas et al. 2023). The unique challenges of levying property among cities in a developing context lead to opaque processes that are illegible to urban residents. In this study I examine whether inconsistencies in property tax calculation and collection processes undermines the legitimacy of this tax from the perspective of residents.

3.2.2 Consequences of tax inequity

Inequities in taxation can undermine public trust in the fairness and neutrality of government, consequently weakening its legitimacy in enforcing laws and levying taxes. Scholarship offers a wide range of factors that define the legitimacy of government. Legitimacy is established

through input factors, such as the presence of democratic processes, but also output factors, which primarily refer to government performance and concern for the common good (Scharpf 2009). Levi and colleagues (2009) propose that government legitimacy rests on two preconditions: governmental trustworthiness and procedural fairness. They define governmental trustworthiness as consisting of three components: effective government performance, leadership motivations, and administrative competence. The authors test the relationship between perceived government legitimacy and these preconditions through a survey conducted in several African countries, finding the strongest link between legitimacy and perceptions of procedural fairness. In contrast, they find the weakest connections with government performance. However, this may be explained by the measure of government performance that the authors use, which is specifically about access to food, rather than service and infrastructure provision from the government.

Procedural fairness

Procedural fairness promotes compliance and adherence to the law. Factors that influence perceptions of procedural fairness include trust in the government's benevolence and intention to act fairly, as well as individual perceptions of neutrality in government decision making and law application (Tyler1997). Further supporting this idea, De Cremer and Tyler (2007) find that trust in government moderates the effect of procedural fairness in the willingness of individuals to comply with the law. This means that evidence of procedural fairness directly strengthens trust in government, consequently increasing compliance. Fair and equitable tax processes can motivate the perception that the government acts systematically, which ultimately strengthens perceptions of government competence (Rothstein and Teorell 2008; Grimes 2006).

The relationship between fairness and taxation has been studied with respect to both procedural and distributive fairness. Scholarship has found a strong relationship between the presence of both of these types of fairness and willingness to pay taxes (Castañeda 2024). In relation to distributional justice, studies focused on the determinants of support for wealth taxation have found evidence that the presence of inequality influences support for increasing the taxes of higher-income individuals (Boudreau and MacKenzie 2018; Chow and Galak 2012).

Procedural fairness in taxation refers to the fairness in how government calculates and administers taxes, as well as how disputes are managed. This has long been considered a fundamental factor in establishing the legitimacy of government to levy taxes. Writing

about the 15th and 16th century Ottoman Empire, philosopher, Kinalizade Ali Efendi, attributed the empire's stability to the "Circle of Equity" – the idea that the "rulers and the ruled" are interdependent and that the legitimacy to govern and levy taxes, and thus support the empire's wealth, rests on the ruler's commitment to justice and fairness (Darling 1997). Equitable taxes were essential for promoting compliance and reducing the potential for rebellion. In fact, petitions for tax reassessments or retrievals were used by the general population to signal perceived injustice in taxation, which in turn expressed a decrease in confidence in the legitimacy of the ruler (Darling 1997). Petitions, rather than rebellions, became a way to demonstrate dissatisfaction with the ruler. Thus, it was understood that the stability of the empire's treasury depended on its proper management, rather than oppressive rule (pp. 237).

Contemporary evidence has also demonstrated that procedural fairness, as revealed by equity in tax calculations, is consequential for how people view taxes and their willingness to comply with tax payments (Castañeda 2024; Spicer and Becker 1980). Experimental studies have been instrumental in analyzing this relationship. Farrar, Rennie, and Thorne (2022) find that both procedural and distributive fairness impact the intention to comply. Importantly, the authors find that this effect is fully mediated by legitimacy, since evidence of unfairness in process and outcome undermines people's perception of the tax authority's right to levy taxes. In another study, which specifically defines procedural fairness through the presence of vertical and horizontal equity, Finocchiaro and Rizo (2014) demonstrate that tax inequities increase tax non-compliance. These experiments had several limitations related to their small sample size and, in the case of Finocchiaro and Rizo (2014), in the application of an experiment among a population of exclusively undergraduate students. Despite their limitations, similar findings have been found in non-experimental research. Specifically, Castaeda-Rodriguez (2021) uses data from 58 countries to study the relationship between the presence of vertical and horizontal inequities and tax morale. He finds that the presence of vertical and horizontal inequity reduces tax legitimacy by reinforcing perceptions of unfairness, which ultimately diminishes tax morale. This research demonstrates the consequences of tax inequity that extend beyond the immediate, direct impacts of reducing tax revenue, but suggests that it may influence how individuals perceive the legitimacy of property taxes, which could further perpetuate inequality.

Legitimacy of planning action

The question of what establishes the government's legitimacy to levy taxes is slightly different

from the question of what legitimizes a tax. Taxation can be broadly understood as an individual sacrifice for a collective goal (Gribnau and Hughes 2021). A central question in political theory is what legitimizes this individual sacrifice. Although urban scholarship has not specifically considered the relationship between legitimacy and taxation, it has considered the legitimizing strategies that local governments use to obtain citizen approval of planning interventions (Taylor 2019; Hengstermann, McElduff and Ritchie 2025). Local government legitimacy may be, for example, undermined by the use of opaque and discretionary financing mechanisms for public works (Weber 2010, Manville and Osman 2018). Scholars have shown that the presence of clear processes in planning is fundamental for establishing the legitimacy of local governments to carry out public actions (Woestenburg, van der Krabben and Spit 2019). This is particularly essential for facilitating planning actions that limit the full enjoyment of property rights, either through land use regulation, expropriation, or taxation (Barton 2003). For example, in their study of land value capture mechanisms, Hengstermann et al. (2025) analyze the principles through which the government legitimizes the use of these mechanisms. They define "legitimation" as the process through which legitimacy is produced. Comparing legal frameworks in Switzerland and the United Kingdom, they find that in both cases policies were legitimized through public input and increasing the certainty in the application of rules and reductions in arbitrariness. However, while the British mechanisms are legitimized through the rationale of benefits received, Swiss legal frameworks use a rationale related to justice and define the objective of these mechanisms as a way of compensating for the advantages and disadvantages that result from planning strategies. Urban planning scholarship has focused on how democratic and transparent processes, as well as legal rationales, legitimize local government action. However, limited urban scholarship has examined whether the perception of fairness of these policies ultimately influences their legitimacy.

In this study, I examine whether evidence of vertical and horizontal inequities fundamentally shapes residents' perceptions of property tax legitimacy. While a broad range of literature explores inequities in property taxation, particularly within the context of the United States, research has not yet analyzed whether the presence of these inequities and factors such as arbitrariness in administrative processes affect public perceptions. This study is the first to investigate whether perceived inequities in public administrative actions shape attitudes towards local government and taxes. Importantly, it frames concerns about the inequity of administrative processes through a lens of urban governance.

3.2.3 Property tax context: Mexico City

A historical perspective

Land-based taxes have a long history both globally and in Mexico. Their use has consistently prompted the question of how to accurately measure the value they attempt to levy. In Mexico City, the earliest records of land-based taxation originate in the Coyoacan region of pre-columbian Mexico City and date back to the fifteenth century. Records describe a tax system, which would apply the tax based on the total area of communal land that each household held for residential or other uses. This system, referred to through the names *tequitlalli* and *teauitcatlalli*[10] , was a type of communally owned land that individuals could use in exchange for a tribute (Horn 1997). At this time, tax collectors would levy taxes based solely on land area, which was calculated using a local unit of measurement. Although the modern property tax system was not established in Mexico City until the 20th century, previous iterations of this tax took into account spatial value differentials. For example, in the 19th century, during the presidency of Santa Anna, a tax on windows and doors was highest in Mexico City than in the rest of the country, and even within Mexico City values differed depending on location. Properties in front of the main plaza paid the highest taxes, followed by those on streets connecting to the main plaza, followed by those on subsequent streets, and finally those with access to street lighting (Strobel del Moral 2020). This tax preempted the development of the modern cadaster in 1896, which attempted a more systematic approach to cataloging properties and their value, a task that reflected the state's needs to fiscally process property (CDMX 2011).

The contemporary property tax system in Mexico City was established through the city's first treasury law in 1929 which marked an important change in political administration and resulted in the establishment of the city's own treasury. The new law had the objective of creating cohesion in the city's tax system by replacing 28 previous laws. In 1947, as a result of changes in the country's State Treasury Law, the federal government of Mexico adopted the responsibility to manage the city's finances and prepare the city's budget (Kuri 2012). The president would approve the city budget and treasury law, which would then be passed on to the Chamber of Deputies. It was not until 1993 that the city gained its autonomy over local financial matters. This meant that for most of the twentieth century, the federal government defined and administered property taxes with limited local input.

Throughout the twentieth century, property taxes were one of the most important sources of

[10]Land on which tribute is paid.

revenue for Mexico City and allowed it to fund public infrastructure without relying on federal government funds or public debt. For example, from the 1940s to 1970s, this tax represented over 20% of local revenue which is nearly double what it is today (Cohen, 2023). At that time, property taxes were the second most important source of revenue for the city. The initiative to increase property tax collection became more pronounced as the city faced greater pressures to expand services and infrastructure to a rapidly growing population (Davis 1991; Kuri 2012). Mexico City's political leaders stressed updating property values to strengthen local tax collection, since property taxes were the city's main source of local revenue until the 1980s when payroll taxes were reassigned from the federal government to states. For example, one of the first actions as the Chief of Mexico City for Ernesto Uruchurtu in 1952 was to reorganize and update the cadaster of Mexico City. This initiative to modernize the cadaster system had the objective of 'knowing what we have and how much what we have is worth, to ensure that the taxes applied are equitable' (as quoted in Cohen 2023, p. 234). At that time, updating the cadaster bases was considered crucial for increasing the city's revenue and ensuring that the administration could carry out its vision, which included the abrupt expansion of the city's road network and consolidation of its drainage system.

As early as 1941, Mexico City used methods for calculating property taxes that separated structure values from land values. A review of Mexico City's finances that included a systematic evaluation of its property tax calculation method from 1962 to 1964 critiqued this method of tax calculation, since it contradicted efforts to approximate cadaster values with market values and recommended unifying this practice (Oldman et al. 1967). At this time, land values varied based on street frontage, with the potential for additional increases based on specific locations. For example, corner lots received a 15% increase and lots with commercial uses, a 25% increase (p.69). This was considered an appropriate strategy for more accurately approximating market values.

In the 1980s, the city altered its method for calculating land values and created large zones in central city areas with unique land values, leaving behind the use of additional modifications at the individual lot level. In addition to this zone-based system, the city also employed a multiplicity of assessment methods. For example, by the late 1980s, Mexico City had over eight different assessment practices that could be used to calculate the value of a single property (Morales Schechinger, 2002). These included: base value, rent value, rent capitalization, construction recovery method, transaction value, and auto-determination among others. These different methodologies further perpetuated inequities, as there was no standardized approach to evaluate properties, resulting in similar properties paying dramatically different

taxes.

In an attempt to consolidate the city's property value calculation process, Mexico City expanded the zone-based system, which was initially introduced for central city areas, to the whole city. This action was carried out through a 1990 tax reform, which also established the creation of high-value corridors throughout the city that are still in use today. These reforms were instrumental in nearly doubling property tax revenue from an all-time low in the 1980s.

Throughout the twentieth century, inequities in property tax calculation were further exacerbated by the use of two different bases for the calculation of property taxes, cadaster assessments for owner-occupied property, and rental values for non-owner occupied properties. The use of these two bases for calculating property values resulted in a system in which properties with similar market values could pay dramatically different property taxes (Morales-Schechinger 2002). Consequently, for much of the twentieth century, the rent-based property tax represented the main source of property tax revenue for Mexico City. This strongly incentivized the government of Mexico City to maintain this system despite its violation of constitutional principles. The rent-based calculating property taxes was finally deemed unconstitutional in 2008 and eliminated after the city lost significant revenue from the use of collective legal actions that resulted in non-payment (Echavarria and Monkkonen 2025). The constitutional challenges and resulting revenue losses demonstrate some of the substantial consequences of a property tax that violates the principles of proportionality and equity.

Public finances

Despite its importance in Mexico City's finances in the 1960s and 1970s, the property tax experienced an important decline in importance by the 1980s. This is a period marked by fiscal crisis and acute inflation, as well as increasing dependence on federal government transfers, federal bailouts, and debt financing (Lajous 1984, p.81). At the beginning of this decade, property tax revenue represented as little as 3% of local government revenue, a figure strongly influenced by high levels of inflation that made outdated property values nearly obsolete.

Fiscal reforms in the 1990s led to important updates to the city's cadaster system. These changes made property taxes relevant once again and nearly doubled the property tax revenue of previous years. One of the most notable reforms in the city's tax system occurred in 2008 during the administration of Mayor Marcelo Ebrard, who carried out a massive cadaster modernization program. This reform increased property tax revenue by prompting massive

reassessments of higher-income neighborhoods. However, it also resulted in pushback from wealthy property owners who received the highest levels of increase and demanded direct benefits (Gomez and Gonzalez, 2008).

Property taxes remain an important source of local revenue for Mexico City. The city's administration has prioritized reducing the city's dependence on federal government transfers and fortifying its local revenue sources. This past year, city mayor Clara Brugada proudly announced that in 2025, Mexico City would be the first Mexican city to primarily rely on local sources of revenue (Gonzalez 2024). This year, property taxes are projected to account for 9% of total local revenue, while federal transfers and participations will account for 49% of revenue, representing a notable reduction from 52% in 2024 and 55% in 2023. While Mexico City's property tax collection is slightly lower than that of comparable cities in the region, it collects about 60% of the total property tax revenue in the country.

The unique importance of Mexico City's property tax collection at the national level can be explained by three primary characteristics that differentiate it from any other city in the country.

The most significant of these is that Mexico City is the main economic center in the country and benefits from valuable office and commercial developments. In 2024, commercial and industrial land uses made up 11% of the total property tax bills, but accounted for 54% of total property tax revenue. Furthermore, unlike other Mexican municipalities, Mexico City does not require the coordination of multiple levels of government to approve changes to property tax rates and to update cadaster assessments. Finally, Mexico City benefits from electoral cycles of six years,—- double that of other municipalities. This gives Mexico City's government more time to make substantial fiscal changes without concerns about immediate political costs. This is particularly important for facilitating cadaster updates which are largely seen as a long-term strategy for increasing tax revenue.

The historical evolution of Mexico City's property tax calculation process reflects a path-dependent trajectory shaped by a series of disjointed policy and technical decisions. As demonstrated here, the assessment of property in Mexico City has implied a process of continuous revision, drawing from different methods and data sources in attempts to accurately measure an unknown value. Throughout their nearly century-long history, property taxes in Mexico have confronted challenges with inequity that have resulted from the use of these different assessment methods. In the next section, I discuss in detail the current calculation methods used in Mexico City and the ways that these perpetuate inequities.

3.3 Current assessment and rate system

The current challenges Mexico City faces in accurately calculating property taxes are not unique to the city, but a result of the inherent difficulties of levying a tax based on property values in a city that is constantly changing. Although property assessment systems are designed to approximate 'fair market value' as closely as possible, this value is ultimately unknowable. The process of estimating this unknown value and then levying a tax based on it contributes to what Sven Steinmo describes as 'fiscal incoherence' (1993), which refers to a sense of confusion about how the government determines taxes and justifies their application.

Mexico City, like other Latin American cities, employs an assessment process that estimates the value of structures and land separately. To calculate the value of structures, the Ministry of Finance categorizes properties on a scale of 1-6 based on the materials and aesthetic finishes of the structure. However, land values are calculated based on an assessment process known as unit-value assessment.[11] To calculate the value of land, Mexico City divides the city into 1,216 zones (Annex 1- Figure 1). The city categorizes these zones into nine typologies based on factors such as socioeconomic level, predominant land uses (mainly residential / mixed use, industrial), the integration of the area into the city and the quality of the services provided. These variables are not well defined either in the fiscal code or in the methodologies that the local government uses to coordinate zones. The lack of clarity in the classification of variables was confirmed in an interview with the Mexico City Subtreasurer (2019-2024), who attributed the lack of sufficient data to weak inter-agency coordination.

The zones used to calculate land values were initially defined based on the distribution of city services (Morales- Schechinger 2002). However, because these zones often cover large areas, they fail to capture small differences in value influenced by land use, allowable density, and proximity to services. For example, because land values are grouped by zone, a lot that has an allowable density of five stories is valued the same as a lot restricted to single-family housing if it falls within the same zone. As a result, a single unit in a five-story building pays significantly lower property taxes than a unit of the same size in a two-story building. Although this approach incentivizes more efficient land use and ensures that properties that have fewer intensive uses of land pay more in taxes, the issue arises in that density is not priced into cadaster land values. This ultimately subsidizes condominium units and limits

[11] Unit-value assessment is an assessment process which does not take into account the specific location of the property but uses a zone-based approach to define a property's value. Properties in different zones will have different values. The values are calculated taking into account average values for groups of properties within each zone, rather than the characteristics of individual properties. Smaller zones typically result in more precise approximations of market values (Bird and Slack 2004b).

the city's ability to use property taxes as a tool to capture land values.

The discounted assessment value that units in higher-density buildings receive is amplified by the city's use of additional subsidies for properties in the lowest six cadaster value brackets.[12] This system unintentionally provides additional discounts to properties that are already remarkably undervalued.[13] The undervaluation of condominiums is particularly notable given that they account for almost 50% of property tax bills and represent the fastest growing land use in the city. Internal documents from the city's Ministry of Finance refer to this phenomenon as the "*Condominización*" of Mexico City (Ministry of Finance 2024). The undervaluation of these condominiums was mentioned in interviews with both ex-treasurers of the city and sitting subtreasurers.

The calculation of cadaster land values based on zones also contributes to inequities due to the ways that breaks between zones occur. Although the zones are largely aligned with the boundaries of the neighborhood, this does not necessarily correspond to changes in value. For example, more proximate points that fall in different zones are more likely to have similar values than less proximate points that are within the same zone. In addition, breaks in zones do not always correspond to natural breaks, such as main roads in the city or natural boundaries. As a result, land values can jump from one side of a residential street to another, such that properties with nearly the same market value can have very different cadaster values if they fall into different zones. For example, in Figure 9, I show a residential street in the neighborhood of Del Valle. Here, one can identify that properties that fall on different sides of the street have notably different cadaster land values per square meter. Consequently, two properties with nearly the same services and features can pay dramatically different property taxes. Admittedly, this occurrence of inequity is less common throughout the city.

[12]For example, Mexico City applies flat taxes to the first four value ranges (a value of up to $1.36 million pesos) and the following three ranges of value get discounts from 50% to 25% (properties with cadaster assessments of up to $ 2.7 million pesos). The application of flat taxes creates points of regressivity in the property tax payment schedule of the first three levels of value, since properties of the highest value within the same bracket pay the same amount as those of the lowest value (Annex 1, Figure 2).

[13]For example, in Annex 1 Figure 2 I show a property tax bill for three bedroom, Class 5 apartment (1-6 range) in a well-serviced area of high land value. As a result of subsidies, the yearly property tax for the apartment in central Mexico City with a market value of approximately $4 million pesos is of $600 Mexican pesos (about $30 USD).

Figure 9: Cadaster land values in neighborhood of Del Valle, Mexico City
Source: Google street view

Another way in which current assessment practices perpetuate inequities is in the way the city updates the cadaster values. With the exception of zones considered high-value corridors that receive differential increases, Mexico City updates cadaster values by applying equal percentage increases across all city areas. These increases are typically linked to inflation, rather than changes in the market. Long periods without taking the fluctuations of values into account create increasing disparities in assessment values.

Property tax equity in Mexico City

I compare cadaster land values to land sales listings to assess the presence of vertical and horizontal inequities in the evaluation calculation processes of Mexico City. In the United States, widespread availability of property data has facilitated the development of a rich set of scholarship examining the presence of property assessment and tax inequities (Berry 2021; Avenancio-León and Howard 2022). However, limitations in data availability has made these studies infrequent in a development context (Peña-Medina 2016). I propose a methodology based on land list values and cadaster land values to analyze the presence of inequities in Mexico City's zone-based property assessment system. Due to data availability limitations, I draw on a smaller and potentially less accurate sample size. Furthermore, I specifically examine land values because I am interested in evaluating inequities in the portion of land value that originates from socially created factors, rather than individual improvements.

To carry out this analysis, I compare cadaster land values with land list prices. I obtained cadaster land values from publicly available information included in the 2024 income law.[14] To obtain market land values, I scraped 2,000 land listings, out of which 1,403 were usable. I collected these land listings throughout 2024 from online listing pages. Because zones can change from one side of the street to another, I only included properties that had a specific street address with number, which I geolocated using Google address identificator (package *ggmap*). I double checked these addresses using Google street view and by revising the individual listings. Importantly, I also ensured that in the study I only included listings that were in the condition of being tear-downs, parking lots or completely empty lots. These restrictions limited the total number of listings incorporated in the final analysis, but increased the precision of the findings. Although I only included listings that were advertised as land, I controlled whether the properties were completely empty or had some structure, such as a warehouse or a remodeled house, which could affect the value. I applied a rate of 0.9 to properties that had the presence of structure. I included all land uses in the analysis because the land values of the cadaster are assigned by zone rather than land use. Finally, I matched individual list values to their corresponding cadaster zones.

I obtained the median list value for zones with more than two list properties present and the mean for zones that only had two values. In the final analysis, I restricted the study sample to zones that had more than one listing to ensure that no zone had a land list value estimate determined by a single observation. Using this method, I included a total of 398 zones in the analysis.[15] In Annex 1, Figure 3, I present a map of the zones included in this analysis. One can observe an oversampling of central city areas, which have more property transactions.

I present the results of this analysis in Figures 10 and 11. First, I present the relationship between the zone land cadaster value and the average market values by zone. Here one can identify that there is a significant positive relationship in which as cadaster values by zone increase, so do the values of the land listing. This relationship is below a 45 degree angle which suggests that cadasters are relatively undervalued in relation to list values, particularly at the highest list value levels. However, overall, this shows that list values accurately track with cadaster values.

[14] Propiedades.com, inmuebles24.com. I chose these pages due to facilities with web scraping and because they pool listings from all listing pages.

[15] This is slightly over 25% of total cadaster zones but make up over 80% of the population in the city (7.3 million).

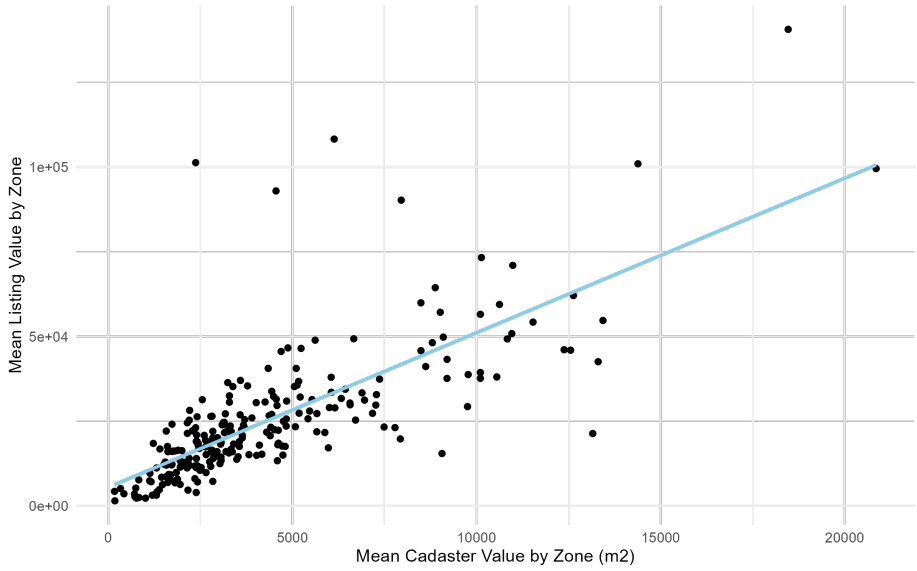


Figure 10: Relationship between listing values and cadaster land values by zone

In Figure 11, I further dissect this relationship and present the measure of cadaster values by zone as a ratio of list land values. I observe this in relation to market land prices/m2 by zone.

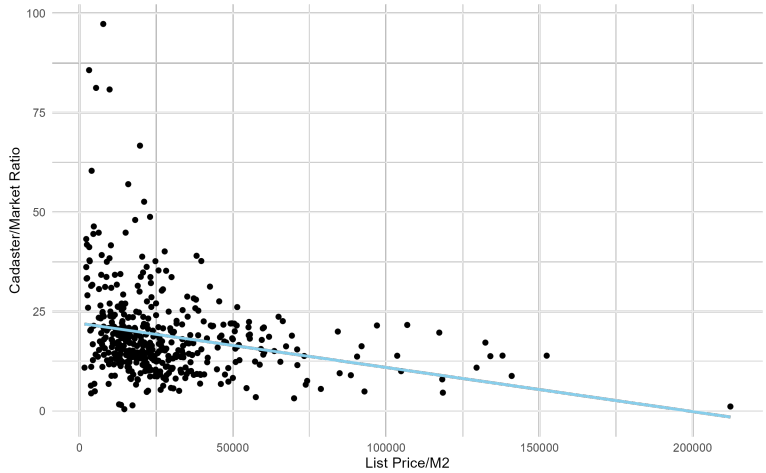


Figure 11: Ratio of cadaster land values to listing values

The ratio which I present in Figure 11 demonstrates a slightly regressive pattern in the ration of cadaster land assessment and land list value. This means that the ratio of cadaster value to listed land price decreases as the listed land value increases. Although this trend may be

partially the result of an overvaluation in the market listings of higher value properties, it may also suggest that the assessment system that Mexico City currently uses to calculate property taxes may not adequately reflect the real value of the land in these areas. This is likely a result of the long time span between assessments or the omission of factors such as the potential density of land in the estimation of the cadaster values.

While this graph demonstrates that lower valued properties, as a whole, have a higher ratio than lower valued properties, one can observe over-valuations and under-valuations at all levels of property values. In the following map I present a categorization of low (orange), medium-low (yellow), medium-high (green), and high valued (blue) properties based on land list values. I break up each group according to whether they have low, neutral, or high ratios. Low ratios suggest that the zone is undervalued in relation to market values, neutral ratios suggest that the zone is probably properly valued in relation to market values, and high ratios suggest that the zone is likely overvalued in relation to market values. In the map in Figure 12 one can observe that under and over assessments occur at all property value levels, which is likely a result of the inaccuracy of assessment practices.

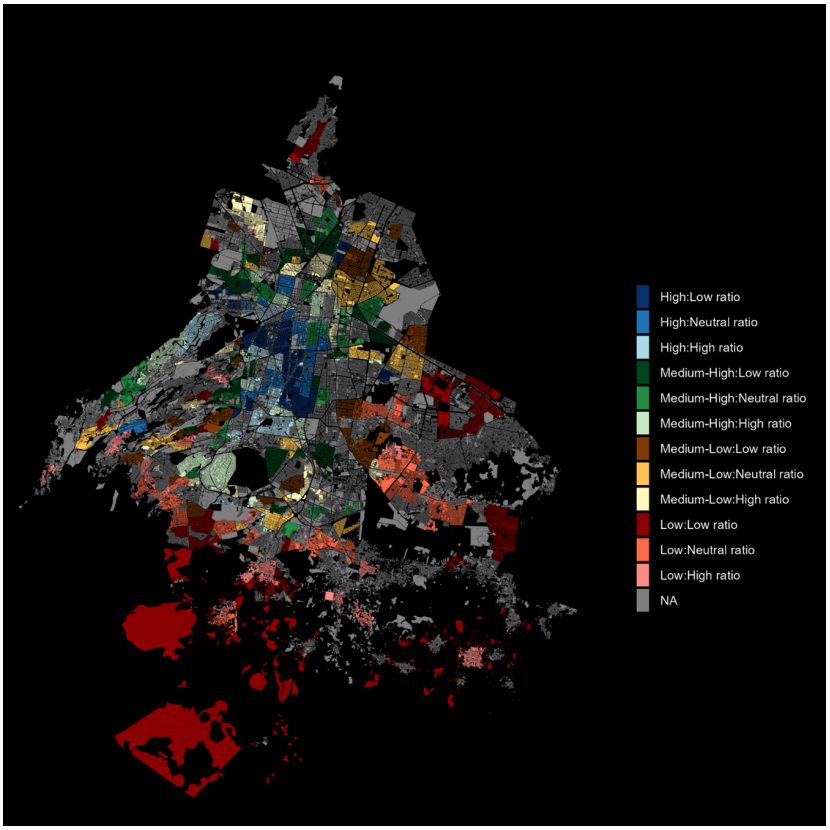


Figure 12: Ratio of cadaster value to land listing value grouped by market value of zone

The map demonstrates that the zones with high market values are concentrated in the center and west of the city (in blue). Among these there is much variation, for example while neighborhoods like Escandon, San Rafael, Doctores, Narvarte Oriente appear to be accurately priced, zones like Condesa, Roma, Narvarte Poniente are undervalued (low ratios in dark blue). Meanwhile, zones like Coyoacan, Lomas de Chapultepec, and Del Valle have high ratios, which means that they are overvalued (light blue). Neighborhoods such as Pedregal and San Jeronimo Lidicie in the south of the city are substantially overvalued for taxation purposes according to the data (light green). The overvaluation is augmented by the fact that these areas are zoned for single-family housing and do not permit more intensive use of land.

Areas with low property values, such as Barrio Norte in Alvaro Obregon appear to be overvalued with high ratios, as well as zones in the city's southern periphery (light pink). Additionally, I identify a number of areas with low property values with high ratios, which could have important consequences, such as exacerbating inequalities. Importantly, under- and over-assesses in a single zone could result in perpetuating inequities among thousands of properties, which could significantly reduce government revenue and perpetuate broad inequalities.

The under and overestimations presented in these maps and graphs capture the general inaccuracies and regressivity in the property assessments in Mexico City. However, they do not capture the specific points of vertical and horizontal inequity. In order to capture the prevalence of these inequities, I present a small sample of pairs of zones that exhibit the highest levels of horizontal and vertical inequity. I present these in Table 4. In this example, horizontal inequity is evident as the application of significantly different cadaster land values in zones that have similar median list market values. This demonstrates a differential treatment of equals by the government. In this table, I also exhibit cases of vertical inequity. This is evident in zones with dramatically different listing values and nearly the same cadaster values. These examples demonstrate insufficient differentiation among unequals.

Horizontal Inequity							
No.	**Zone (1)**	**Zone (2)**	**List Value (1)**	**List Value (2)**	**Cadaster C (1)**	**Cadaster (2)**	**% Diff**
1	A050190	A120129	4,173	4,286	1,324	168	687
2	A050152	C-06-M	21,413	21,362	2,147	13,157	513
3	A110108	A110156	101,289	100,952	2,373	14,384	506
4	A140180	A140971	1,490	2,293	178	1,009	467
5	A010712	A110136	23,080	23,115	2,372	7,786	228
6	A010962	A050065	25,302	25,330	2,199	6,714	205
7	A110336	A060055	140,624	108,235	18,465	6,134	201
8	A010282	A100094	17,543	17,551	1,607	4,803	199
9	A110023	A011103	15,631	15,458	3,276	9,063	177
10	A030265	A020242	31,214	31,348	6,958	2,552	173
11	A060055	A110108	108,235	101,289	6,134	2,373	158
12	A140021	A020262	7,403	7,239	1,122	2,838	153
Vertical Inequity							
No.	**Zone (1)**	**Zone (2)**	**List Value (1)**	**List Value (2)**	**Cadaster C (1)**	**Cadaster (2)**	**% Diff**
1	A100163	A050290	18,437	3,166	1,222	1,196	482
2	A100011	A100163	3,348	18,437	1,261	1,222	451
3	A070063	A100322	19,063	3,953	2,388	2,388	382
4	A060075	A110645	90,225	19,765	7,955	7,931	356
5	A110108	A010712	101,289	23,080	2,373	2,372	339
6	A060055	A060194	108,235	28,931	6,134	6,154	274
7	A090312	A140961	11,198	3,170	1,311	1,306	253
8	A011742	A160291	16,810	4,800	1,402	1,386	250
9	A140971	A140021	2,293	7,403	1,009	1,122	223
10	A030346	A011103	49,801	15,458	9,097	9,063	222
11	A140550	A120010	7,692	2,489	828	831	209
12	A011082	A020262	22,013	7,239	2,838	2,838	204

Table 4: Vertical and Horizontal Inequities in Mexico City's property assessments

I only present a small sample of the total zones with substantial inequities. However, in this analysis, several specific neighborhoods stand out. For example, even though Condesa and Polanco have similar median list values; they have dramatically different cadaster values (Horizontal inequity #7). Meanwhile, the neighborhoods of Condesa and Santa Maria Ribera have notably different median market values and nearly equal cadaster values by zone (vertical inequity 6). This example demonstrates both vertical and horizontal inequity that results from the undervaluation of zones.

The presence of inequities in property assessments is important because it can perpetuate

inequalities, reduce government revenue, and, as I demonstrate in the experimental portion of this study, it can undermine the fragile perceived legitimacy of property taxation.

The analysis has some limitations, such as the small sample size for each zone and the lack of consideration of additional factors by zone, such as allowable densities and land use. However, it offers a new methodology for identifying property tax inequities by drawing specifically on land values, the socially derived portion of property value. This analysis is particularly useful for studying property tax inequity in a non-US context where there is limited data availability of cadaster and property value data.

3.4 Qualitative Findings: Top-down and bottom-up evidence on inequity

As part of this study, I conducted semi-structured interviews with past and present government officials – at the time of interview – who were involved in different parts of the property tax collection process in Mexico City. In Annex 1-Table 2, I present the details of the interview and the participants. These interviews were fundamental for the design of the survey experiment and for understanding the challenges of property tax administration and collection in Mexico City.

In addition, I conducted three exploratory focus groups with a total of 23 participants. Focus groups had the objective of identifying how Mexico City residents perceive property taxes and issues that they identify with this tax. Focus groups included a mix of individuals living in different Mexico City boroughs and were varied with respect to gender, age, income level, occupation, and types of tenure.

3.4.1 Government official interviews

Interviews with government officials demonstrate that there have been substantial technical advancements with property assessment calculation, particularly in shifting away from an individual assessor system to a data-driven one. Nonetheless, the efficiency of this system remains constrained by political considerations, data limitations, weak inter-agency coordination, and the prevailing reliance on flat and discounted rates.

Even though property sales data is readily available, interviewees expressed a persistent hesitation in using this information for the calculation of cadaster values. For example, a previous employee of the city's cadaster office (2016-2018) explained that even though they

had all the technical information to develop an econometric model to accurately update cadaster values and increase the accuracy of the current system, political considerations halted these efforts. He remarked that "It was not implemented because that would have been a huge political problem. It would have to be approved... the fiscal code has to be approved every year, and just the approval of the fiscal code with differentiated percentages in different administrations is already a problem. And after losing the political battle over the incorporation of land value capture in the constitution, there was no possibility. ' This shows that technical decisions are often made in response to the current political climate, rather than methodological processes. This was a sentiment expressed by other interviewees, such as the city's subtreasurer (2018-2024) who mentioned that "the updates are carried out, sadly, according to the criteria of Mexico City representatives. Therefore, what we have tried to do is push forward the methodological part." This sentiment again reveals a general sense that technical considerations are secondary to political interests in decisions regarding cadaster assessments.

Alternatively, when reforms were made that increased the accuracy of assessment methods, methods such as subsidies and discounts were applied to offset them. For example, in 2014 a reform to the fiscal code established that cadaster values would be updated to sale values at the moment of a property transaction. The Mexico City treasurer during that time described this as an important achievement for ensuring that assessment values systematically approached market values throughout the city. Even though this change remains in the fiscal code, the city grants those affected by this change a subsidy of 100% every year. This ultimately makes the fiscal code murkier and contributes to taxpayer confusion since these reforms are present in the law but are not actually applied. Furthermore, when the city applies subsidies to compensate for reforms that are in the fiscal code it undermines the credibility of these processes.

Overall, interviews with government officials demonstrate that what bureaucrats and technical experts can do to improve the accuracy of the assessment processes is limited by political actors and concerns of political costs. In general, interviews with government officials highlighted that the processes of measuring property value are embedded in power relations (Scott 2020).

3.4.2 Focus groups

Despite technical advancements in property tax calculation processes, many city residents perceive this system as inconsistent and opaque, particularly when they experience abrupt

jumps in their tax bills. Individuals do not only consider that there are substantial inconsistencies or arbitrariness in how property taxes are calculated but also express a general skepticism with how government administers and spends property tax revenue.

1. Lack of clarity in how property values are defined

Many focus group participants expressed their feeling that there was no clear delineation of why they paid the taxes they paid compared to other nearby properties. For example, a 68-year-old resident of Cuahtemoc borough expressed this concern by saying:... it's not possible that on my block, the street where my house is located is considered residential, while the other three surrounding streets are not, and then the next block and the next block, only this street. No, it doesn't even extend two or three more streets, just this one. I mean, these are incomprehensible situations where the tax jumps from $250 pesos of property tax to $9,000 pesos. So, there are many inconsistencies, many inconsistencies, and reliable criteria need to be established." This general sentiment was expressed by multiple participants of different focus groups who raised these concerns in response to open-ended questions about their general perceptions of the property tax.

Similarly, some participants expressed confusion about increase schedules and how these are decided. "The property values from one street to another are completely different. Take for example, the Cillacrozón neighborhood, with its main avenue, Eduardo Molina. If I go to another neighborhood, certain conditions are already missing, right? And this is what we are talking about—I would like to understand why. I know that the fiscal code exists, which establishes the values that must be paid, or determines them, and that these are updated year by year. But what I do know, at least from my experience over the past 10 years or more, is that these values have always remained the same." (Female, 41 year old, Gustavo A. Madero). Some participants expressed a general lack of clarity as to why the zone in which they lived had substantially different land values compared to other nearby city areas. A general sense of confusion was a consistent sentiment among many focus group participants.

Even participants who were opposed to the tax in general were concerned that it be applied equitably to all. Indeed, it was the participants who opposed the tax in principle that were most concerned about its fair application. "I am in agreement that this tax should not exist, but it already exists, so the government should apply it in a just way" (Male, 35 year old, Alvaro Obregon).

It is important to note that not all inconsistencies between the payment benefit connection

were negative. Some participants expressed that they felt they paid little in property taxes in comparison to the benefits they received from the government. For example, a participant expressed, "What I pay in property tax compared to the type of services I receive in the area seems low; it is low in relation to the payment. I have roads, transportation, water and all basic services, as well as everything within walking distance.' Statements like these, which often come up in conversation, suggest a possible connection between satisfaction with services and infrastructure and the willingness to pay this tax.

2. Incoherence in how funds are spent

The perceived incoherence of property taxes extends beyond how they are calculated and collected and also includes how the resulting revenues are spent. Participants were not as concerned that they directly benefited from the tax revenue as they were that the money be used for the improvement of the city. There was a large concern that the city could make decisions on the use of funds without having to communicate any information to taxpayers. "Here, no one has any idea—I least of all—about what is done with the property tax revenue, whether at the local level, the borough level, or even less at the city level. So, the same thing always happens. Someone always decides how the funds will be allocated and what they will be used for. And there are never any transparency mechanisms in terms of governance and governability that allow us to know where the money is going and how taxpayers' money is being used." (Female, 44 year old, Tlalpan). Some participants described the government's use of money as giving citizens *"atole con el dedo"*, a popular Mexican expression that means to make promises that will not be fulfilled or to deceive. The sense of distrust over the use of money demonstrates a lack of communication strategies and democratic processes in how the city spends this money.

3. Perception of arbitrary increases

Another recurring theme in focus groups and expressed by multiple participants was the perception that they, or people they knew had received abrupt property tax increases that they considered unjustified. For example, a participant narrated that her father received a notable increase in their property tax bill "just because they fixed the roof of their house". When this point came up in conversation, it would often receive strong agreement from other participants. There was a particular sense that property taxes could increase without any explanation or justification from the government, which seemed to contribute to a sense of uncertainty and distrust among residents.

3.5 Methodology

Background analysis of property tax calculation processes in Mexico City, as well as elite interviews and resident focus groups, was essential to identify points of contention in the city's property tax system. From this process, I found that the political and technical challenges that accompany taxing unrealized property in Mexico City result in inequities in its property tax calculation process. Furthermore, focus groups revealed that many individuals were very aware of the inconsistencies in the property tax collection process, which contributed to their feeling that the tax was unjustified.

I developed the following research questions iteratively through the process of interviewing government officials and carrying out focus groups.

- Does evidence of vertical and horizontal inequity negatively influence an individual's trust in government and perception of government's competence and fairness?
- Does evidence of inequity negatively affect public perceptions of the government's legitimacy to tax property?
- Does evidence of vertical and horizontal inequity shape public support for property tax increases?

In order to answer these questions and analyze causal connections, I carried out an experimental field survey in Mexico City with 1,202 respondents. The survey was fielded from June 30 to July 26th in 120 different neighborhoods of Mexico City. I decided to physically field the survey, rather than use an online platform to ensure that the sample included individuals who do not have access to a computer or internet, are older, or have lower levels of education. These are populations that are often underrepresented in online surveys.

3.5.1 Experimental design

In this experiment I randomly assigned individuals to one of three possible groups: Control, Treatment 1 (Horizontal Inequity), and Treatment 2 (Vertical Inequity). The treatments had the objective of presenting respondents with accurate information highlighting real world examples in which the current property tax calculation system creates inequities in tax payment. I specifically attempted to manipulate individual's perceptions of property tax equity without priming respondents.

I used videos in order to make the property tax calculation process more comprehensible and

didactic to different individuals who may have little exposure or knowledge of tax calculation processes. Previous scholarship on taxation and inequality has successfully employed videos that explain difficult taxation concepts to present experimental treatments (Stantcheva 2021).

The treatments, which showed inequities in property tax calculation, presented respondents with two side-by side properties with differing or equal property values and differing or equal property taxes. These hypothetical cases were based on real world information derived from cadaster zone/land values, cadaster structure values by class, listed land values, and property tax calculations taking all subsidies and discounts into consideration.

Control

Video with information detailing how the government calculates property taxes. The video explains how Mexico City's government calculates property values for the purpose of collecting property taxes. It explains that this value is the sum of the value of structures (as defined in six possible categories) and that the value of land is defined by dividing the city into 1,216 zones. The video then explains that these two values are combined to define the cadastral value used for property taxes. The purpose of this explanation is simply to ensure that individuals have a solid understanding of how property values and property taxes are calculated.

In the second part of the video (which is the control), I present two houses with similar locations, similar assigned land values, similar assigned structure values, total assigned cadaster value, similar market values, and information about how they are charged similar property taxes by the government. Control video is available here.

Treatment 1: Horizontal equity

The first part of the Treatment 1 provides the same information as the control video.

In the second part of the video, I present two houses with similar locations, similar assigned structure values, similar market values, however, with different assigned land values, different assigned cadaster values, and different property taxes. The video presents each value separately and is accompanied by audio to ensure that individuals understand each value. The objective of this video is to manipulate the perception of horizontal equity in how the government calculates property taxes by showing two houses that have similar market and assigned structure values but are assigned different land values and are thus charged different property taxes. Treatment 1 video is available here.

Treatment 2: Vertical inequity

The first part of the Treatment 2 video provides the same information as the control video.

In the second part of the video, I present two houses with different locations, similar assigned structure values, similar assigned land values, similar assigned cadaster values, and similar property taxes, but with notably different market values. The video presents each value separately and is accompanied by audio to ensure that individuals grasp each value separately. The objective of the video is to manipulate the perception of vertical equity in how government calculates property taxes by showing two houses that have different market values, but are assigned the same cadaster land value and are thus charged similar property taxes. Treatment 2 video is available here.

All

All of the three videos follow the same structure and are of comparable time lengths. I defined the three potential scenarios based on realistic advertised market land values, government-defined cadaster land values, government- defined structure value based on the category of the property (1-6), as well as subsidies and flat rates. This ensured that the examples matched reality as closely as possible.

In the treatments, I prioritized the subtle presentation of information in order to avoid strongly priming respondents toward any particular interpretation of what inequity in tax calculation might imply about the government. To ensure this, I relied solely on presenting evidence demonstrating disparities in property tax calculation without any explicit mention of the situation as inequitable.

Each of the three videos lasted 1 minute and 45 seconds. In order to make these more comprehensible I included two images of houses which were exactly the same, except for their paint color and small aesthetic features that I edited in order differentiate them while maintaining consistency and the control acted as expected. At the conclusion of the videos, participants were handed support cards with the exact information presented in the videos. Surveyors were instructed to ensure that participants spent at least ten seconds analyzing the cards, which guaranteed that they properly absorbed the treatment, which was my main concern in using a video-based treatment in a field setting.

Importantly, the only differences between control and both treatments were the numbers presented to respondents concerning the market value, cadaster value, and property tax paid by each property. Table 5 shows the final distribution of group assignment.

Group	N
Control	390
Horizontal Equity	398
Vertical Equity	389

Table 5: Participants by group assignment

Attention checks

Immediately after the video, I included an attention check question that asked respondents what value Mexico City's government uses to calculate property taxes. This was explained clearly in the video and an incorrect response would properly signal that participants did not pay full attention to the video. The attention check was not specifically related to the application of the treatment; therefore, I used it as a control, rather than a variable for elimination of participants.

Sample/randomization

I carried out a survey of 1,202 randomly selected residents of Mexico City. This sample included property owners and renters. I hired a survey company and supported training and supervision of a group of about 14 surveyors. I carried survey supervision on the field and remotely.

Surveyors administered the survey in 120, randomly selected census tracts (AGEB's) from Monday through Sunday from 10am-7pm from June 30th to July 26th.[16] Surveys were carried out shortly after the 2024 presidential election (June 2nd) which ensured that respondents were engaged with the political sphere, but did not associate the survey with a political campaign, which could have biased responses.

Neighborhood stratification variables

To select the neighborhoods of study, I divided the city by four socio-economic levels based on questions from the 2020 census which asks households about their ownership of household goods, including television, washing machine, vehicle, motorcycle, television subscriptions, and their provision of services etc. Based on these responses, I created a profile for every city block (*manzana*) and census tract (AGEB).

[16]Surveyors carried out about 10 surveys in each neighborhood. Each neighborhood had two surveyors on the field and there was no neighborhood that was entirely surveyed by a single surveyor.

I additionally stratified census tracts based on the level of segregation by block. I included segregation because in focus groups and interviews, I found that the level of segregation of participant's neighborhood influenced their views on property taxes. For example, lower income individuals living in neighborhoods with a higher level of social mix were more likely to perceive the property taxes they paid as unfair. I considered that ensuring that ensuring an adequate mix of census tracts in terms of their segregation profile was important in defining the study sample. I estimated the level of segregation of different zones through the seg package in R using socio-economic measures.

I divided city neighborhood into twelve groups based on the four socio-economic levels and three segregation levels. I then randomly selected 10 census tracts from each group. I present the distribution of participants by socio-economic and segregation level in Tables 5 and 6.

SE Level	Surveys
1	295
2	301
3	305
4	301

Table 6: Distribution of participants by census block socio-economic level

Seg level	Surveys
1	407
2	389
3	406

Table 7: Distribution of participants by census block segregation level

In Annex 2, Figure 1 I include a map of the final census tracts included in the study.

Filter questions

In order to ensure that individuals were able to engage with the survey properly, they were asked an initial filter question of whether they knew what property taxes were (Do you know what property taxes are? S: *"Usted sabe que es el impuesto predial o el predio?"*), additionally they were asked if they resided in the property in question (Is this your primary residence? S: *"Esta es su residencia principal?"*). Surveyors did not ask if individuals were property

owners because of the challenges that this would imply in data collection.[17]

Because of the sensitivity of the topic, respondents were not asked any specific information about their property status or property tax payment. Even with this, a few enumerators reported that they encountered challenges from some potential respondents when they learned about the topic of the survey. Specifically, some individuals expressed concern that their responses would be used to undermine their property rights. All participants were presented with IRB protocol and reassured that their information was completely anonymous. They were also told that they could opt out of participating at any point.

Checks

Prior to analysis, I conducted checks to guarantee the quality of the data. The first data control involved omitting entries that had straight-lining, which resulted in the omission of 25 entries. I additionally omitted entries below thirteen minutes which is a time one standard deviation below the mean time of the survey. The number of entries that were omitted as a result of this check was limited because surveyors were given immediate feedback during data collection process if any rushing was detected.

3.5.2 Outcome Variables

Primary Outcome Variables

I divide the primary outcomes for the main analysis into two groups. The first is related to perceptions of Mexico City government and the second is perception and support for property taxes.

Perceptions of government

- Trust in local (borough) government (1-7 scale)
- Trust in local (Mexico City) government (1-7 scale)
- Trust in federal government (1- 7 scale)
- Perception of government competence (1-7 scale)
- Perception of government as a fair actor (1-7 scale)

Perceptions of tax

[17] One of the main challenges that surveyors encountered.

- Support for property tax increase (1-7 scale)
- Perception of government legitimacy to tax property (1-7 scale)
- Support for non-compliance (1-7 scale)

3.5.3 Hypotheses

Horizontal inequity refers to the unequal treatment of equals and vertical inequity implies equal treatment of unequals. Scholarship suggests the effective application of processes and assurance that government is acting in consideration of the collective good is an important predeterminant of legitimacy. I test whether evidence of deliberate horizontal and vertical inequity influences how people perceive government and individual opinions about government's right to tax property.

H1a: Information of inequity (horizontal and vertical) in property tax calculation processes will reduce trust in municipal governments and Mexico City governments in relation to the federal government.
H1b: Information of inequity (horizontal and vertical) in property tax calculation processes will reduce citizen's perceptions of government competence.

H2a: Information of inequity (horizontal and vertical) in property tax calculation processes will reduce the perception that property taxation is legitimate.
H2b: Information of inequity (horizontal and vertical) in property tax calculation processes will influence respondents to believe that not paying property taxes is justified.

3.5.4 Analysis and Results

To test my hypotheses, I run the following model:

$$Yi = \beta_0 + \beta_1 T_1 i + \beta_2 T_2 Ai + Xi + \epsilon i$$

Where Yi is the outcome for respondent i, T1 and T2, are dummy variables for assignment into one of the treatment conditions, and X is a vector of individual covariates. I control basic demographic and socio-economic covariates along with political party affiliation, satisfaction with public services, tenancy type, and the attention check.

I used simple random assignment which meant that each treatment was assigned randomly at the moment of executing the survey. In Table 8 I show that covariates were balanced on assignment, as demonstrated by the insignificant p values.

Covariate	Mean *Control*	Mean *Treatment1*	Mean *Treatment2*	P_Value *Treatment1*	P_Value *Treatment 2*
Age	0.525	0.523	0.554	0.951	0.224
Gender	0.556	0.515	0.524	0.245	0.371
Tenure	0.813	0.799	0.776	0.624	0.208
Income	0.305	0.303	0.282	0.93	0.143
Education level	0.41	0.411	0.423	0.937	0.417
Morena support	0.531	0.487	0.54	0.224	0.8
Service satisfaction	0.592	0.573	0.572	0.372	0.371
Property ideology	0.53	0.542	0.509	0.487	0.229
Attention check	0.777	0.731	0.73	0.136	0.13

Table 8: Balance table
Note: P-values show that there is no significance in the difference between different groups.

I study the effects of my two treatments on seven outcome variables that capture respondent's perceptions of government and taxes. I use a dummy variable of 0 or 1 to denote whether individuals were in a control or treatment group. In Table 9, I present the summary statistics of the different outcome questions and covariates.

Variable	Mean	SD	Min	Max
Outcome variables				
Perception of gov. competence	3.53	1.86	1	7
Perception of gov. fairness	3.57	1.72	1	7
Trust in borough gov.	3.21	1.84	1	7
Trust in Mexico City gov.	3.70	1.91	1	7
Trust in Fed gov.	3.63	1.90	1	7
Trust in police	2.84	1.70	1	7
Support for pt increase	3.14	1.87	1	7
Legitimacy to tax property	4.14	1.84	1	7
Support for non-compliance	3.18	1.80	1	7
Covariates				
Age	3.67	1.71	1	6
Gender (female)	0.53	0.50	0	1
Tenure (property owner)	0.80	0.40	0	1
Income	2.67	1.96	0	9
Education level	3.07	1.17	1	6
Political affiliation (Morena)	0.52	0.50	0	1
Service satisfaction	4.63	2.39	0	8
Property ideology	3.16	1.44	0	6
Attention Check	0.75	0.44	0	1

Table 9: Summary Statistics of Outcome Variables and Covariates

3.5.5 Treatment effects

I study the effects of information on vertical or horizontal inequity on perceptions of government and property taxes. My hypothesis is that evidence of inequity (horizontal and vertical) will negatively impact how people perceive government along the lines of trust, competence, and fairness. I further hypothesize that exposure to this information will impact perceptions of government legitimacy to tax property. This is important because it could demonstrate that inequity in taxation reduces support for this tax.

The first measure that I consider is the difference in means, which is an unbiased measure for treatment effects in my randomized sample. This measure captures the difference in the average response between participants in the treatment group and participants in the control group. I present the results of this measure and their significance in Table 10.

		Horizontal Equity			Vertical Equity		
Outcome	Control	T1	Diff T1	P(T1)	T2	Diff T2	P(T2)
Perception of gov. competence	3.63	3.53	-0.11	0.42	3.43	-0.21	$0.10^{\dagger}$
Perception of gov. fairness	4.42	4.49	0.07	0.57	4.38	-0.04	0.72
Trust in borough gov.	3.28	3.20	-0.08	0.54	3.15	-0.13	0.32
Trust in Mexico City gov.	3.73	3.61	-0.12	0.38	3.76	0.02	0.87
Trust in Fed gov.	3.61	3.59	-0.02	0.88	3.71	0.10	0.45
Trust in police	2.85	2.77	-0.08	0.49	2.90	0.05	0.69
Support for pt increase	3.10	3.08	-0.02	0.87	3.24	0.14	0.30
Legitimacy to tax property	4.30	3.96	-0.35	0.01^{**}	4.16	-0.15	0.27
Support for non-compliance	3.27	3.13	-0.14	0.27	3.14	-0.13	0.31

Table 10: Comparison of Treatment Effects on Outcomes
Note: $^{\dagger}p < 0.1$, $^{*}p < 0.05$, $^{**}p < 0.01$, $^{***}p < 0.001$

Results indicate that the treatments of vertical and horizontal inequity did not have any significant effects on general government variables, such as trust in government, perception of government fairness, and so forth. However, I find the strongest and most significant effects in response to the horizontal inequity treatment. Respondents in this treatment group had a significant (p=0.007) reduction of 0.35 in the category measuring agreement that the government has the right to levy a property tax on a 1-7 scale. This is also equivalent to a one unit reduction in support for the idea that government has the right to tax property in 34% of participants when comparing between control and treatment groups.[18]

I present a visual representation of treatment effects for horizontal and vertical inequity in Figure 13. Here, I observe that the vertical inequity treatment group prompted stronger movements in categories such as perception of government competence than the horizontal inequity treatment. However, these movements are not significant at the p=0.05 level.

[18] 3.3x-4.3(1-p)=3.96, p=.34

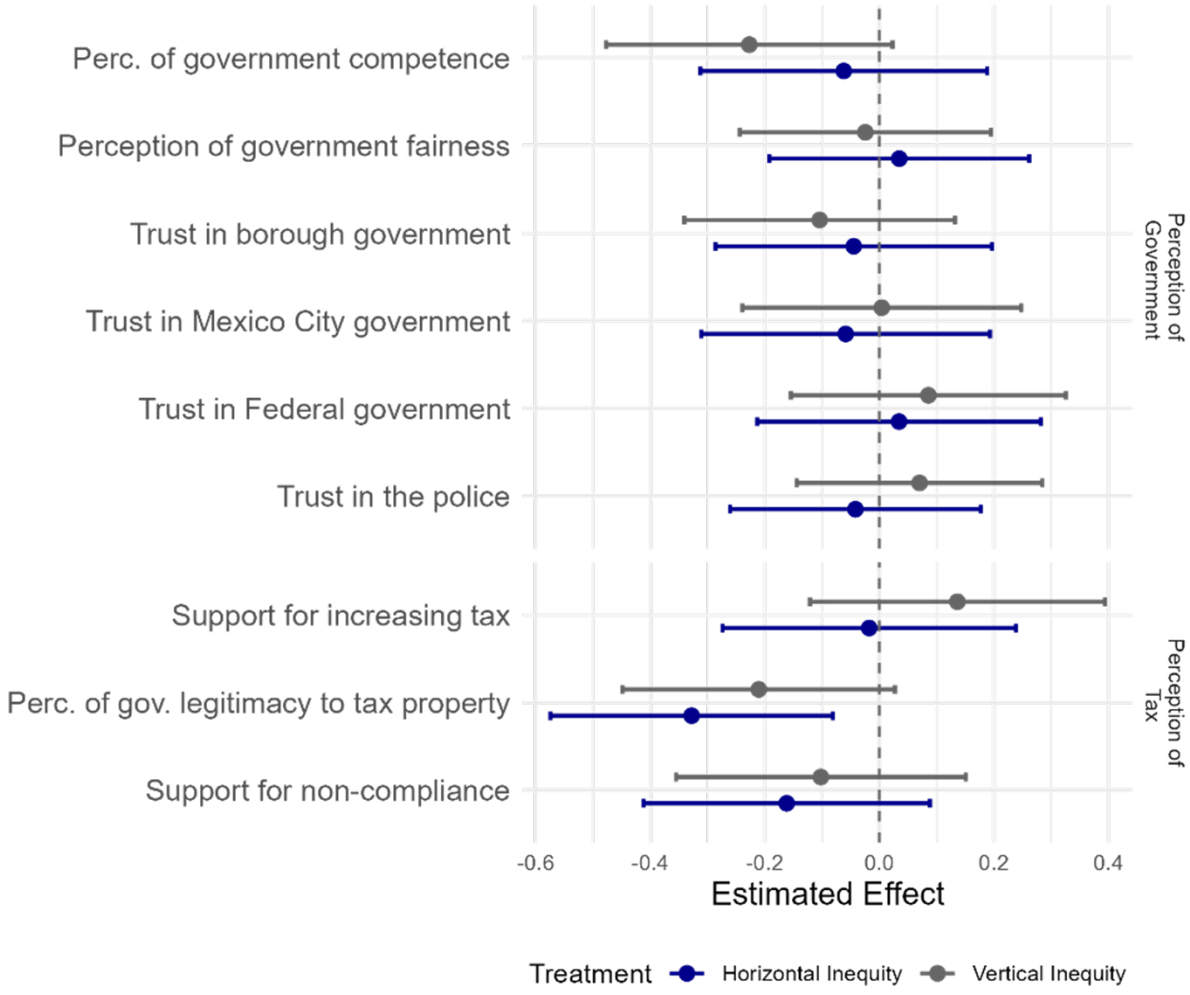


Figure 13: Average treatment effects of horizontal inequity
Note: The dots show the estimated treatment effect of the horizontal inequity treatment compared to the control. The bars show confidence intervals at the 95% confidence level. These results come from OLS regression using covariate adjustments and robust standard errors

I specifically consider the impact of horizontal inequity on perceived government legitimacy to tax property, which is the only outcome question for which I identify significance. I find that reduction in support is particularly noticeable among individuals with the highest levels of support for this tax. For example, an analysis of differences in the distribution of responses reveals that 28% of individuals in the control group had expressed a level of agreement of 6 or 7 that government has the right to tax property. However, only 19% percent of respondents

demonstrated this level of support in the treatment group. The reduction of 9 percentage points is statistically significant (p= 0.0034). These results suggest that evidence of property tax inequity had the strongest effect in reducing the confidence of individuals that have high levels of support for the government's right to levy property taxes. This suggests that support for property taxation is fragile.

Future specifications

The limited effects that resulted from the experiment suggest that there were either limitations with the intended manipulation of the treatment, or alternatively that people correctly understood and absorbed the treatment, but that evidence of inequity did not significantly shift views of government or taxes. In Annex 3, I present a set of factors that could have contributed to weak effects and present a series of next steps for potential survey designs that could address the weaknesses of this experiment.

3.5.6 Discussion

Inequity treatments sought to manipulate perceptions of how government applies property taxes and provide information about inequities in the application of property taxes to understand whether this affects people's views of government, taxes, and the legitimacy of government to tax property. Through this experimental design, I attempted to replicate a perception commonly voiced in focus groups, which is that many residents feel a widespread sense of uncertainty or confusion about how government calculates property taxes (and uses funds). This sentiment was amplified when individuals compared their property tax payments to those of their neighbors or considered how much one property paid in comparison to others.

The clearest impact of both treatments was on the way participants perceived the right of the government to tax property, demonstrating the fragility of the perceived legitimacy of this government action. This study demonstrated with sufficient confidence that evidence of horizontal inequity prompts a reduction in the perceived legitimacy of government to tax property. The effect is equivalent to one third of the control populations reducing their level of support by one unit. Reductions were most notable among individuals with the highest level of support for the tax, demonstrating the fragility of support for this. It is also

particularly notable that this variable also had the strongest effects (yet still insignificant at p=.083) in the vertical inequity treatments when adding covariate adjustments.

Previous scholarship had identified that inequitable taxation reduces perceptions of tax legitimacy and tax morale (Castañeda 2021). However, much of this research has focused on taxation at a national level and has disregarded the potential ways that these dynamics interact at the local level or in consideration of property taxation specifically. This study presents initial evidence indicating that perceived inequities in property tax calculation processes could have substantial effects in weakening public confidence in taxation. This is particularly relevant with respect to property taxes, a salient tax with low levels of public support.

3.5.7 Conclusion

The main objective of this study is to examine how the challenges cities face in taxing property have specific consequences for governance, equity, and public finance. A major difficulty in this process is accurately estimating land value, which is ultimately unknowable and influenced by a variety of often intangible factors. The challenges to calculating these values accurately perpetuate inequities in tax processes and consequently results in a weakening of legitimacy in the taxation processes.

Throughout its history, Mexico City has attempted to employ different strategies to increase the accuracy of its property tax calculation practices and has made important improvements throughout this process. However, the assessment strategies that Mexico City currently employs continue to exacerbate inequities in the property tax calculation and collection process. Factors such as the use of large zones to calculate the cadaster land values, city-wide value increases that do not take into consideration the market fluctuations of specific zones, and the use of flat quotas and discounted rates contribute to a general sense among residents that property tax payments are inconsistently applied and arbitrary.

This study offers novel evidence that inequity in tax calculation processes weakens support for property taxes. This relationship warrants particular attention given the crucial role that property taxation plays in local public finance. Future scholarship should consider the

extent to which individuals are aware of inequities in property tax calculation processes, since this study offers only limited qualitative evidence. Additionally, subsequent inquiries into this topic should examine whether the unique nature of property taxes, as direct, local, and asset-based taxes, prompts different effects to perceived inequity than national taxes with other types of bases.

4 Essay 3

The Limits of Property Rights

There are undoubtedly many elements that make up societies, but if one were to seek a guiding principle among them,a factor that shapes and encompasses all seemingly isolated social phenomena, it could be none other than the organization of property.

— Mariano Otero, *Mexico City* 1842

Abstract

Local governments manage and delimit property rights through the application of taxes, expropriations, and land use regulations. These limits reduce individual sovereignty over property for the purpose of bringing about collective benefit. At stake in this process are moral and political issues surrounding the nature of individual rights and the legitimate role of government. Indeed, individualist views of property contend that the government's primary duty is to protect property, implying that any limitations of property rights can be justified only insofar as they aim to protect competing individual rights (e.g. the nuisance clause). This contrasts with communitarian views of property, which argue that property ownership entails concomitant social obligations that take precedence over some individual benefits. While the theoretical aspects of these debates merit independent consideration, less examined is how the practical attitudes and dispositions of everyday people towards these questions influence the political capacity of local governments to tax and regulate property. This study aims to gather insight into how the public perceives the government's right to apply limits to property. In order to accomplish this, I ask: How do the characteristics of individuals and their surroundings interact with individual attitudes and dispositions toward property? Drawing on 1,200 surveys and 53 interviews of Mexico City residents, this essay explores how residents conceive of property rights, value, and taxation. Findings reveal those multiple demographic characteristics, such as income and gender, that have a strong influence on support for measures that limit property rights. In particular, relationships with the built environment, as evidenced by the satisfaction and quality of service and infrastructure, have a significant relationship with the ideology of the property.

4.1 Introduction

Although property ownership might seem to entail sovereignty over property in theory, governments in practice always employ a variety of legal and fiscal instruments that place limits on what people can do with their property. Nevertheless, the effective implementation of these instruments requires constant negotiation with residents concerning the degree to which they are willing to accept limits to property rights. This study offers a preliminary examination of how demographic, built environment, and governance factors relate to public acceptance of the state's role as an arbiter of property. It addresses the question: How do urban residents view the role of government in managing, defining and limiting property rights? This study represents an initial examination of how different urban residents perceive how the government delimits what is private and what is public with respect to property.

The state applies limits to property using a multiplicity of instruments including expropriation, land use regulation, and the implementation of land value capture mechanisms (Fischel 1995; Goodfellow 2017; Muñoz-Gielen 2014; Qian 2010). The implementation of these limits necessitates constant negotiation between the state and citizens which continuously redefines property. For example, attempts to integrate clauses to enable the use of land value capture mechanisms in the Mexico City Constitution in 2016 resulted in resident pushback claiming that this attempt represented an illegitimate claim of government control over private property (Azuela, Malagón, and Herrera 2020). However, it is unclear whether this response reflected the view of the population at large or whether this perspective was primarily shaped by media narratives. This study proposes to offer initial insight into addressing these types of questions.

Of course, perceptions of the government's right to apply limits to property rights are not absolute and typically fall within a spectrum. On the one hand, there are individuals who consider that the government should be as non-interventionist as possible with respect to property and should primarily focus on protecting the individual property owner (Blackstone 1844; Locke 1824). On the other hand, there are those who advocate for the fundamental role of government in applying limits to property in order to bring about community benefits (Rousseau 1762). In this paper, I argue that where individuals fall within this spectrum is not random but is rather shaped iteratively through demographics, built environment characteristics, and perceptions of government.

Examining where urban residents fall within this spectrum of support for property intervention is not simply theoretically interesting but has policy-relevant implications that are

consequential for the city's fiscal conditions and development. For example, an individualistic vision of property, consistent with strong property rights, may motivate individuals to enact opportunistic behavior that undermines large infrastructure projects (Holland 2023). Simultaneously, individual property ownership also shapes beliefs around government and market. Individuals that hold a property title, for example, are more likely to have market-oriented perspectives (de Janvry, Gonzalez-Navarro, and Sadoulet 2014; Schargrodsky and Galiani 2010). Most importantly, property relations can offer insight into the nature of the state, since the state and property define each other reciprocally. Therefore, how individuals perceive the role of the state in property can reflect broader social dynamics.[19]

In this study, I draw on responses to a representative survey of 1,200 individuals and 53 interviews with Mexico City residents. Interviews were essential for designing and finalizing the survey questions that serve as the main data points in this study. I use responses to five questions on property relations to develop an index that situates individuals within the spectrum of individualist and collectivist views of property. I additionally use descriptive econometric analysis to analyze whether more individualist or collectivist views of property coincide with specific demographic, built environment, and governance characteristics.

I study these dynamics in the context of Mexico City, a large city with a with a long history of property conflicts. Mexico City's established use tools that limit property rights, such as expropriation, land use regulation, and different land value capture mechanisms, make it a particularly insightful context to study property dynamics. Furthermore, the frequent use of these instruments makes them more present in people's minds, which ensures that respondents could base their survey responses on their experiences and grounded opinions. This was also evident in the interview portion of the study in which it became very apparent that respondents had very defined opinions on property adn the state's role in it.

Findings from this study constribute to scholarship on how urban residents in Latin American perceive government-instituted limits to property rights. Evidence from this study suggests that there is significant heterogeneity in how people view government's role in property, with the majority of individuals having mixed opinions between individualist and collectivist views. I also find that no single identifier overwhelmingly dictates people's view of property; rather, views are simultaneously driven by factors of governance, demographics and built environment. Governance factors, such as trust in local government and perceptions of

[19]In Annex 1, Figure 1, I include country-wide responses to a LAPOP 2014 question asking individuals whether they "believe the government protects their property rights". Responses demonstrate important country-level distinctions throughout the Americas.

government fairness, have the most significant and precise relationship with how people perceive property. I also find that demographic characteristics such as level of education and gender are significantly related to how people perceive property, with more educated individuals having more collectivist visions of property, as well as men. Finally, I find evidence to suggest that the built environment matters. Individuals who are more satisfied with their built environment and live in a neighborhood with higher quality services and infrastructure are more likely to have collectivist visions of government.

This study presents an initial attempt to address a significant gap in urban scholarship which has largely neglected the role of property relations in defining how government negotiates public needs and private benefits. Additionally, this study seeks to coalesce distinct branches of scholarship concerned with property in the urban realm by examining attitudes towards expropriation, land use regulation, and three types of land value capture tools. In this way, this study represents a first attempt to present a more holistic approach towards examining property relations.

4.2 Perspectives on Property

While issues concerning property rights lie at the core of many urban governance challenges, urban scholarship from the Global South context has overwhelmingly considered property rights in the context of informality and land titling (Boone 2019; Ferreira 2024; Varley and Salazar 2021). Yet, a more comprehensive vision of property is essential for addressing questions concerning land use regulation, urban property taxation, and infrastructure development. The conflicts that arise in the implementation of these policies are rooted in a fundamental tension between the theoretical sovereignty of property and the obligations of property ownership to contribute to a healthy, flourishing community. Often neglected is the recognition that property is a social relation that is not simply constituted between owner and object but also between owner and all other individuals in relation to that object (Cohen 1927, p. 12). This relationship is defined, administered, and managed by the state.

Since the primary role of the state is to manage such relations through law and policy, debates over property must confront the reality that in a democratic society, individuals hold differing perspectives and thresholds for accepting state intervention in property (Kohn 2016). For the purpose of this paper, I approach debates concerning the social identity of property and the role of the state in property through the lens of two competing perspectives, liberal contractual and communitarianism.

Put briefly, liberal contractual perspectives contend that the principal role of government is to protect property, and no public good can justify impinging upon the individual right to private property (Blackstone 1844; Cohen 1927; Locke 1824). This perspective conceives property as both an inalienable right and an exit, allowing individuals to remove themselves from society. Put otherwise, this is a view of property that is "self-regarding", implying that what occurs with the property is only the concern of the owner and should not be defined by the community (Singer 2000, p.3). In this sense, private property is essential for establishing the ability of individuals to self-cultivate and consequently support the common good. Thus, the liberal view presumes that when property owners act rationally in their own self-interest, the community thrives (Shepherd 2020).

Rival communitarian perspectives hold that property is inextricably bound to questions of the common good, and that property can only be legitimate insofar as it contributes to a flourishing community (Rousseau 1762; p. 11). Advocates of this perspective contend that property does not exist apart from society but is rather a core social institution that both depends upon and influences how a community constitutes and organizes itself (Penalver 2005).

Both communitarian perspectives and liberal contractual perspectives, with the exception of strict libertarian views, agree that property has limits and that property rights entail obligations. However, these perspectives offer differing responses to questions such as: What limits, if any, can be placed on the rights of property ownership? Which limits are justifiable and legitimate for the government to enforce? Who should these limits benefit? And how can the government guarantee those benefits?

While the liberal perspective defines property in absolutist terms, it also recognizes that restrictions on property are necessary for property to exist. In this case, however, restrictions generally appear as negative rights which establish the freedom to exclude others, including the government, from interfering with the enjoyment of property. For example, in American property law, nuisance clauses, which limit what owners can do with their property, were introduced not to protect society at large, but to protect individual property owners and their property value (Freyfogle 2003; Singer 2000).[20]

In contrast, communitarian views tend to define the institution of property through its functional role within a complex system of social norms and obligations. This means that limits to property are necessary not only for pragmatic purposes, but in order to develop

[20]See for example the Private Property Protection Act 1995

and support a healthy society. From this point of view, no individual right of property can supersede the interconnected needs of a community (Rousseau 1762). The legitimate purpose of government is therefore to manage property rights in order to ensure the collective good of the community at large.

Several approaches to property have this as their guiding principle. For example, Leon Duguit's notion of the social function of property emphasizes that private property implies positive obligations, which ensure that the property can contribute to the collective good (Babie and Viven-Wilksch 2020). Duguit's conception of the social function of property is particularly notable for its influence on constitutions throughout the world, but particularly in Latin America.

Contemporary legal scholarship has also sought to establish principles outlining the obligations of property. For example, Gregory Alexander (2005) argues that the institution of property inherently entails social obligations to support the flourishing and self-realization of the community. According to him, these obligations are substantial and include priorities such as distributive justice. Penalver (2005) similarly describes property as an "entrance" into community and a sense of shared responsibilities and belonging.

Based on a review of the literature and qualitative interviews, I identify three non-exhaustive ways in which the government commonly imposes hard and soft limits to property rights in the urban realm.

4.2.1 Limits to property rights and ownership

The first and most drastic way that government applies limits to property is through the practice of eminent domain or expropriation. This mechanism (also known as a taking) enables the state to withdraw individual property rights if there is sufficient public utility or benefit, as well as appropriate compensation to the owner (Fischel 1995). Eminent domain thus represents one of the most stringent ways that government applies limits to property since it implies complete dispossession of these rights. Azuela (2013) argues that in Latin America, eminent domain can be used to obtain four distinct objectives. Beginning with the most widely accepted, these include: (1) the creation of public benefit, (2) the redistribution of urban wealth, (3) the promotion of economic development, and finally, (4) the regularization of land ownership. In these different manifestations, eminent domain creates distinct relations—for example, it can be used to prioritize collective over individual interests, or alternatively to benefit a single owner to the detriment of society at large.

How the state defines "public benefit" and justifies the dispossession of property rights by government is at the core of debates of eminent domain (Alexander 2009). For example, Mercedes Maldonado (2013) argues that in Colombia the state uses broad definitions to stipulate public benefit or a "social interest project". This has allowed the state to develop public infrastructure, particularly in the case of Bogota, but has also facilitated the dispossession of individual property owners for the benefit of third parties detached from the state.

The application of eminent domain is inherently ambiguous, given that the determination of beneficiaries and those affected lies entirely at the discretion of the state. It can therefore impact high income individuals whose land is expropriated in order to regularize informal occupants or develop affordable housing (Elizalde 2025). In these cases, which have marked the history of Latin America, land expropriation is used as a tool for wealth redistribution (Albertus 2015). However, the use of eminent domain may also exacerbate wealth accumulation when it is used to dispossess low-income individuals in order to develop large infrastructure projects, particularly those that benefit capital, such as toll roads or trade corridors. These groups may also be more vulnerable to the use of expropriation instruments because they have less political, legal, and economic power to rebuff the use of these mechanisms (Mercedes Maldonado and Isais Pena 2013). Other factors also influence the impact that expropriation has on individuals, and consequently how they may perceive this type of state action, for example, factors such as the connection to the community can influence how people perceive the state's use of this legal instrument (Azuela 2013). Ultimately, how people perceive the use of eminent domain may not be determined by a single factor, but many, including their perception of the state.

4.2.2 Limits to land use

The second manner in which governments apply limits to property involves the application of regulation dictating what individuals can and cannot do with their property (Singer 2000). The use of some regulations is essential for the constitution of property and is thus considered an acceptable form of state intervention among even the vast majority of liberal perspectives (Gwaleba and Chigbu 2020). Regulations range from those that are meant to protect the individual property owner (e.g. nuisance laws mentioned earlier) to those that have the objective of satisfying a broader vision of society.

Land use regulation represents one of the most common ways through which the government manages and limits individual control over property. The guiding principle, which is that

limits to property are subject to communal interests, are present in both civil and common law contexts. For example, in Brazil, land use regulations are motivated by the principle of the social function of property. In this case it was immediately after the introduction of the social function of property into the coutnry's constitution, that cities were required to adopt master plans (Ondetti 2016). Brazil also has a long-standing history of making a legal and conceptual distinction between the right to property and the right to build, exemplified in the *Outorga Onerosa do Direito de Construir instrument*, which first appeared in Porto Alegre in 1975 (Rigo Santin and Concalves Marangon 2009).

From a common law context, the United States Supreme Court established a similar rationale in the case of *Euclid v. Amber Realty* (1926), holding that local governments have the legitimate authority to regulate land use even if such determinations result in a reduction of property value. This marked a new role for local governments as arbiters in balancing private property rights and collective interests. Nearly a century later, debates over land use regulation in the United States have demonstrated that perceptions of land use regulation are shaped less by their ability to bring about collective benefits, but by their power to exclude and protect property value (Trounstine 2020). Most of the scholarship on perceptions has specifically considered preferences with respect to single vs. multifamily housing (Trounstine 2023) and has examined different determinants of support for land use regulation policy, including factors such as tenancy and political ideology (Hankinson 2018; Lewis 2006; Wicki et al. 2025).

4.2.3 Land value capture mechanisms

A less common, but more socially significant way that the state can place limits on property is by capturing a portion of value uplift that results from public works. This is what several political philosophers such as Mill (1848) and George (1926) have classified as *windfall gains* or ungained increment of land value. This mechanism considers the application of limits specifically to land-based property, arguing that the value of land is socially created and should not be fully appropriated by individual owners. George, most famously advocated for the elimination of private property because he believed that this was the at the core of the excessive poverty and inequality in the late 19th century U.S. However, recognizing the embeddedness of this institution, he instead suggested employing land taxes that permit capturing a portion of ungained increases in value. He conceives of these taxes as a way of giving back to the community part of the value that was created by the community. He has famously referred to this as a way of leaving property owners "the shell" and taking "the

kernel". In other words, using taxation as a way to place limits on how much of the unearned value of property individual property owners can appropriate without the need for the state to confiscate property

Land value capture mechanisms seek to redistribute part of the unearned wealth concentrated in land ownership. At the core of this is the idea that individual property owners should not be allowed to fully appropriate socially created value. This is consistent with a vision of the social obligation of property that defines obligation as not only a matter of ensuring that property can be used for public benefit, but that a core purpose of the institution is to support wealth redistribution and community flourishing (Alexander 2005). This point has also been made by scholars examining the use of these mechanisms in Latin America who demonstrate that land value capture mechanisms are seen as a way to fulfill the social function of property (Friendly 2020).

Practically, land value capture can be implemented through a variety of instruments, including property taxes, development charges, betterment levies (charged based on value uplift or infrastructure costs), and real estate transfer taxes. The implementation of these mechanisms has spurred resistance from property owners who feel that the charge is not adequately justified by the real value uplift or by the way government uses funds (Jaramillo 2008). Limited scholarship has systematically considered how individuals perceive different land value capture mechanisms and factors that could contribute to this perception. For example, Prez-Moreno (2024) shows evidence in a small sample for the case of Medellin, Colombia that the majority of property owners agree with making betterment contributions and understand how funds are used. However, it's unclear whether this is a result of the institutional context and the adequate application of these funds. Urban planning scholarship has not directly considered whether certain mechanisms have higher levels of acceptability than others.

The three limiting instruments that I present here shape how the state interacts with private property. Even though these instruments function under a shared logic of limiting individual control for societal objectives, previous studies has rarely examined these mechanisms together in attempts to understand how the public perceives the role of the state in property as a whole. This paper contributes a novel perspective on this topic by proposing an index that captures people's perspectives towards different strategies that the state employs to constrain property rights.

4.3 Socioeconomic and social characteristics

While scholarship has not specifically considered whether demographic or contextual characteristics influence people's preferences and perceptions of property rights, a growing set of scholarship concerned with wealth taxation has extensively studied the factors that determine support for wealth redistribution. This scholarship offers some parallels to the concerns presented in this paper and can offer some insight into the individual and social characteristics that may interact with having an individualist or collectivist vision of property. Of course, support for the application of limits to property may be more heterogeneous than the factors presented here because limits to property affect individuals across all income groups, unlike wealth taxes.

Studies focused on preferences for wealth redistribution and taxation have shown that demographic factors such as gender, education level, and age influence support for redistribution. These studies have captured general trends at a country and cross-country level. For example, this scholarship has found that, even after applying controls, women consistently demonstrate stronger support for redistribution, particularly in the United States (Alesina and Giuliano 2009; Ranehill and Weber 2022). Income is also important, with wealthier people expressing lower levels of support for redistribution (Alesina and Angeletos 2005). This is intuitive since wealthier individuals are the least likely to benefit from redistribution and most likely to be burdened. Education is also a factor that has drawn the focus of these studies. However, education turns out to be a less straightforward variable. For example, even after controlling for income, scholars have found that education is negatively related to support for redistribution and more aligned with an individualist ideology (Schargrodsky and Galiani 2010). This means that as education increases, support for redistribution decreases (Alesina and Angeletos 2005). However, this is reversed when education interacts with political ideology. Thus, left-leaning individuals with higher levels of education express higher levels of support for redistribution.

Some scholars have examined factors that influence support for redistribution beyond demographic determinants. These additional factors include governance and culture. For example, Hammar (2019) finds that coming from an individualistic or collectivist culture has a significant influence on whether someone supports redistribution or not. Other factors, such as trust in government also influences this dynamic with more trusting individuals having a higher level of support (Kuziemko et al. 2015). Finally, the perception that individuals have of their place in society, including past experiences and expectations of gains and losses, also

appears to influence individual preferences towards redistribution (Alesina and Ferrara 2005). While less examined, previous studies have demonstrated that tenure may influence political preferences. For example, Ansell (2014) argues that property ownership influences political views and makes individuals more sensitive to location-specific dynamics and shifts individual priorities towards protecting property values. What is most worth highlighting here is the assertion that homeownership shifts the social and political preferences of individuals, such that they may be incentivized to make decisions that benefit them individually while undermining societal needs (Schwartz and Seabrooke 2008, p. 255). Overall, this scholarship suggests that support for redistribution and wealth taxes is multidimensional and not influenced or driven by any one single factor.

4.4 Mexico City Context

I situate this study in Mexico City, a city where the local government employs a variety of legal and fiscal instruments to apply comprehensive and discretionary limits to property. While these measures are commonly justified by their social purpose, they have often been interpreted as a form of government overreach. This has generated push-back from residents who seek to negotiate these limits, making the concept of property dynamic and continuously reinterpreted in the interaction between state and citizens. In this study, I offer empirical evidence of how different types of individuals accept state-imposed restrictions on property.

Eminent Domain

Mexico City's government has employed eminent domain to achieve multiple objectives, such as regularizing informal property[21], constructing social housing[22], developing large infrastructure projects[23], and road networks[24], and creating new areas for conservation and environmental protection[25]. While in some cases the use of eminent domain has resulted in

[21]CDMX, "Expropia Gobierno Capitalino lotes en Colonia 8 de Agosto para dar certeza Jurídica a 34 familias en Alcaldía Álvaro Obregón."

[22]Gaceta Oficial del Distrito Federal. "Decreto por el que se expropria a favor del Instituto de Vivienda del Distrito Federal, Los Predios que se Mencionana.". https://paot.org.mx/centro/gaceta/1999/octubre99/14octubre99.pdf

[23]Flores Dewey, Onesimo, and Diane E. and Davis. "Planning, Politics, and Urban Mega-Projects in Developmental Context: Lessons from Mexico City's Airport Controversy." Journal of Urban Affairs 35, no. 5 (2013): 531–51. https://doi.org/10.1111/juaf.12012.

[24]Crus Flores, Alejando. Desarrollo de Medios, S. A. de. "La Jornada: El polémico predio El Encino ya forma parte del patrimonio del gobierno local," June 23, 2014. https://www.jornada.com.mx/2014/06/23/capital/030n2cap.

[25]"Con Ayuda de Ministra, El Gobierno Capitalino Defiende Una Expropiación Amañada - Proceso." Accessed May 2, 2025. https://www.proceso.com.mx/reportajes/2022/11/8/con-ayuda-de-ministra-el-gobierno-capitalino-defiende-una-expropiacion-amanada-296575.html.

clear and undisputed public benefits, such as expropriation for social housing development, other cases reveal ambiguities about who benefits and how the state defines public benefit. For example, in 2010 Mexico City's government expropriated properties in the west of the city for the construction of a toll road (Supervia Poniente) connecting the city's main ring road network (Periferico) to the high-end area of Santa Fe. These expropriations fragmented the social fabric of existing communities to provide detached benefits to a broader population capable of paying the new toll road. This illustrates the inherent ambiguity in defining beneficiaries and the government's role in determining public good. What is at stake here is how individuals view the state and the ease with which it can abuse power.

Land Use Regulation

While expropriation occurs in isolated cases, Mexico City routinely and systematically applies limits to property through land use regulation. Like most cities, Mexico City utilizes comprehensive land use plans which define the land use rules for the entirety of the city. However, these rules are frequently modified through strategic planning instruments, such as partial plans and programs, as well as sweeping city-wide policies such as *Bando Dos, Norma 26, Sistema de Transferencia de Potencialidades, de Desarrollo Urbano, and Polígonos de Actuación* (Azuela, Malagón, and Herrera 2020).

The Bando Dos policy is a notable case that highlights the challenges of coordinating a common vision of the city through land use restrictions. This policy, implemented in 2000 by then-mayor Andres Manuel Lopez Obrador, limited housing and commercial developments in nine southern boroughs and promoted development in four central boroughs with the objective of reshaping the city's density profile. While some agreed with the objective to re-densify the city center and protect peripheral areas for conservation purposes, many residents including developers and academics perceived this construction as unconstitutional and expressed concern for decreasing property values resulting from dramatic freezes in construction permits (Esquivel Hernández et al. 2007). *Bando Dos* thus represented a novel conceptualization of property in Mexico City, from an isolated individual right to a stake in the interconnected identity of the city

Land value capture (betterment levy, property taxes, and uplift capture)

The regime of property taxation and use of betterment levies (*contribucion por mejoras*) has also exposed tensions in Mexico City's use of financial mechanisms to delimit the obligations of property. In Mexico City, inconsistencies and technical issues in property tax calculation

have resulted in citizen protests against property tax payment, as well as the use of individual and collective legal protections to push back against what individuals consider unfair charges (Echavarria and Monkkonen 2025). Similarly, recent attempts by the government to collect betterment levies, a charge applied to nearby property owners for infrastructure development, ultimately failed due to the absence of democratic processes that undermined the legitimate use of this mechanism (Aguayo Ayala 2020).

Importantly, one of the most vivid negotiations over property limits occurred over a land value capture clause debated in 2016 as Mexico City began a process to define its constitution. At this time, the city government proposed a clause to facilitate the introduction of mechanisms to capture land value uplifts resulting from government action. This proposal ignited resistance from property owners who framed the introduction of this policy as an attempt against private property. Azuela (2020) suggests that this episode represented a deeply individualistic vision of property fueled by a significant distrust in the state's ability to address the needs of residents.

The case of Mexico City underscores that accepting the state's role in applying limits to property presupposes a level of trust in government and the institutions that uphold it. In contexts of weak government trust and low institutional credibility, government actions that apply limits to property may be perceived as illegitimate. Yet it remains unclear whether perceptions of government systematically influence public acceptance of the state's application of limits of property or whether is simply an anecdotal connection. Additionally, it is unclear whether additional factors, such as gender, income, education or quality of services and infrastructure influence how urban residents perceive the role of government in limiting individual sovereignty over property.

4.5 Research Design

For this study, I draw on a rich set of data which included a survey of over 1,200 respondents in Mexico City and 53 interviews with residents of Mexico City's 16 boroughs. This combined evidence demonstrates that acceptance of government's intervention of property is multidimensional.

4.5.1 Qualitative evidence

In March-April 2024, I carried out interviews in person or zoom, depending on the preference of the interviewees. Interviews lasted 35 minutes to 2 hours. The interviewees were contacted

using a 'snowball' recruitment method that began with contacts with focus group participants from a previous study. Participants were compensated for their time.

The objective of these interviews was to examine how people perceive the role of the government in intervening in property in different ways. These interviews included discussions about government regulation of property, property taxation, the capture of land value uplifts, and property value.

Property taxes

In many interviews, I identified that a factor that prompts strong resistance to property taxes is the idea of a "tax of the home". People considered it excessive to pay for something that they had worked to obtain, for example many expressed variations of the idea that "if you worked your property, then it's your property" (44, male, Magdalena Contreras). For example, one participant said, "You've already paid for your home or your land, so then having to keep paying the government just doesn't seem right — it doesn't feel fair" (37, female, Azcapotzalco). In this way, many individuals expressed a view of property that makes ownership akin to sovereignty. For many participants, property taxes redefine ownership and put in question the very concept of property. Some even interpreted the question of paying property taxes through a nationalistic view and a question of constitutional right, "It's written in the Constitution that Mexican land belongs to Mexicans ... so why are they charging me just for living on Mexican soil?" (34, male, Alvaro Obregon), one participant asked.

In terms of property taxes, there was also a concern that the bases used to define taxes were not valid and did not reflect what people should be paying for. For example, one participant described the case of the neighborhoods around the newly built Mitikah development, the tallest building in Mexico City, "I think that in this case, it's really unfair for all the people living around that tower, because they are not being benefited with the development or the increase in their taxes. It's just not fair —it isn't really being applied in the proper way" (47, female, Venustiano Carranza). Some participants also considered it unfair for taxes to be based on the value of structures, which result from individual effort, "I think everyone spends their money however they want .... But just because they decided to invest in their home and it is now worth more, it doesn't mean they should be charged more. Otherwise, what's next? Are they going to pass a law that charges you based on the number of friends you have, where I'll have to pay more and they'll pay less?" (41, male, Coyoacan). These responses demonstrate a sentiment that was expressed consistently: participants disagreed

over which part of property value the government actually has a right to tax.

Services and infrastructure contributions

Even though many participants challenged the very idea of paying a property tax, many expressed a willingness to contribute to infrastructure nearby and government services. For example, one participant expressed, "I find it fair and important... by collecting that tax, they can make other types of improvements, like to the city. For example, it helps fix potholes or things like that." Many people see the collection of taxes as important for supporting government programs and as a form of individual sacrifice that brings about collective benefits, even if they are not directly benefited. For example, a participant from Iztapalapa noted, "I also feel like it's because they take a little bit from us to give back to others. For example, now that they gave kids the 'My Scholarship to Start' program, I feel like they take about 10% from us to distribute to other children. It's not so much about taking our money anymore but about giving it to those who really need it" (38 year old, female). However, these views were not consistent across all participants.

Capture of land value uplift

Individuals most strongly opposed the use of land value uplift mechanisms and expressed that even if the uplift resulted from public works, they believed that property value fully belonged to property owners. Additionally, many felt that the uplift in land value would already be captured by other charges, such as property taxes. This is consistent with the findings by Goodfellow (2017). However, perception of government was one of the factors that most strongly appeared to influence people's level of support for capturing land value increases, "I think the property owner should keep all the value no matter what, because government doesn't do anything with the money" (29 year old, female, Tlalpan). This was a common sentiment that in multiple interviews. For example, one respondent mentioned that "government is just going to steal that money and won't use it or take advantage of it to do things like improve public infrastructure" (female, 42 year old, Tlalpan). "At the end of the day, it's our money, our effort. And to give government a percentage, I am in agreement with that, but it's the corruption that I am not (in agreement with)" (34 year old,female, Alvaro Obregon).

Property regulation

In terms of the rules and regulation people seem to fully understand the role of government in regulating property use and what people can and cannot do. "When we built our house,

they told us that we had to have a certain percentage of green area and parking. I think that's fair, for there to be rules in place, I think it's for the benefit of us all" (32 year old, female, Xochimilco).

The views shared by residents in these interviews were fundamental for designing parts of the survey questionnaire, which is the main source of data for this study.

4.5.2 Experimental Survey

I administered a survey to 1,202 respondents in 120 neighborhoods in Mexico City. I selected neighborhoods based on the socioeconomic level and population of the neighborhood.

In order to better understand how people perceive limits to property rights in general, I develop an index that takes into consideration limitations to property rights in terms of land use and taxation. With the objective of situating individuals' views of property, I presented respondents with five sets of statements. Each set included two opposing statements about different instruments that apply limits to property rights. One of these statements expressed a collectivist view and the other an individualist view.

These five sets consider five different ways in which the government applies limits to property rights, some in the most extreme ways and some in the most routine. I consider limits to property in five different dimensions related to property rights, land use regulation, value capture, taxation, and infrastructure contributions. In order to reduce any potential order effects in the survey, I randomized the order to each of the five questions and the order in which I presented each statement.

To obtain individual sentiment towards the way the government applies limits to property, I asked individuals to choose the statement that they most strongly agreed with among the following sets:

Set 1: Expropriation/ Eminent domain

0. Government has the right to expropriate property if there is sufficient public benefit.
1. No public benefit sufficiently justifies expropriation by the government.

Set 2: Value Uplift[26]

0. If property value increases as a result of public work, the government should have the

[26]Because of past controversies surrounding the term value capture (capture de valor) in Mexico City, I explicitly did not use this terminology in the presentation of these statements.

right to collect a portion of the increase. 1. If property value increases as a result of public work, the entire increase should stay with the property owner.

Set 3: Regulation of property

0. Government rules that regulate how people can use their property are necessary for the well-being of society. 1. Government places too many restrictions on what people can do with their property (i.e. building potential, use, etc.).

Set 4: Contribution to services and infrastructure

0. Property owners should contribute to the services and infrastructure because these support the broader community. 1. Property owners should not have to contribute to the services and infrastructure near their property if they do not use them.

Set 5: Property taxes

0. Property owners have an obligation to support the city's services and infrastructure through property taxes. 1. Property owners worked hard to obtain their property and should not be required to pay an annual tax on it.

The responses offer a glimpse of how different people view and relate to their property. The responses to each of these questions (0,1) are positively correlated with one another individually. In Table 11, I present a correlation matrix of the five different categories that I measured. This matrix shows that all categories are positively related to the other categories, with some relationships being more significant than others.

	Property Tax	Infrastructure	Expropriation	Value Capture	Regulation
Property Tax	1.00 (< 0.01)***	0.25 (< 0.01)***	0.07 (0.061)	0.07 (0.094)	0.18 (< 0.01)***
Infrastructure	0.25 (< 0.01)***	1.00 (< 0.01)***	0.05 (0.288)	0.04 (0.312)	0.10 (0.003)**
Expropriation	0.07 (0.012)*	0.05 (0.096)	1.00 (< 0.01)***	0.09 (0.007)**	0.08 (0.020)*
Value Uplift	0.07 (0.024)*	0.04 (0.156)	0.09 (< 0.01)***	1.00 (< 0.01)***	0.03 (0.312)
Regulation	0.18 (< 0.01)***	0.10 (< 0.01)***	0.08 (0.003)*	0.03 (0.302)	1.00 (< 0.01)***

Table 11: Correlation Matrix of Policy Preferences

The strongest correlation (0.25) is between the categories of "Infrastructure Contribution" and "Property taxes", which both consider the obligation of property owners to contribute to their municipalities. I also observe a strong correlation between the "Property Tax" and "Regulation" categories. This is interesting because these both represent two of the most common ways in which the government applies limits to property rights, but in very different ways, one related to land use and the other to financial obligations. The category with the lowest numbers of correlations is "Value Uplift". This is not surprising since over 70% of responses =1, so there is less variation in opinions.

4.5.3 Distribution of responses

The sum of responses which respondents answered consistent with an individualist viewpoint (x=1) appear as a normal distribution with most respondents falling in the middle of extremes and most individuals agreeing with two or three of the possible five statements. In Figure 14, I present the distribution of the responses to the sum of these questions.

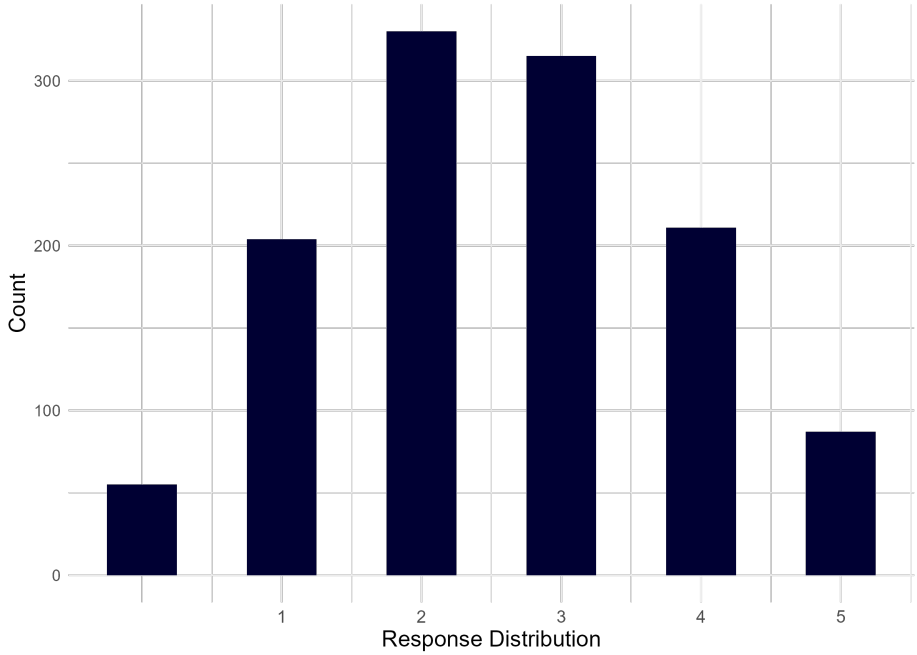


Figure 14: Trend of distribution of responses

Individuals falling in the middle of this distribution (2 or 3) are likely to have no strong ideological vision of property and hold individualist views on some aspects of property and collectivist views in others. In contrast, individuals who answered 0 or 1 to every or nearly every question have a stronger ideological standing. I explore this further in my models.

I also examine the distribution of individualist and collectivist views for each category in Figure 15. The most individualist views were found to be in the category of value capture (73%), followed by expropriation (53%). These two could be considered the two most drastic "takings" from property and perceived by people as being in a different category than more common approaches that government uses to place limits on property, such as taxation and regulation. Additionally, these are the most uncommon ways in which government interferes with property and is therefore unsurprising that views on these government strategies are more individualist in this scale. While one applies strict limits to property rights (expropriation) and the other to the financial responsibilities of property owners, these may be interpreted similarly by respondents. The highest share of collectivist views in this case are evident in the property taxes (35%) category, which is one of the most common ways that government applies limits to property and is more openly accepted.

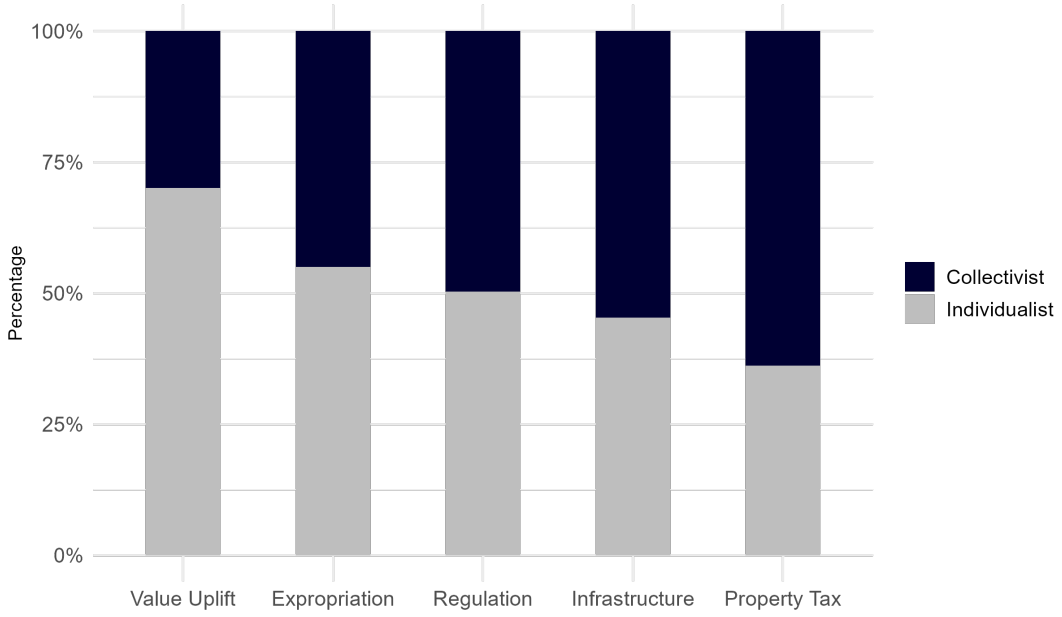


Figure 15: Preferences by category

Similarly, I consider the conditional probabilities of each category in order to identify which was most likely to be the last chosen when four out of five questions were selected. I find that the category "Value Uplift" was significantly more likely to be the odd question out. This means that individuals could have a collectivist view for all other questions except for the land value capture one. In contrast, the category of "Property taxes" was almost never (4%) the only question that received an individualist response. This means that the property tax statement is the most inclusive and an individualist view with this statement was almost always accompanied with an individualist view in other categories.

When only one category was selected as individualist, which category was selected?

Category	**Count**	**Perc (%)**
Value Uplift	90	44
Expropriation	44	22
Regulation	33	16
Infrastructure	28	14
Property Tax	9	4
Total	204	

The general distribution of answers demonstrates that individuals may be more supportive of policies that have individuals contribute to infrastructure and services in the municipality independently of benefit. However, they are most likely to oppose policies that imply the government directly capturing land value increases even if these result from public works. Even though contributing to surrounding infrastructure and the capture of land value uplift are more related to each other than the use of expropriation mechanisms, individuals see the capture of land value uplift more closely associated with expropriation. This highlights the importance of property taxes in capturing land value increases without the need to implement new, additional mechanisms. Property taxes benefit from being more broadly accepted and having a more redistributive character.

4.6 Analysis

I examine how an individual's property preferences interacted with a series of demographic, governance, and built environment factors. I consider the following variables:

Demographic: Age, gender, income, education, tenure, political party support.

Governance: Trust in federal government, trust in Mexico City government's ability to properly carry out its job, perception that Mexico City's government acts fairly, trust in their social circle (control).

Built Environment: Service and infrastructure satisfaction, quality of services and infrastructure, housing density, employment density, use of public parks.

Dependent variable: collectivist or individualist property preferences on a scale of 0 to 5 depending on the number of individualist statements that respondents agreed with.

I tested all variables, particularly governance variables, which are highly related to one another. I found that there was no issue of collinearity. In Annex 1, Table 2 I present the results of the multicollinearity test for these factors. In Annex 1, I also present the means of each of these variables and each of the five categories of analysis for limits to property.

4.6.1 Commonality Analysis

My three variable groups (demographics, governance, and built environment) represent the foundation of my analysis. As the first approximation for understanding the relationship between my variables and my dependent variable, I carry out a simple commonality analysis of these three groups. The objective of this analysis is to study the unique contribution

each group makes in explaining the variance of the relationship with my dependent variable. To carry out this analysis, I regressed the three groups of independent variables in their full scales on my dependent variable and built a series of nested models that allowed me to extract the unique contribution of each group. I find that 75% of the explanatory power for my total R2 of 0.14 comes from the unique contribution of each group and 25% comes from shared variance between groups, which shows that each group is contributing uniquely to the model and not doubling effects. Figure 3 captures the unique and shared contributions of the different groups.

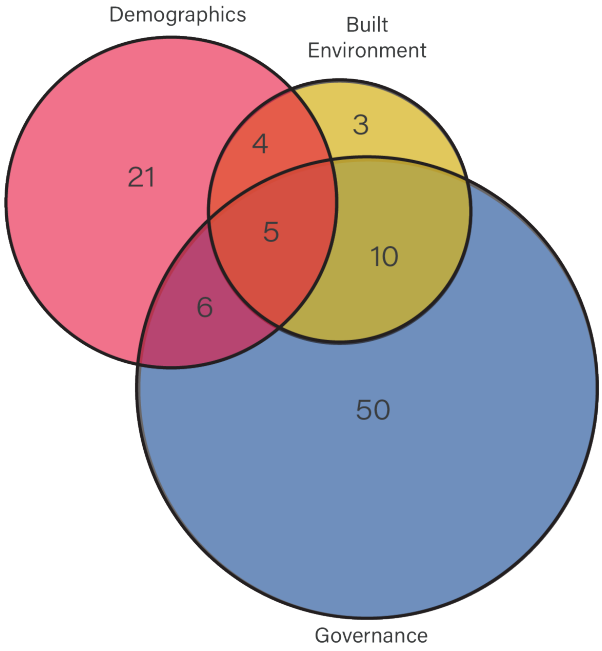


Figure 16: Shared and unique variance by group with commonality analysis
Note: Number denote percentages of variance absorbed by each group

Overall, the results indicate that governance variables, such as trust at the local and federal level and perceptions of fairness, are the most significant in capturing the variance in the model and increasing the specificity of the results. The unique variance of the governance variables is overwhelming and demonstrates that these variables are uniquely related to the dependent variable without necessarily interacting with demographic or built environment factors. While governance is an important category in driving movement in the dependent variable, the results of this analysis show that demographic and built environment variables are also important, even if this is less apparent. Demographic variables are uniquely responsible

for 21% of the variance, while built environment variables are uniquely responsible for 3% of the variance. Importantly, governance and built environment factors have a shared variance of about 10% with no multicollinearity. This suggests that while built environment factors alone do not contribute much precision to the model, they do so in interaction with governance factors. Initial results demonstrate that even though governance factors contribute a significant amount of precision to the model, it is not the only set of factors that are driving this relationship.

As a second step in this commonality analysis, I study the unique contribution that each variable had to a full model with all variables present. According to these results, I identify that individual trust factors, as well as the education variables capture the most variance within the model. Nonetheless, the majority of the variance (over 80%) is explained in the shared interaction between variables. This initial analysis is not focused on understanding the significance of each group or variable, an issue that I will address in the next stage of the analysis, but rather to identify which groups and variables contribute specificity and drive the overall patterns that I present in the next section.

4.6.2 Models

In this section I present the results of seven models, which allowed me to carefully study how each variable uniquely interacts with my dependent variable. In this part of the analysis, I converted all variables to binary form in order to facilitate interpretation and comparison across variables. I did this at the risk of losing the subtle movements across scales and precision of the estimates. However, with this change, I gain broader insights across thresholds, rather than subtle movements within a scale. For example, with trust in government, I am less interested in whether an increase in the property ideology scale corresponds with more trust (e.g. a movement from 2 to 3 on a 1-7 scale) but rather if property ideology preferences correspond to being low or high trust (0,1). The same logic corresponds to other categories, such as income and education.

In Table 12, I show the results for my four initial models.

	Model 1	Model 2	Model 3	Model 4
Age	$-0.092^{\dagger}$	$-0.089^{\dagger}$	-0.106^{*}	
	(0.048)	(0.049)	(0.050)	
Gender (Male)	-0.183^{*}	-0.205^{**}	-0.232^{**}	
	(0.076)	(0.076)	(0.078)	
Income (High)	$-0.185^{\dagger}$	$-0.167^{\dagger}$	$-0.173^{\dagger}$	-0.238^{*}
	(0.096)	(0.097)	(0.099)	(0.096)
Support for Morena	-0.069		-0.260^{***}	
	(0.078)		(0.077)	
Education (High)	-0.287^{***}	-0.245^{**}	-0.263^{**}	
	(0.085)	(0.085)	(0.087)	
Social Trust	0.039			
	(0.083)			
Trust in Federal Gov.	-0.221^{*}			
	(0.096)			
Trust in City Gov.	-0.358^{***}	-0.635^{***}		-0.622^{***}
	(0.097)	(0.082)		(0.084)
Perc. of CDMX Fairness	-0.351^{***}			
	(0.090)			
Service/Infra Quality	0.326^{**}	0.338^{**}	0.295^{**}	0.344^{**}
	(0.105)	(0.107)	(0.109)	(0.116)
Service/Infra Satisfaction	-0.093	$-0.152^{\dagger}$	-0.257^{**}	-0.179^{*}
	(0.080)	(0.079)	(0.079)	(0.079)
Housing Density				-0.056
				(0.216)
Employment Density				0.173
				(0.164)
Informal Commerce				0.055
				(0.050)
Use of Public Parks				-0.160^{*}
				(0.081)
Observations	1,061	1,061	1,061	1,046
R^2	0.128	0.104	0.063	0.092
Adjusted R^2	0.119	0.098	0.057	0.085
Residual Std. Error	1.208	1.223	1.251	1.232
	(df = 1049)	(df = 1053)	(df = 1053)	(df = 1037)
F Statistic	14.058^{***}	17.430^{***}	10.085^{***}	13.145^{***}
	(df = 11; 1049)	(df = 7; 1053)	(df = 7; 1053)	(df = 8; 1037)

Note: $\dagger$ $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 12: Results of linear regression model (Models 1-4)
Note: Standard errors in parentheses

Across all models, I find that men are slightly more collectivist than women with a high level of significance. Age does not have a strong effect, but I find that this is because this variable takes an inverted U-shape with the lowest age group (18-34) being collectivist, then

individualist in middle age (34-55), and collectivist again in the highest age group (56+).

Similarly, I find education is one of the factors that carries the most weight in the model. Individuals that are more educated are significantly more likely to have a collectivist perception of property. Income does not appear to be as significant predictor overall since it is largely mediated by education level. However, the general descriptive and statistical trends demonstrate that lower income individuals are more likely to have a more collectivist view of property. This is a point of analysis that should be studied further in future research. Furthermore, I find that while support for the dominant political party Morena is negatively related to having a more collectivist perception of property, this effect becomes insignificant when I integrate government trust variables.

Consistent with the findings of the commonality analysis, I find that trust in government and perception of government fairness variables appear to be the most significant across all models. Endogeneity is a valid and potential concern here—qualities that make people support stronger limits to property rights may also be the same qualities that make them more trusting of government. For example, being more willing to support regulation and tax payments may also make you more trusting of government. Additionally, there is a concern for other, unaccounted factors that affect both. For example, not having a property title might make one less trusting of government and at the same time more protectionist of property. In this case, trust and individualist property ideology would appear together, but not necessarily have a direct relationship.[27] Here, I do not seek to understand whether low trust in government and low perceptions of government fairness *cause* collectivist or individualist property ideologies, but whether these appear together even if it is as separate factors.

In order to offer more precision to the study of trust and perception of government, I disaggregate the measures of trust in four distinct variables after checking for multicollinearity. These variables include social trust, trust in federal government, trust in Mexico City government, and perception of Mexico City government fairness. Here, I use the variable "social trust" as a control variable in order to isolate the effects of trust in government as opposed to general trust.

The findings indicate that individuals with a high trust in government and those that consider

[27]If this were the case I would that lower income property owners would also be more sensitive to trust in determining their support for collectivist measures, particularly in the case of more abusive measures such as expropriation. However, I find the oppositive to be true (Annex 1). I find that "high" income individuals are more sensitive to trust in government particularly in consideration of measures such as expropriation.

Mexico City's government to be a fair arbiter are significantly more likely to have a collectivist view of property (although direction of causality is unclear). While the effects are strong for both local and federal government, it is evident that individuals that have high trust in local government have more collectivist views, which suggests that individuals view property as a distinctively local issue. Additionally, while general social trust has a significant and negative relationship with having individualist views of property, this completely loses significance when trust in government is introduced into the model. This indicates that having a more collectivist view of property is not associated with being more trusting in general but rather about possessing high levels of trust in the government specifically.

I also find that built environment factors, such as living in a neighborhood with low quality infrastructure and services are significantly related to having more individualist views of property while controlling for income and service satisfaction. The relation between property ideology and quality of services and infrastructure at the census tract level is one of the most significant and precise of the models. This suggests that the quality of an individual's built environment has some effect on how they view instruments that apply limits to property. Notably, the connection between property ideology and service and infrastructure quality does not appear to be mediated through trust in government based on an exploratory analysis of this data. I also find that individuals that use public parks more often are more likely to have a collectivist view of property. This should be interpreted only as an exploratory analysis due to endogeneity concerns, although it suggests a potential relationship that should be studied further.

I present partial R2 for these models in Annex 1, Table 2.

As an alternative way of measuring my dependent variable and easing interpretation, I run three logit models in which my dependent variable is a 0-1 scale. In these models I use three different measures as my dependent variable. In my first model (5) I created an principal components index which re-scaled my responses to either 0 (collectivist) or 1 (individualist) for my entire dataset. In Models 6 and 7, I also use logistic regression models to study whether individuals that have views of property situated at the extremes have categorically different characteristics from each other. I omit individuals with moderate views (2 and 3) in order to focus on individuals who appear to be ideological purists. Therefore, I only consider individuals that answered at the near extreme (Model 6), or extremes, referring to all responses 0 or all responses 1 (Model 7).

I present results in Table 13.

	Model 5 Binary logit	Model 6 Near-extreme	Model 7 Extremes
Age	−0.144	−0.068	−0.339
	(0.091)	(0.141)	(0.348)
Gender (Male)	−0.282*	−0.430*	−0.585
	(0.131)	(0.207)	(0.511)
Income (High)	−0.047	−0.342	−0.726
	(0.169)	(0.273)	(0.690)
Support for Morena	−0.118	−0.321	−0.445
	(0.135)	(0.215)	(0.540)
Education (High)	−0.607***	−0.556*	−1.092†
	(0.148)	(0.239)	(0.634)
Tenure: Lives with Owner	0.131	−0.091	0.511
	(0.196)	(0.326)	(0.915)
Tenure: Owner	−0.120	−0.624†	−0.255
	(0.211)	(0.342)	(0.893)
Tenure: Loaned Home	−0.190	−0.474	−1.208
	(0.318)	(0.493)	(1.185)
Social Trust	0.032	−0.065	0.361
	(0.143)	(0.230)	(0.629)
Trust in Federal Gov.	−0.286†	−0.425	0.527
	(0.166)	(0.264)	(0.686)
Trust in City Gov.	−0.394*	−0.754**	−2.097***
	(0.168)	(0.267)	(0.623)
Perc. of CDMX Fairness	−0.406**	−0.837***	−1.141†
	(0.153)	(0.240)	(0.626)
Service/infra Quality	0.403*	0.622*	1.393†
	(0.183)	(0.289)	(0.746)
Service/infra Satisfaction	−0.185	−0.285	−1.011†
	(0.137)	(0.215)	(0.554)
Constant	1.202***	2.617***	4.536**
	(0.345)	(0.576)	(1.658)
Observations	1,061	495	127
Log Likelihood	−685.860	−282.324	−53.010
Akaike Inf. Crit.	1,401.719	594.647	136.020
Tjur's R2	0.08	0.22	0.44

Note: † $p < 0.10$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Table 13: Results Model 5-7

Note: Standard errors in parentheses

Consistent with my previous models, I find that older individuals are more collectivist than younger ones. The odd ratio of being a collectivist increases by 18% as I move from one age group to another. I also find that men have 27% lower odds of being individualist than women. Education is also significant here. Being more educated decreases the odds of holding an individualist perspective by 43%. Additionally, being in a high quality neighborhood

decreases the odds of being an individualist by 33%. Trust in government and fairness are important here as well. Individuals that have high trust in Mexico City's government have lower odds of being an individualist. Here, the factor of trust in the federal government loses nearly all significance- being high trust at the city level is more important than being high trust at the federal level for property preferences.

In the last two models, I find that at the extremes, trust in Mexico City government and perception of the government's fairness become more significant. Coefficients for these two variables almost double. Additionally, gender plays a stronger role. Men are significantly more likely to be pure collectivists than women with higher coefficients than captured in previous models. Similarly, I find that the quality of infrastructure and services at the census tract level have more significance at the extremes with coefficients that almost double. While education remains important, its significance does not appear to increase among this group of people. Notably, my models with individuals at the extremes or extremes have the highest R2, which suggests that as I consider that populations that have more defined visions of property, the precision of the models increases.

In Annex 2, I include graphics that demonstrate the raw data trends for demographic and built environment variables.

4.6.3 Matching on Quality

One of the most significant findings from the previous analysis that could benefit from further study is the relationship between property preferences and neighborhood quality. This is significant because neighborhood quality is a variable that I constructed based on census data with information of infrastructure and service provision at the census tract level, rather than a survey question. This reduces the possibility of endogeneity that could result if individuals were responding to questions in a specific way.

I find that the relationship between property preferences and service and infrastructure quality is strongest at the high and low ends of quality. For example, respondents with the lowest levels of quality were more likely to express individualist views, while respondents with the highest quality of services expressed more collectivist views. Respondents with average quality services, the majority of the city, fell in the middle of the spectrum. In the following figure (Figure 4), I demonstrate the general trends of responses. Here one can appreciate how infrastructure and service quality is most meaningful at the extremes (low and high quality).

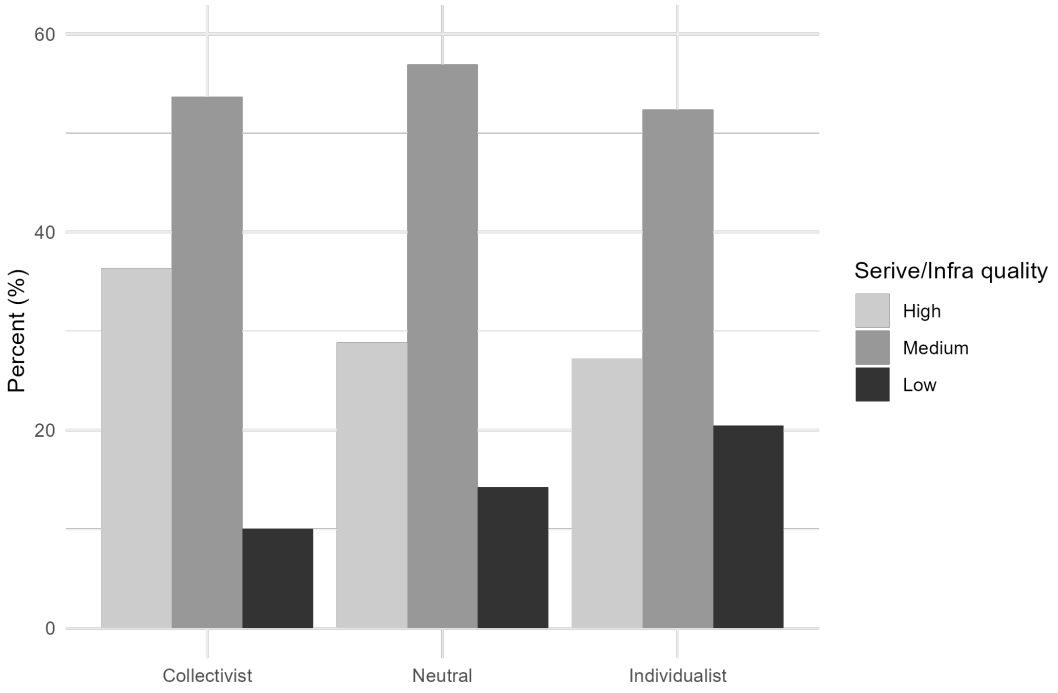


Figure 17: Distribution of responses by quality of services and infrastructure
Note: property ideology was defined as collectivist=0,1 "individualist" responses, neutral=2,3 "individualist" responses and individualist=4,5.

In order to verify the finding highlighted in these models that suggest that a relationship exists between property ideology and service and infrastructure quality, I match respondents based on gender, income, age, and income variables, but different levels of service quality. My objective here is to identify whether the quality of the built environment alone influences property preferences while holding other factors constant.

I was able to obtain 320 matches based on my variables of interest. After matching on my control variables, I find that people living in high-quality neighborhoods are significantly (p= ¡.0001) more likely to have a collectivist view of property than similar individuals in low quality neighborhoods. Specifically, individuals in high quality neighborhoods are 0.34 points more collectivist on a 1-3 scale. I simplify this interpretation using a 0-1 ideology scale and calculated the predicted probabilities for my low and high quality groups. Using this data, I find that the predicted probability of being an individualist in the high quality group is 23

percentage points lower than being an individualist in the low quality group.

4.6.4 Discussion and Conclusions

From a Schmittian perspective, the state can both grant property rights and take them away. This role of the state has been studied and theorized in urban scholarship with respect to informality and illegal "formal" practices (Roy 2009). However, everyday urban practices also involve the state limiting the full enjoyment of property rights for public benefit. For example, land use regulation limits what individuals can do with their property. Similarly, property taxation puts a limit to ownership by linking an obligation of payment to ownership. Individuals have different levels of acceptibility for the use of these mechanisms. I argue that these levels of acceptability are not random, but are linked to individual demographic characteristics, such as income, gender, age; how they perceive and the quality of their built environment; and how they perceive their local government through factors such as, trust and fairness.

In this paper I seek to show that property rights can be meaningfully analyzed across different dimensions. Additionally, I argue that property rights scholarship can and should consider how property rights are given and taken away in everyday urban practices.

My first objective in this analysis was to create an index that was based on different categories of how government intervenes in property. I carry out this task to categorize people and also interpret the types of interventions they were most and least willing to accept. I find that the majority of individuals believe that government has the right to collect a yearly property tax. However, residents are less likely to support limits to property that are more uncommonly used in Mexico City and that imply the government either directly taking property or a portion of property value uplift. This finding highlights the importance of property taxes as a land value capture mechanism due to their broader acceptability. Overall, I identify that property preferences follow a normal distribution, with the majority of individuals having mixed views on the instruments that government uses to apply limits to property and the smallest share of individuals having more cohesive views as either individualist or collectivist.

In studying individual characteristics, I find that governance characteristics have the most

definitive relationship with perceptions of property, followed by demographic and finally built environment factors. Findings demonstrate that while having high trust in government overall has a strong relationship with property preferences, trust in Mexico City's government's ability to carry out its job is most significant. The overwhelming relation between residents' support for the application of limits to property and trust in government demonstrates that individuals systematically interpret taxation, regulation, and expropriation as part of a dynamic relationship with government, rather than isolated interventions.

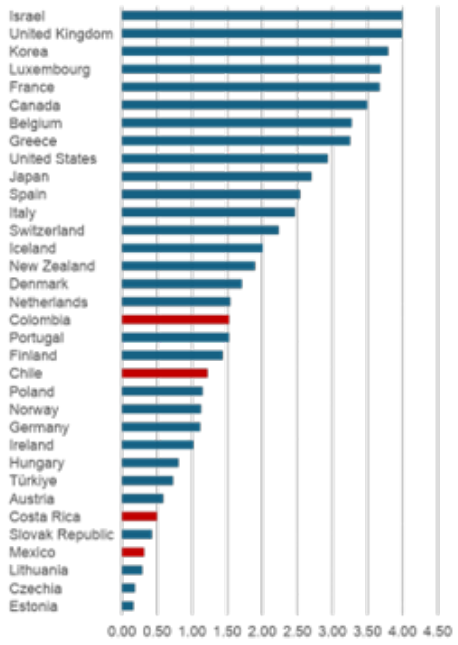
The relationship between property ideology and demographics that I find speaks to general trends in the population that should be investigated further in later studies. Contrary to the findings of scholarship on preferences for redistribution, I find that women have a trend of being more individualist with respect to property than men, even while controlling for other factors, such as trust. This is a surprising finding that is counter to previous studies that have studied the role of gender in support for more statist policies, such as increased taxation (Ranehill and Weber 2022). Additionally, I find that a more collectivist vision of property is consistent with being higher income, more educated, and older. Future studies should further examine the relationship between income and property preferences in order to identify potential mediators for this relationship which is counter to what some previous studies have demonstrated with respect to wealth redistribution measures (Alesina and Angeletos 2005).

One of the most surprising findings was in the analysis of the relationship between my dependent variable and the quality of services and infrastructure at the neighborhood level. I find a significant relationship between these factors, which suggests that the built environment ultimately has some influence on how people relate to property. This relationship is most significant at the extremes with people that have the lowest quality levels having the most individualist views of property. This demonstrated relationship could have important consequences as individuals living in quality neighborhoods could more strongly oppose government interventions in property and further perpetuate a vicious cycle.

5 Annex: Essay 1

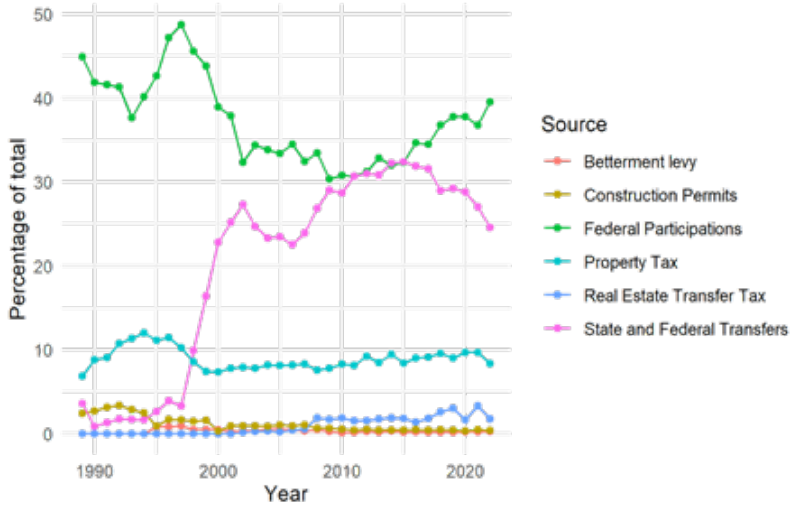
5.1 Essay 1: Annex 1

Figure 1: Property tax collection in Latin American countries as a percentage of GDP



Source: OECD data

Figure 2: Revenue by source 1989- 2022, Municipalities over 100,000 people



Source: INEGI Public Finance data

5.2 Essay1: Annex 2

Table 1: General characteristics of participants (summary statistics)

Category	**Sub-category**	**Count**	**%**
Monthly Household Income	Below $5,000	126	6%
	from $5,001 to $10,000	303	15%
	from $10,001 to $15,000	335	17%
	from $15,001 to $20,000	325	16%
	from $20,001 to $30,000	345	17%
	from $30,001 to $45,000	258	13%
	from $45,001 to $60,000	121	6%
	from $60,001 to $75,000	62	3%
	from $75,000 to $100,000	42	2%
	I don't know	78	4%
Maximum Education Level Attained	Bachelor degree	1070	53%
	Postgraduate study	286	14%
	High school degree	515	25%
	Middle or elementary school	155	8%
Property Value	Below $400,000	147	7%
	between $400,001 and $600,000	306	15%
	between $600,001 and $1,000,000	518	26%
	between $1,000,001 and $2,500,000	670	33%
	between $2,500,001 and $5,000,000	239	12%
	between $5,000,001 and $8,000,000	48	2%
	between $8,000,001 and $14,000,000	24	1%
	more than $14,000,000	12	1%
	I don't know	60	3%
Property Type	Independent home with street exit	1579	78%
	Other	13	1%
	Unit in apartment building in gated community	82	4%
	Unit in apartment building with street exit	81	4%
	Independent home within gated community	271	13%
Ownership Status	Other	35	2%
	Property is completely paid off	1159	57%
	Property is being paid off	774	38%
	Property in legal dispute	58	3%
Status as Head of Household	Shares the responsibility as head of household	1062	52%
	Is the sole head of household	964	48%
Age Range	25-34	264	13%
	35-44	638	31%
	45-54	675	33%
	55-64	343	17%
	Above 65 yo	106	5%
Gender	Man	970	48%
	Woman	1056	52%

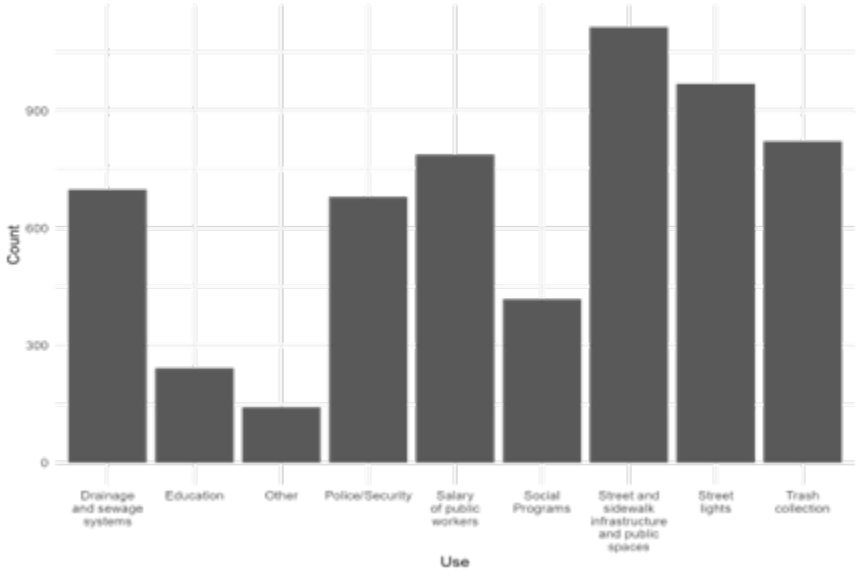
Table 2: Regression results

	Dependent variable:
	Government Skeptic
Gender: Woman	0.21^{***}
	(0.026)
Age (low to high)	-0.15
	(0.012)
Income (low to high)	0.04.
	(0.024)
Schooling (low to high)	0.27^{***}
	(0.036)
Political Party: Morena Support	-0.26^{***}
	(0.028)
PP alignment	-1.03^{***}
	(0.03)
Municipal Pop:>1 million	-0.19^{***}
	(0.027)
Income Schooling	-0.036^{***}
	(0.008)
Constant	-0.372^{***}
	(0.108)
Observations	27,244
Log Likelihood	$-18{,}428.130$
Akaike Inf. Crit.	36,872.270
Note:	*p<0.1; **p<0.05; ***p<0.01

Figure 1: Map of participating cities

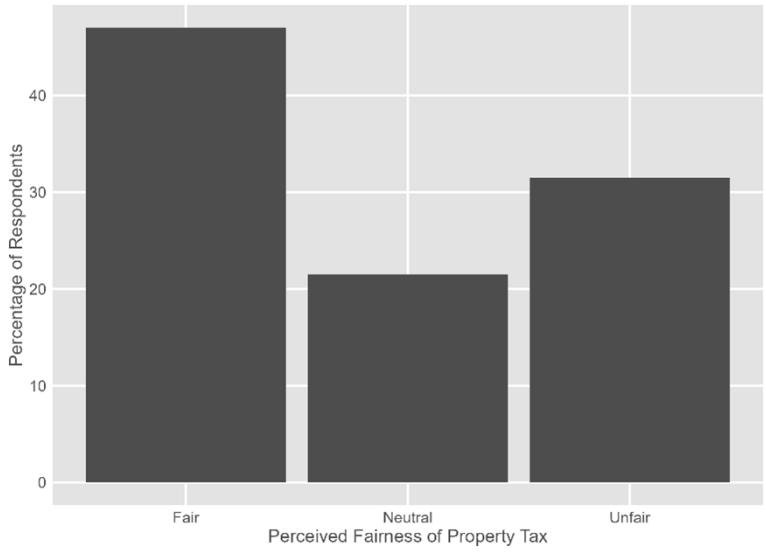
Municipality	State	Participants
Aguascalientes	Aguascalientes	59
Apodaca	Nuevo Leon	47
Benito Juarez (Cancun)	Quintana Roo	61
Celaya	Guanajuato	36
Centro	Tabasco	63
Chihuahua	Chihuahua	66
Culiacan	Sinaloa	58
Durango	Durango	49
Ecatepec de Morelos	Estado de Mexico	64
Guadalajara	Jalisco	62
Guadalupe	Nuevo Leon	52
Hermosillo	Sonora	66
Irapuato	Guanajuato	52
Ciudad Juarez	Chihuahua	56
Leon	Guanajuato	62
Merida	Yucatan	83
Mazatlan	Sinaloa	38
Mexicali	Baja California	41
Monterrey	Nuevo Leon	85
Morelia	Michoacan	65
Nezahualcoyotl	Estado de Mexico	53
Oaxaca	Oaxaca	36
Puebla	Puebla	69
Queretaro	Queretaro	71
Saltillo	Coahuila	65
San Luis Potosi	San Luis Potosi	63
Tijuana	Baja California	70
Tlajomulco de Zuniga	Jalisco	54
Toluca	Estado de Mexico	65
Torreon	Coahuila	64
Tuxtla Gutierrez	Chiapas	62
Veracruz	Veracruz	70
Zapopan	Jalisco	54

Figure 2: Beliefs about destination of property tax funds



Note: 128 of the individuals who identified "other" as the destination for property taxes claimed that the alternative destination for the use of this tax was: "the pockets of government workers", "stolen", "corruption", or an opinion which expressed the lack of belief in the use of property taxes in government actions.

Figure 3: Perceptions of the fairness of property tax payments



Note: Question asked participants to agree of disagree with the following statement: I believe that the property tax I am charged is fair in relation to the services my home receives from the government.

Figure 4: Distribution of property tax payments in pesos by year

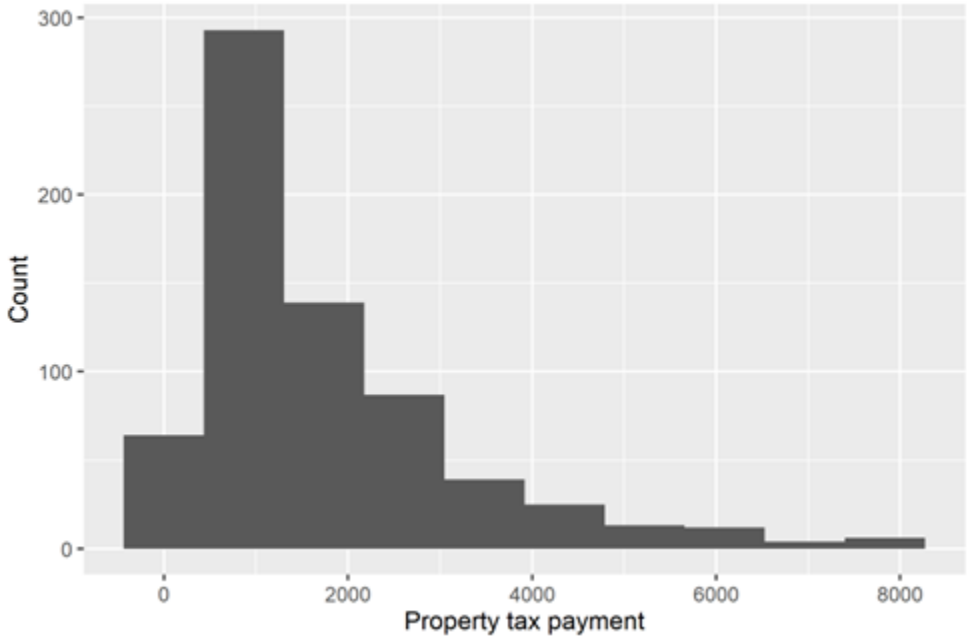
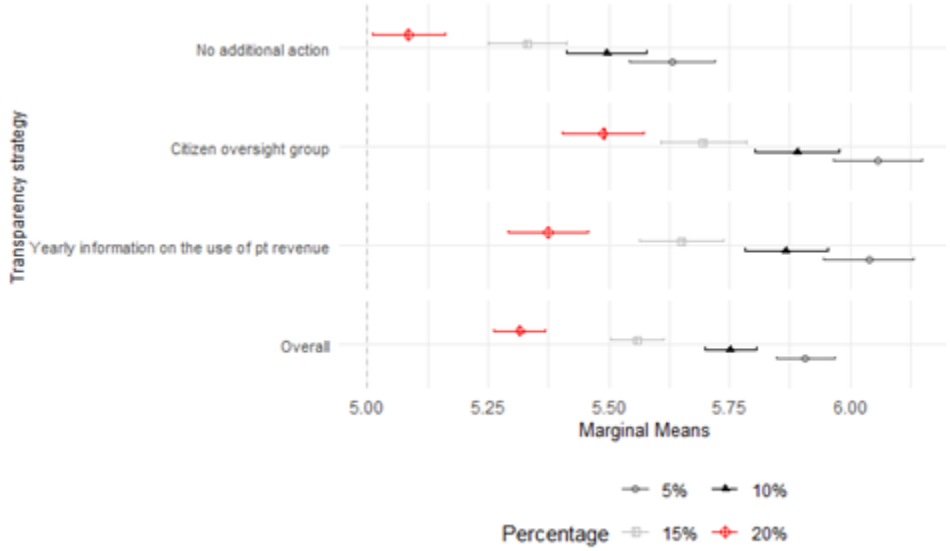


Figure 5: Marginal means of interaction between oversight strategy and increase



Note: The marginal means show the descriptive interaction between oversight strategies and levels of increase. In other words, how often was the combination of each chosen together. This graphic reveals that individuals were significantly more likely to choose a 20% increase when that same profile had an citizen oversight group present. Indeed the likelihood of choosing a 20% increase when paired with a citizen group present was nearly equal to a 10% increase when no additional action was implemented.

Subgroup effects

Figure 6: Heterogenous effects of Income

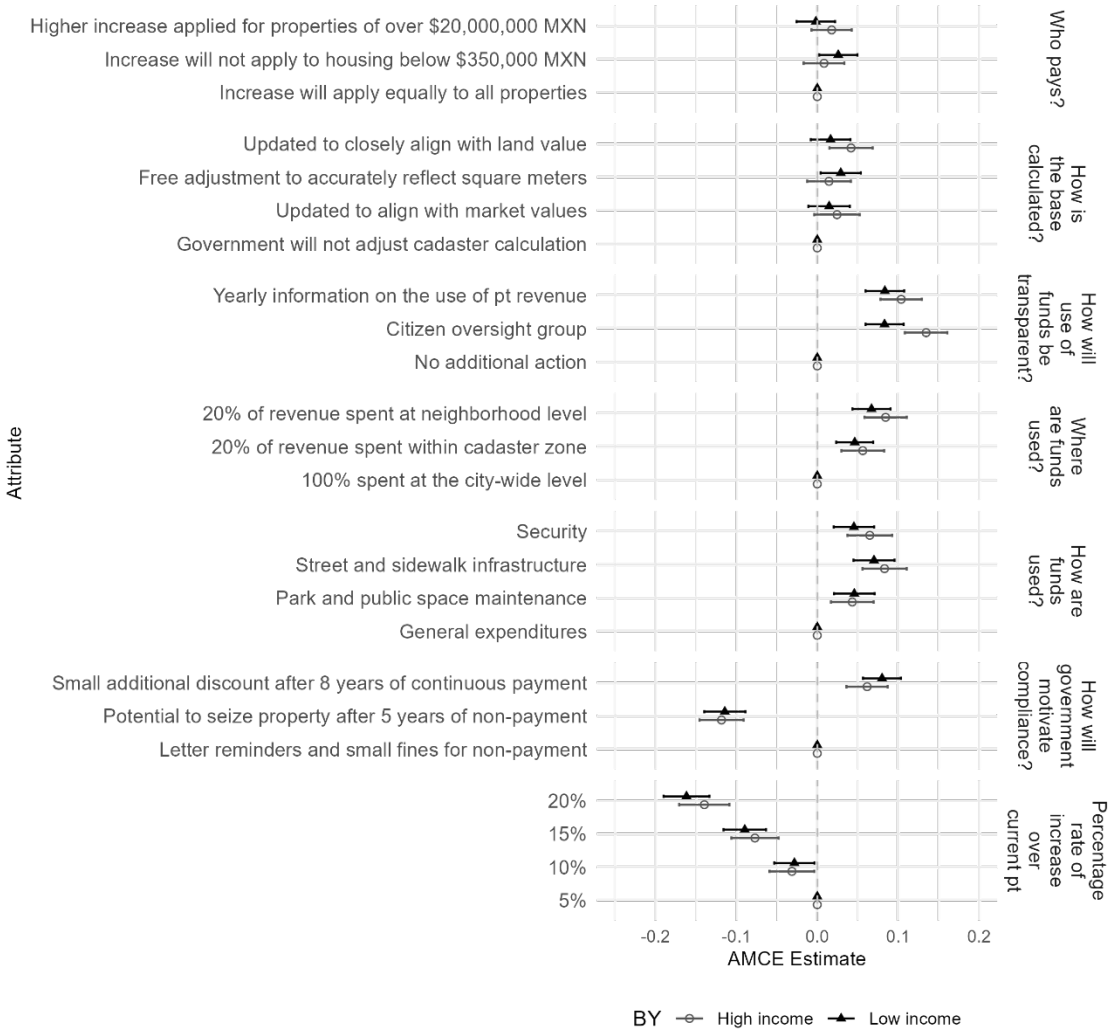
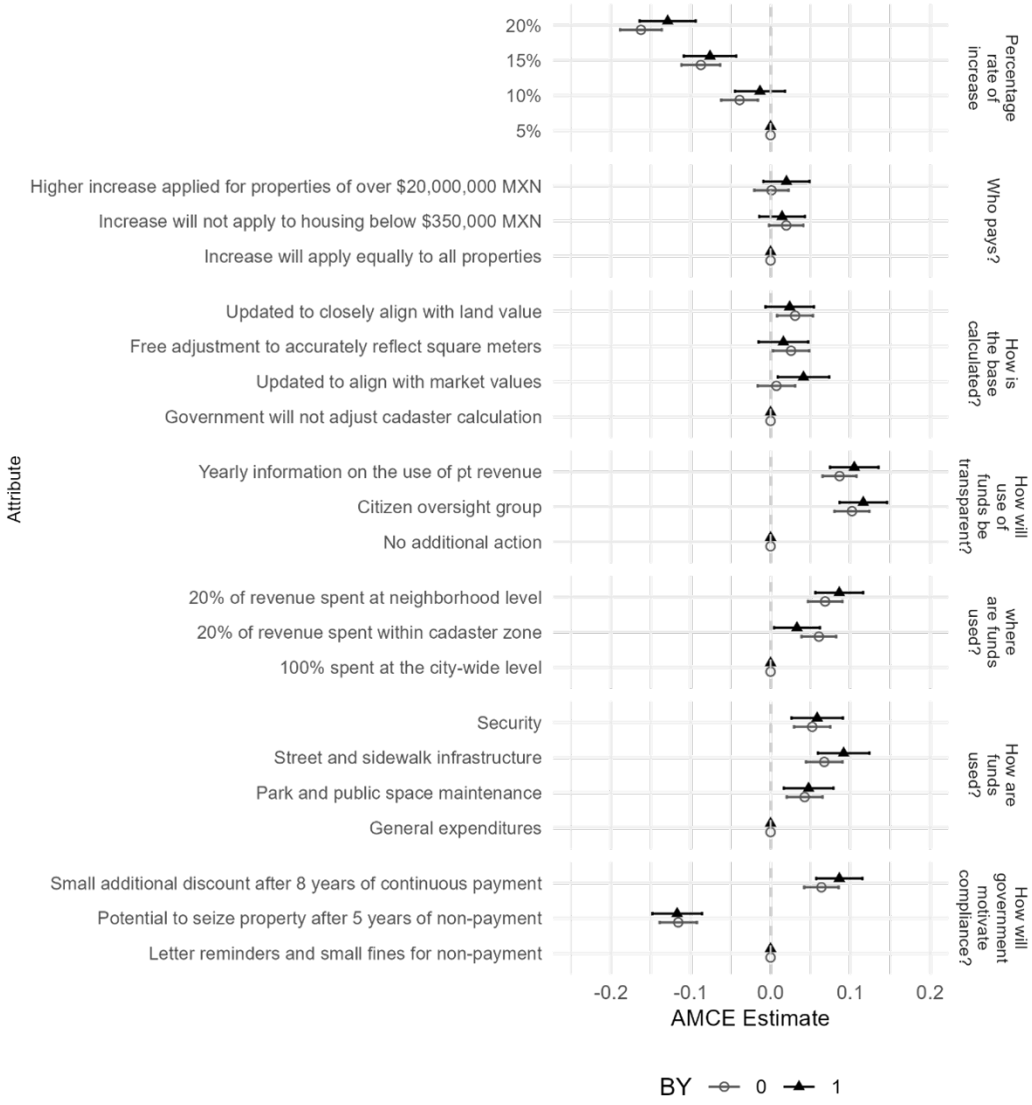


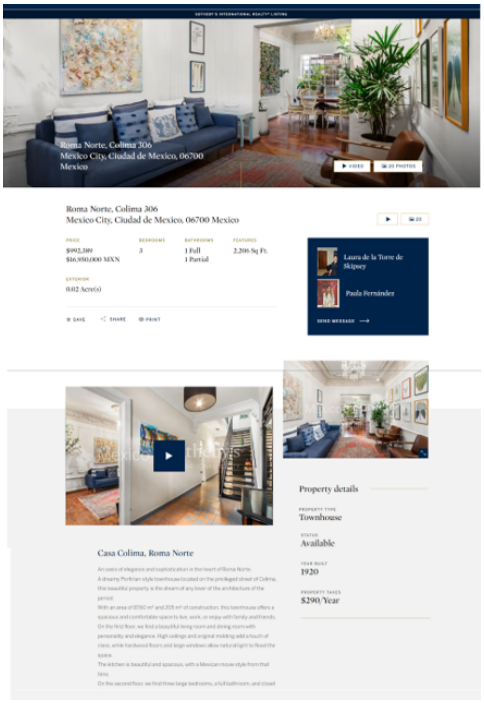
Figure 7: Heterogeneous Effects of Political Party Alignment



6 Essay2:Annex

6.1 Essay 2: Annex 1

Figure 1: Property listing



Source: sothebysrealty.com

Figure 2: Official cadaster land values by zone (2024)

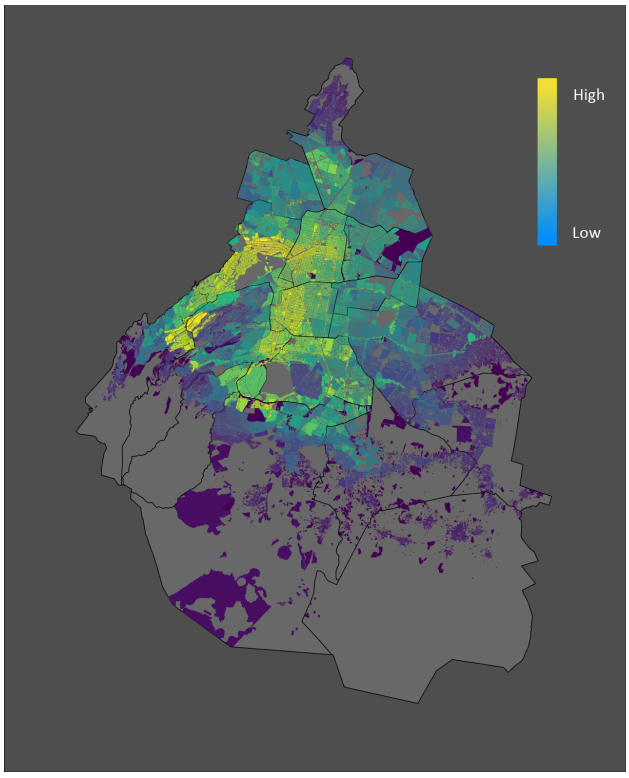


Figure 3: Effective tax rate applied to cadaster value

Figure 4: Example of Mexico City property tax bill

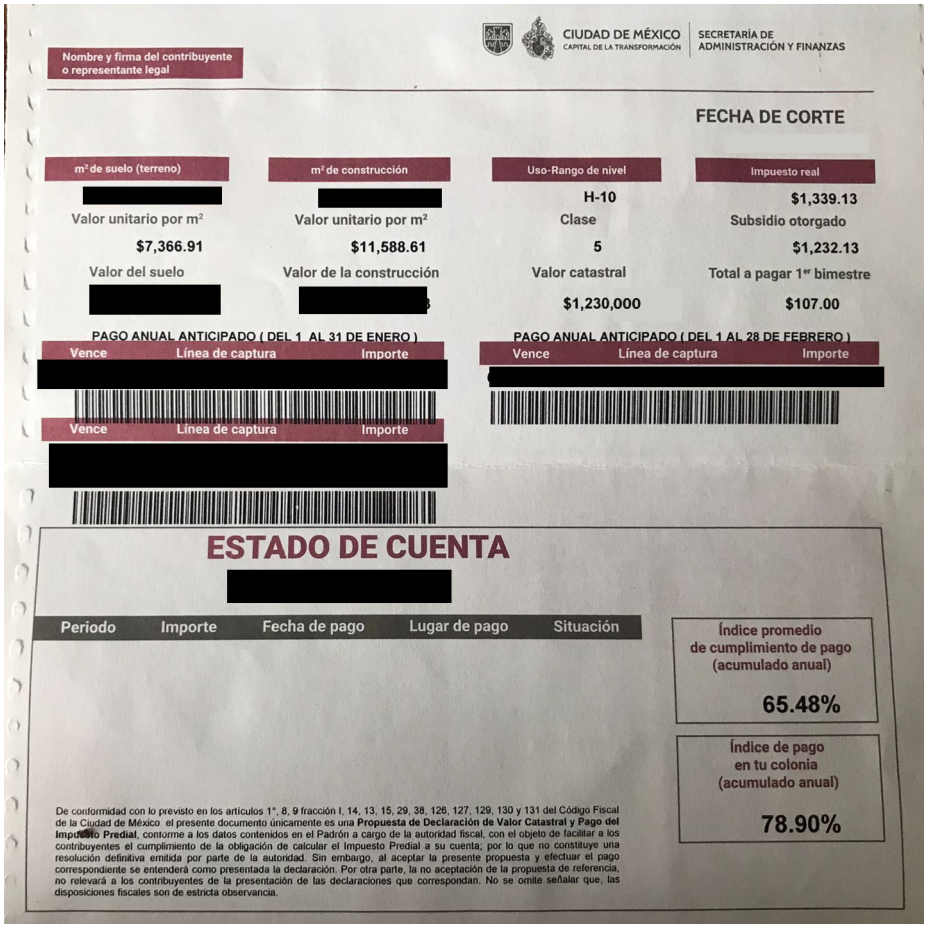
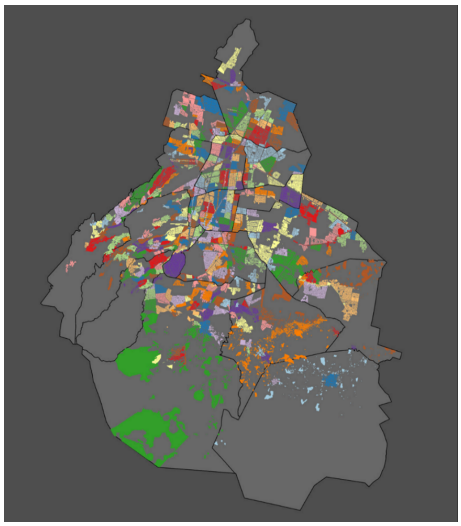


Figure 5: Zones included in analysis based on availability of list values



6.2 Essay 2: Annex 2

Figure 1: Final AGEB sample

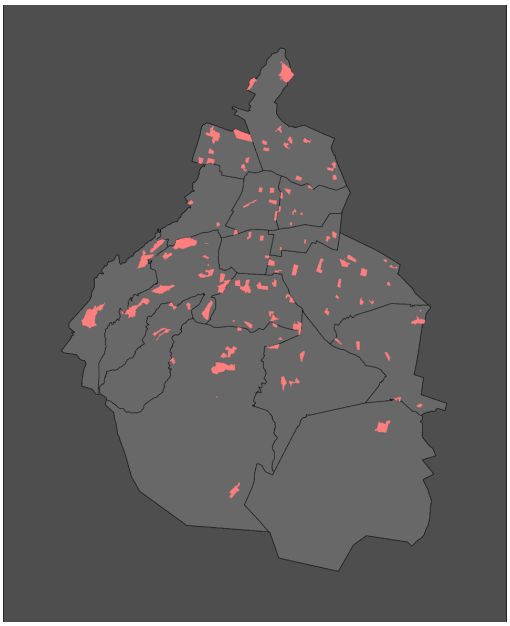


Table 1: Information of Interview Participants: Government Officials

Position	Dates	Interview Dates	Length (mins)
Director of Cadaster	2000-2002	March 2024	67
Director of Cadaster Policy	1985	May 2024	114
Employee of Cadaster Office	2016-2018	September 2023, March 2024	63
Treasurer of Mexico City	2012-2018	April 2024	67
Treasurer of Mexico City	2019-2024	December 2024	72
Sub-treasurer of Mexico City	2019-2024	May 2024	73
Employee of Ministry of Finance	2004-2006	April 2024	58

This study received IRB approvals from UCLA. No personal identifiable information was asked of survey participants. At the end of the survey, participants were asked if they wanted to volunteer an email address to receive information about the survey results. Emails are only stored in a cloud-based system and not a local database.

Pilot and adjustments I ran two separate pilots for this study. The first involved an online panel sample which randomly assigned individuals to the control group or one of the treatment arms. In this case, the treatment arms simply involved a comparative image of two houses and the different assigned values showing vertical and horizontal inequities.

Respondents were instructed that this was a pilot survey and asked to offer feedback to improve the survey. Many respondents suggested that they would have liked a more dynamic explanation about exactly how property taxes were calculated in order to better understand the comparison. Based on this input, I decided to use videos to ensure that respondents would understand the details and complexities of tax calculation. Additionally, the videos permitted a voice-over which would guarantee that all individuals received the same information at the same pace. After this initial pilot, I carried out individual interviews with Mexico City residents who offered feedback on the video instrument. The main feedback I received was that the video was too extensive and offered too much detail which was fatiguing for some. Based on this feedback I cut the video in half from its initial starting length of three minutes. I made sure to only keep the most essential information.

Prior to kickstarting the survey, I carried out a small pilot with about 40 respondents on the field. The objectives of this pilot were two-fold. The first objective was to familiarize surveyors with the different components of the survey and ensure that they were getting

proper feedback and not rushing. I personally supervised the fielded pilot and gave surveyors direct feedback to ensure the proper administration of the survey. The second objective of the field pilot was to ensure that respondents were adequately engaged with the experimental components of the survey. Based on the field pilot, I decided to complement the videos with support cards which surveyors would show to participants based on the video they were shown.

Enumeration The survey had a total duration of 15-20 minutes and was carried out using electronic tablets. Surveyors were closely monitored during the enumeration process and quickly communicated with if flaws were found in their surveys or there was evidence of rushing.

Informed consent Consistent with ethical norms and consideration, enumerators were instructed to receive informed verbal consent from participants. Enumerators verbally gave participants the following information:

- Their name
- The name of the firm conducting enumeration
- Estimated length of interview (15-20 minutes)
- Affiliation
- The topic area of the survey

Additionally, enumerators shared an information sheet with participants that included:

- Objective of study
- Researcher name and affiliation
- Researcher's and supervisor's contact information
- UCLA IRB contact information

Non-compliance

Data quality check- remove respondents who are straight-line. I will run a version of the

analyses omitting respondents that straight-line. Another concern includes the potential for rushing through survey since enumerators were paid by survey completion, rather than by hour. However, the amount of payment was determined based on the calculated length of the survey (15-20 minutes), therefore enumerators were informed of the importance of adhering to the survey duration and were closely monitored to ensure compliance. In order to reduce this issue, surveyors were consistently given feedback during the piloting phase of the survey. Surveys that were less than 10 minutes were flagged and re-executed in the same neighborhood. Additionally, immediate feedback was given to enumerators which reduced the incidence of this occurrence by the third day of surveying. Importantly, in order to ensure that surveyors were not rushing through the survey, I applied a minimum required time on the screen which included the video treatment.

Changes to sample

Because of specific concerns a number of AGEB's that were initially selected were not included in the final sample. I include the AGEB's and their replacement below. The main reason for omitting a specific census tract was related to inaccessibility of neighborhoods of high socioeconomic levels and the selection of predominantly commercial or industrial neighborhoods with the random generator.

Table 1: Replaced census tracts

New Census Tract	Replaced Tract	Reasons for Change
195	1675	Gated communities or very high socioeconomic level where it is difficult to access households.
446	968	Gated communities or very high socioeconomic level where it is difficult to access households.
2841	540	High security risk for surveyors.
549	49	Gated communities or very high socioeconomic level where it is difficult to access households.
730	1548	Gated communities or very high socioeconomic level where it is difficult to access households.
806	1148	Gated communities or very high socioeconomic level where it is difficult to access households.
1402	771	Primarily commercial area of the city.
1410	198	Gated communities or very high socioeconomic level where it is difficult to access households.
2066	020A	Gated communities or very high socioeconomic level where it is difficult to access households.
995	091A	Gated communities or very high socioeconomic level where it is difficult to access households.
563	1165	Only industry in the entire census tract.
84A	687	Primarily commercial area of the city.
446	29	Gated communities or very high socioeconomic level where it is difficult to access households.
2047	457	Gated communities or very high socioeconomic level where it is difficult to access households.
629	727	Gated communities or very high socioeconomic level where it is difficult to access households.
375	757	Gated communities or very high socioeconomic level where it is difficult to access households.

6.2.1 Essay 2: Annex 3

Strategies for future research

The first possibility of the factors that contributed to the low effects could be related to the weakness of the treatment. One point of weakness of the weakness could be related to the use of a video to administer the experiment. For example, there were limitations in getting individuals to fully engage with the video in the context of a crowded and noisy street space and ensuring that people maintained their attention through the end of the video. However, using a video experiment as part of a fielded survey had certain advantages, such as that

it allowed surveyors to monitor participants and ensure that they watched the entirety of the video. Additionally, using a video experiment also provided individuals with a more didactic presentation of information, which was particularly useful for an experiment on taxation, a topic that many individuals are unfamiliar with or do not regularly thing about. In order to address this potential limitation, I used support cards which surveyors presented to individuals after the experiment in order to ensure that respondents had the opportunity to look at the information presented in the experiment calmly.

I checked whether individuals engaged with the video by including a quality control question at the end of the video. However, this question was specifically related to the information presented at the beginning of the videos on how Mexico City calculates property taxes, rather than a manipulation check. A manipulation check would allow me to correctly identify whether respondents correctly absorbed the treatment manipulation and which of the presented scenarios are true.

The other possible scenario that could have resulted in the limited effects from this study could be that the treatment properly manipulated individuals in the way that it was designed to, but the actual treatment had no effect. This would mean that respondents were either surprised or unsurprised by the information, but either way it did not change their perceptions of government or the tax. In this scenario, I consider two possible paths, respondents were surprised by the information presented, which means that they did not have a previous conception of inequity in the administration of the tax. However, this additional information did not affect them enough to change how they viewed government or property taxes. Perhaps there was indifference to the government applying taxes in an inequitable way.

The other possible situation is one in which people absorbed the treatment but were unsurprised by the information because they already had a strong preconceived notion that the government is an unfair actor and administer and collects taxes with inequities. In this scenario the treatments presented would not have done much to change people's views of government or tax administration. This could be the reason which one does not identify significant changes between control and treatment groups. The additional information did not do much to change people's preconceptions about the fairness of tax administration. In

the focus group and interview components of this study, participants appeared to have a strong sense that the government administered the tax in inconsistent ways and often did not understand why they or family members paid a certain amount compared to other people they knew.

Alternatively, the experiment sought to influence the perception of inequity in a general sense by presenting a hypothetical example comparing two properties in Mexico City and the differences in their corresponding market values, cadaster values, and property taxes. However, the treatment did not directly manipulate people's perceptions of personal inequity, or their own experience. As a result, the limited effects could indicate not that people are indifferent to inequity in the tax's assessments and administration, but rather that effects of inequity subside when they are not personally affected by them.

Strategies for future research

The topics that this study considers are important and essential for understanding the complex relationship that people have to taxes and government's legitimacy to enforce taxation. This study is also an investigation into how people view inequity and the potential effects of government treating individuals in an inequitable way in terms of tax policy.

In order to address doubts about the survey results, I propose to carry out a second iteration of the survey that will allow me to identify which of the conditions that I presented in the previous section ultimately influenced the results. In this new version I will include the following changes:

1) A manipulation check to ensure that respondent's adequately absorbed the treatment. For example, I would ask respondents:
a. Which property is worth more (A, B, or the same) and
b. Which property pays more taxes (A, B, or the same).

I would expect that individuals who receive the vertical treatment would that one property is worth more than the other and that they pay the same tax. Individuals would have a support card to help them answer this question, but this would ensure that they are fully aware of

the inequity. In contrast, I would expect respondents that received the horizontal treatment to choose "the same" as the response to the first question and then respond either A or B (depending on design) to the second question. Finally, the control groups would answer "the same" to both questions. Ensuring that these answers are aligned with the treatment would allow me to check that the treatment manipulation worked effectively.

2) After the presentation of the standard outcome questions, I would include a set of debriefing questions exclusively for the treatment groups. I would not analyze responses to these questions in order to interpret treatment effects but would use them to identify whether the respondents found the treatment information to be novel or not. Importantly, this would permit me to know with certainty whether results are a consequence of people's apathy to inequity or alternatively a result of treatment not actually changing their pre-existing opinions about how government administers property taxes. The questions that I would ask are the following;

a. Were you aware that the government of Mexico City used this method in order to calculate the property taxes that people pay?

b. Did you find the information presented novel or did it confirm information you already knew?

6.3 Essay 3: Annex

6.3.1 Essay 3: Annex1

Figure 1: Perception that government will protect property

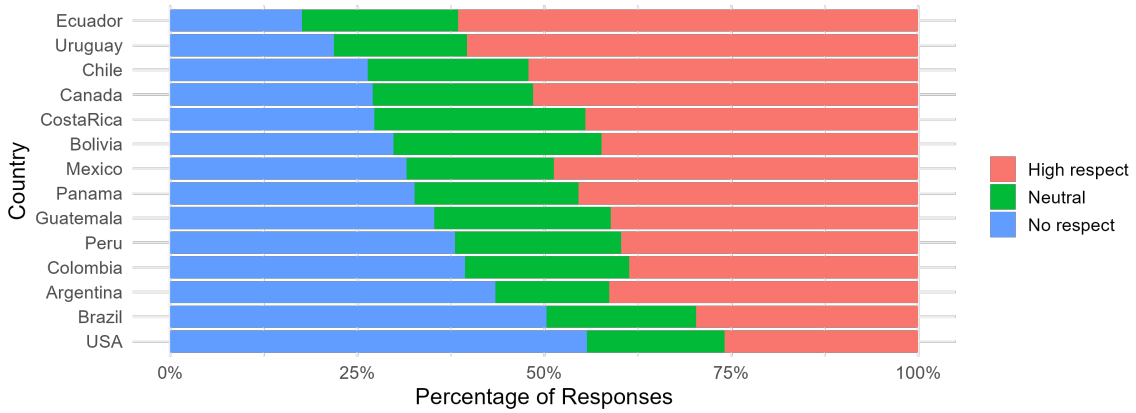


Table 1: Multicollinearity test

Category	**VIF**
Social trust	1.22
Fed. gov trust	2.11
CDMX gov. trust	2.02
Perc. of CDMX fairness	2.18

Table 2: Unique Variance Contributions of Each Variable

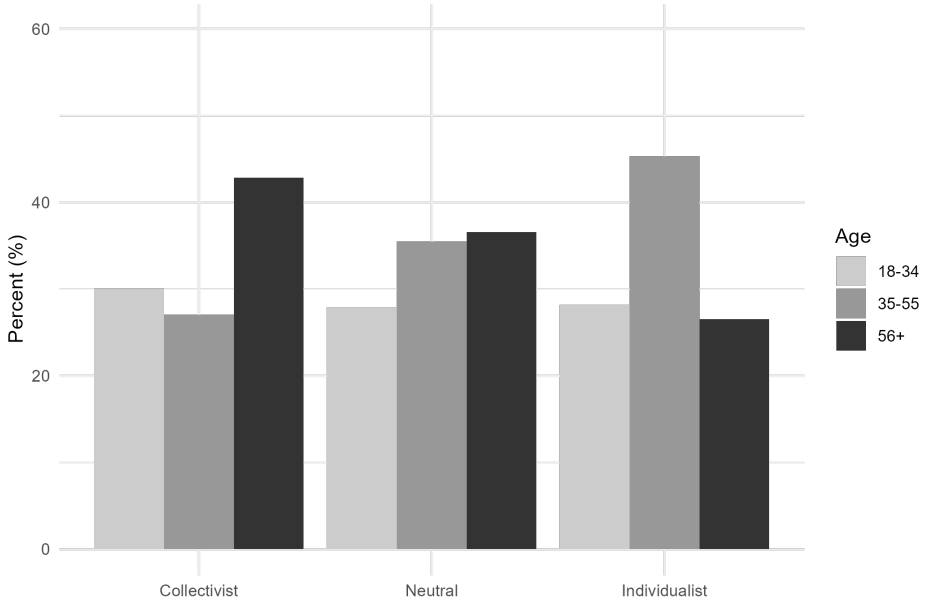
Variable	**% of Total R^2**
Gender	2.38
Age	2.24
Income	0.80
Education	6.57
Political party	0.00
Tenure	1.23
Service/infra quality	1.23
Service/infra satisfaction	0.07
Housing density	0.00
Employee density	0.58
Informal_comm_group	1.16
Social trust	0.07
Trust in Federal government	7.30
Perception of CDMX competence	4.05
Perception of CDMX fairness	3.03
Total Unique	**30.78**
Shared Variance	**69.22**

In the following table I demonstrate what variables are responsible for absorbing the majority of the variance in the 4 models presented. I find that the variables that have a more direct relationship with the dependent variable and are better predictors in the models are the variables of trust and fairness, followed by education and service and infrastructure quality. However, these only explain from about 1-5% of the variance in the models. This demonstrates that property ideology is not easily predicted by a single variable but influenced by multiple characteristics that are potentially beyond those that I have included in this model. Overall, these models show general relations but have weak predictive power individually.

6.3.2 Essay 3: Annex2

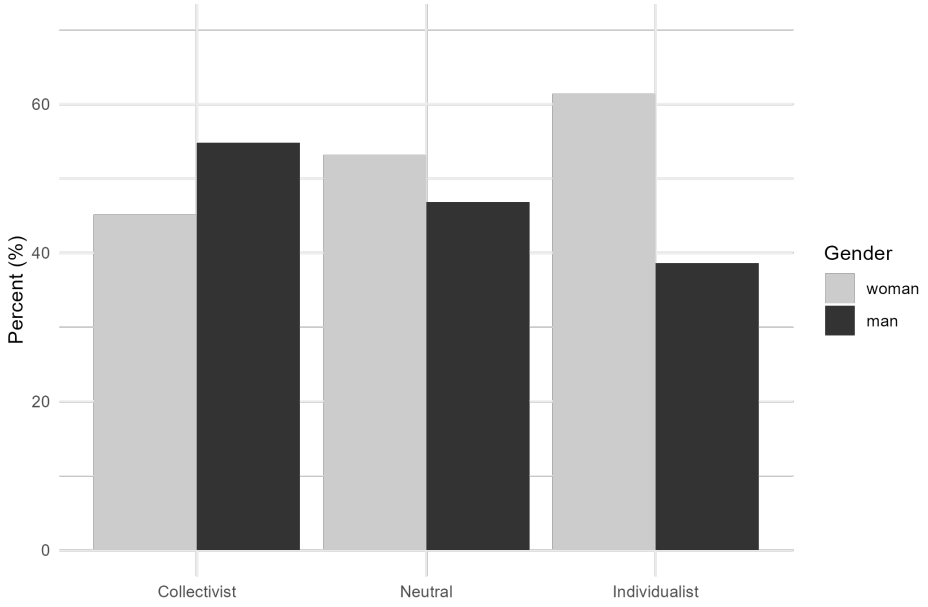
Raw data trends

Figure 1: Property ideology by age group



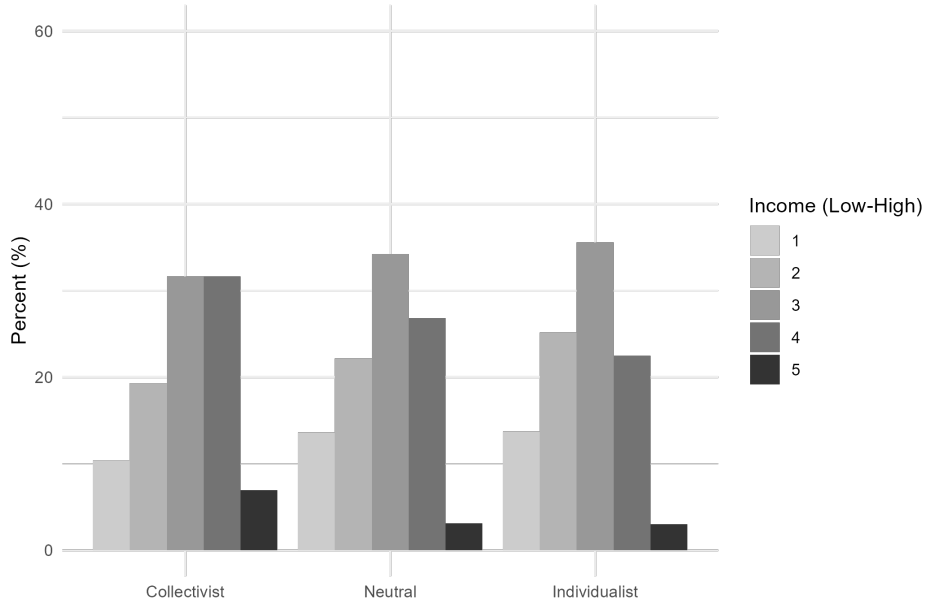
Note: Individuals 56+ are more likely to appear in the collectivist group than individuals in the 35-55 group. Individuals in the 18-34 group appear to be indifferent with respect to property ideology.

Figure 2: Property ideology by gender



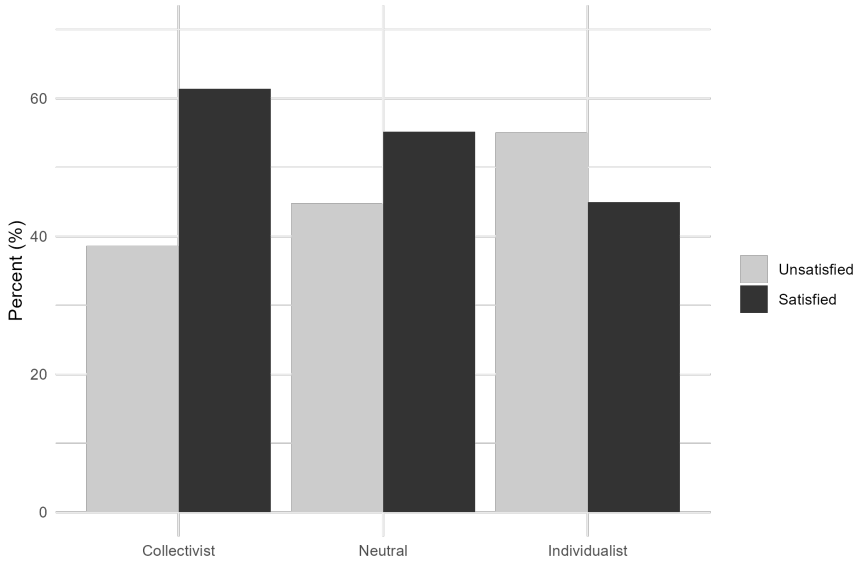
Note: Women are more likely to appear in the collectivist group than men.

Figure 3: Property ideology by income



Note: Individuals in the highest income groups (4,5) are much less likely to appear in the individualist group than the collectivist group. In contrast individuals in the low income groups (1,2, and 3) are more likely to appear in the individualist group than the collectivist group.

Figure 4: Property ideology by satisfaction level



Note: High satisfaction with services and infrastructure appears more in the collectivist group than the individualist group.

7 References

7.1 Introduction

Richard M. Bird and Enid Slack. (2004). "Land and Property Taxation in 25 Countries: A Comparative Review." In Richard M. Bird and Enid Slack (Eds.), *International Handbook of Land and Property Taxation*, Chapter 2. Edward Elgar Publishing.

Canavire-Bacarreza, Gustavo, and Nicolás Guadalupe Zúñiga Espinoza. "Transferencias e Impuesto Predial En México." Economía UNAM 12, no. 35 (May 1, 2015): 69–99.

Christensen, Darin, and Francisco Garfias. 2021. "The Politics of Property Taxation: Fiscal Infrastructure and Electoral Incentives in Brazil." *The Journal of Politics* 83(4): 1399–1416. doi:10.1086/711902.

Esquivel, Gerardo. 2024. Desarrollo regional con igualdad de oportunidades y movilidad social. Centro de Estudios Espinosa Yglesisas. https://ceey.org.mx/desarrollo-regional-con-igualdad-de-oportunidades-y-movilidad-social/ (August 28, 2024).

Goodfellow, T. and Owen, O. (2018) *Taxation, Property Rights and the Social Contract in Lagos.* Working Paper. ICTD Working Paper (73). Institute of Development Studies

Jibao, Samuel S., and Wilson Prichard. "The Political Economy of Property Tax in Africa: Explaining Reform Outcomes in Sierra Leone." *African Affairs* 114, no. 456 (July 1, 2015): 404–31. https://doi.org/10.1093/afraf/adv022.

Rios, Viri. *No Es Normal: El Juego Oculto Que Alimenta La Desigualdad Mexicana.* Mexico City: Gijalbo, 2021.

Scott, James C. 2020. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed.* Yale University Press.

Unda Gutiérrez, Mónica. "Poor Local Finances: What Explains Property Tax Collection in Mexico?" Estudios Demográficos y Urbanos 36, no. 1 (April 2021): 49–88. https://doi.org/10.24201/edu.v36i1.1871.

Weingast, Barry. 'Second generation fiscal federalism: The implications of fiscal incentives', *Journal of Urban Economics* 65 (2009), pp. 279–93

7.2 Essay 1

Ballard-Rosa, Cameron, Lucy Martin, and Kenneth Scheve. 2017. "The Structure of American Income Tax Policy Preferences." *The Journal of Politics* 79(1).

Bansak, Kirk, Jens Hainmueller, Daniel J. Hopkins, and Teppei Yamamoto. 2023. "Using Conjoint Experiments to Analyze Election Outcomes: The Essential Role of the Average Marginal Component Effect." *Political Analysis* 31(4): 500–518. doi:10.1017/pan.2022.16.

Cabral, Marika, and Caroline Hoxby. 2012. "The Hated Property Tax: Salience, Tax Rates, and Tax Revolts." https://www.nber.org/papers/w18514 (August 28, 2024).

Canavire-Bacarreza, Gustavo, and Nicolás Guadalupe Zúñiga Espinoza. 2015. "Transferencias e Impuesto Predial En México." Economía UNAM 12(35): 69–99. doi:10.1016/j.eunam.2015.09.004.

Chio, Yolanda. 2021. "Morenistas protestan contra aumento del predial en NL." La Jornada. https://www.jornada.com.mx/noticia/2021/11/17/estados/morenistas-protestan-contra-aumento-del-predial-en-nl-7008 (March 15, 2025).

Christensen, Darin, and Francisco Garfias. 2021. "The Politics of Property Taxation: Fiscal Infrastructure and Electoral Incentives in Brazil." *The Journal of Politics* 83(4): 1399–1416. doi:10.1086/711902.

Esquivel, Gerardo. 2024. Desarrollo regional con igualdad de oportunidades y movilidad social. Centro de Estudios Espinosa Yglesisas. https://ceey.org.mx/desarrollo-regional-con-igualdad-de-oportunidades-y-movilidad-social/ (August 28, 2024).

Fang, Songying, and Erica Owen. 2011. "International Institutions and Credible Commitment of Non-Democracies." *The Review of International Organizations* 6(2): 141–62. doi:10.1007/s11558-011-9102-0.

Fay, Marianne, Luis Andres, Charles Fox, Ulf Narloch, Stephane Straub, and Michael Slawson. 2017. Rethinking Infrastructure in Latin America and the Caribbean: Spending Better to Achieve More. World Bank.

Feld, Lars P., and Bruno S. Frey. 2002. "Trust Breeds Trust: How Taxpayers Are Treated." *Economics of Governance* 3(2): 87–99. doi:10.1007/s101010100032.

Flores-Macias, Gustavo. 2019. *The Political Economy of Taxation in Latin America*. Cambridge University Press.

Flores-Macías, Gustavo A. 2018. "Building Support for Taxation in Developing Countries: Experimental Evidence from Mexico." *World Development* 105: 13–24.

Hainmueller, Jens, Daniel J. Hopkins, and Teppei Yamamoto. 2014. "Causal Inference in Conjoint Analysis: Understanding Multidimensional Choices via Stated Preference Experiments." *Political Analysis* 22(1): 1–30.

Herrera, Veronica. 2017. *Water and Politics: Clientelism and Reform in Urban Mexico*. Ann Arbor.

Horiuchi, Yusaku, Zachary Markovich, and Teppei Yamamoto. 2022. "Does Conjoint Analysis Mitigate Social Desirability Bias?" *Political Analysis* 30(4): 535–49. doi:10.1017/pan.2021.30.

Irigoin, Alejandra, and Regina Grafe. 2013. "Bounded Leviathan: Fiscal Constraints and Financial Development in the Early Modern Hispanic World." In Questioning Credible Commitment: Perspectives on the Rise of Financial Capitalism, Cambridge University Press.

Jibao, Samuel S., and Wilson Prichard. 2015. "The Political Economy of Property Tax in Africa: Explaining Reform Outcomes in Sierra Leone." *African Affairs* 114(456): 404–31.

Jimenez, Andrea. 2024. "Pavimentan Colonias 'Más Cumplidas' En El Predial." La Voz de la Frontera. https://www.lavozdelafrontera.com.mx/local/pavimentan-colonias-mas-cumplidas-en-el-predial-12134596.html.

Krause, Kate. 2000. "Tax Complexity: Problem or Opportunity?" *Public Finance Review* 28(5): 395–414. doi:10.1177/109114210002800501.

Kuziemko, Ilyana, Michael I. Norton, Emmanuel Saez, and Stefanie Stantcheva. 2015. "How Elastic Are Preferences for Redistribution? Evidence from Randomized Survey Experiments." *American Economic Review* 105(4): 1478–1508. doi:10.1257/aer.20130360.

LAPOP. 2023. "Barómetro de Las Américas."

Leeper, Thomas J., Sara B. Hobolt, and James Tilley. 2020. "Measuring Subgroup Preferences in Conjoint Experiments." *Political Analysis* 28(2): 207–21. doi:10.1017/pan.2019.30.

Leiva, Silvana-Andrea, and Jose Santos Maradiaga Aguilar. 2022. "La Economía Política Del Impuesto Predial: El Efecto Del Capital Social En La Recaudación Municipal de México." Centro de Estudios de las Finanzas Publicas: Premio Nacional de las Finanzas Publicas 2021 19(31). https://www.cefp.gob.mx/publicaciones/revista/2022/revistapnfp2022VF.pdf.

Levi, Margaret. 1988. *Of Rule and Revenue*. University of California Press.

Libertun De Duren, Nora. 2006. "Planning à La Carte: The Location Patterns of Gated Communities around Buenos Aires in a Decentralized Planning Context." *International Journal of Urban and Regional Research* 30(2): 308–27. doi:10.1111/j.1468-2427.2006.00667.

Manville, Michael, and David King. 2013. "Credible Commitment and Congestion Pricing." *Transportation* 40(2): 229–49. doi:10.1007/s11116-012-9430-9.

Marr, Christa, and Chih Ming Tan. 2014. "Understanding Changes in Attitudes towards Redistribution and Government after the Great Recession." doi:10.2139/ssrn.2184298.

Martin, Isaac William, Jane Lilly Lopez, and Lauren Olsen. 2019. "Policy Design and the Politics of City Revenue: Evidence from California Municipal Ballot Measures." *Urban Affairs Review* 55(5): 1312–38. doi:10.1177/1078087417752474.

Martin, Isaac William, and Jennifer M. Nations. 2018. "Taxation and Citizen Voice in School District Parcel Tax Elections." *Sociological Science* 5: 653–68. doi:10.15195/v5.a27.

Martinez, Carolina. 2025. "Zapopan: Presentan las obras del Presupuesto Participativo 2025." El Informador Noticias de Jalisco, México, Deportes Entretenimiento.

Martinez Llompart, Patricio. 2016. Mexico City's Citizen Comptrollers Program: A "Bottom-up" Approach to Cost-Effective Fraud Prevention. Center for the Advancement of Public Integrity.

North, Douglass C., and Barry R. Weingast. 1989. "Constitutions and Commitment: The Evolution of Institutions Governing Public Choice in Seventeenth-Century England." *The Journal of Economic History* 49(4): 803–32.

Olivier, Tomás, and Edella Schlager. 2022. "Rules and the Ruled: Understanding Joint Patterns of Institutional Design and Behavior in Complex Governing Arrangements." *Policy Studies Journal* 50(2): 340–65. doi:10.1111/psj.12429.

Partlow, Jeffrey. 2013. "The Necessity of Complexity in the Tax System General Law Division." *Wyoming Law Review* 13(1): 303–34.

Post, Alison E. 2018. "Cities and Politics in the Developing World." *Annual Review of Political Science* 21 (1): 115–33. https://doi.org/10.1146/annurev-polisci-042716-102405.

Rios, Viri. *No Es Normal: El Juego Oculto Que Alimenta La Desigualdad Mexicana.* Mexico City: Gijalbo, 2021.

Scholz, John T., and Mark Lubell. 1998. "Trust and Taxpaying: Testing the Heuristic Approach to Collective Action." *American journal of political science*: 398–417.

Stantcheva, Stefanie. 2023. "How to Run Surveys: A Guide to Creating Your Own Identifying Variation and Revealing the Invisible." *Annual Review of Economics* 15(Volume 15, 2023): 205–34. doi:10.1146/annurev-economics-091622-010157.

Stasavage, David. 2007. "Partisan Politics and Public Debt: The Importance of the 'Whig Supremacy' for Britain's Financial Revolution." *European Review of Economic History* 11(1): 123–53. doi:10.1017/S1361491606001900.

Steinmo, Sven. 1993. *Taxation and Democracy: Swedish, British, and American Approaches to Financing the Modern State.* Yale University Press.

Studies (IFS), Edited by Institute for Fiscal, and James Mirrlees, eds. 2018. Tax By Design: The Mirrlees Review. Oxford, New York: Oxford University Press.

Timmons, Jeffrey F. 2010. "Taxation and Credible Commitment: Left, Right, and Partisan Turnover." *Comparative Politics* 42(2): 207–27. doi:10.5129/001041510X12911363509558.

Timmons, Jeffrey F., and Francisco Garfias. 2015. "Revealed Corruption, Taxation, and Fiscal Accountability: Evidence from Brazil." *World Development* 70: 13–27.

Unda Gutiérrez, Mónica. 2021. "Poor Local Finances: What Explains Property Tax Collection in Mexico?" *Estudios demográficos y urbanos* 36(1): 49–88. doi:10.24201/edu.v36i1.1871.

Unda, Monica. 2017. "Una hacienda local pobre: los determinantes de la recaudación predial en México." Lincoln Institute of Land Policy Working Paper.

Wahl, Ingrid, Barbara Kastlunger, and Erich Kirchler. 2010. "Trust in Authorities and Power to Enforce Tax Compliance: An Empirical Analysis of the 'Slippery Slope Framework.'" *Law & Policy* 32(4): 383–406. doi:10.1111/j.1467-9930.2010.00327

Weingast, Barry. 'Second generation fiscal federalism: The implications of fiscal incentives', *Journal of Urban Economics* 65 (2009).

7.3 Essay 2

Abbas, Ali, Naveed Ahsan, Muhammad Ahmad Amin, Michael Best, Michael Callen, Ahsan Farooqui, Adnan Khan, Shandana Khan Mohmand, and Omar Masud. 2023. "Property Tax Utilization and Equity in Punjab: Policy Challenges and Reform Options."

Ahmad, Ehtisham, Giorgio Brosio, and Juan Pablo Jiménez. 2019. "Options for Retooling Property Taxation in Latin America." *Macroeconomía Del Desarrollo, Macroeconomía del Desarrollo*, , December. https://ideas.repec.org//p/ecr/col037/45021.html.

Avenancio-León, Carlos F, and Troup Howard. 2022. "The Assessment Gap: Racial Inequalities in Property Taxation*." *The Quarterly Journal of Economics* 137 (3): 1383–1434.

Barton, Barry. 2003. "The Legitimacy of Regulation." *New Zealand Universities Law Review* 20 (3): 364–401.

Berry, Christopher R. 2021. "Reassessing the Property Tax." SSRN Electronic Journal.

Bird, Richard M., and Enid Slack. 2004a. "Land and Property Taxation in 25 Countries: A Comparative Review." Chapters. https://ideas.repec.org//h/elg/eechap/3304_2.*html*.

———. 2004b. "Taxing Land and Property in Emerging Economies: Raising Revenue . . . and More?" In Land Policies and Their Outcomes. Lincoln Institute of Land Policy.

Bird, Richard M., Enid Slack, and Almos Tassonyi. 2012. A Tale of Two Taxes: Property Tax Reform in Ontario. Lincoln Institute of Land Policy.

Boudreau, Cheryl, and Scott A. MacKenzie. 2018. "Wanting What Is Fair: How Party Cues and Information about Income Inequality Affect Public Support for Taxes." *The Journal of Politics* 80 (2): 367–81. https://doi.org/10.1086/694784.

Bradbury, Katharine L., Christopher J. Mayer, and Karl E. Case. 2001. "Property Tax Limits, Local Fiscal Behavior, and Property Values: Evidence from Massachusetts under Proposition." *Journal of Public Economics* 80 (2): 287–311. https://doi.org/10.1016/S0047-2727(00)00081-5.

Castañeda, Néstor. 2024. "Fairness and Tax Morale in Developing Countries." Studies in Comparative International Development 59 (1): 113–37. https://doi.org/10.1007/s12116-023-09394-z.

Castañeda, Víctor Mauricio. 2021. "Tax Equity and Its Association with Fiscal Morale." *International Public Management Journal* 24 (5): 710–35. https://doi.org/10.1080/10967494.2019.1671926.

Chow, Rosalind M., and Jeff Galak. 2012. "The Effect of Inequality Frames on Support for Redistributive Tax Policies." *Psychological Science* 23 (12): 1467–69.

Cohen, Manuel Perló. 2023. *Uruchurtu, el regente de hierro.* Universidad Nacional Autónoma de México, Instituto de Investigaciones Sociales, Facultad de Arquitectura.

Cornia, Gary C., and Barrett A. Slade. 2006. "Property Taxation of Multifamily Housing: An Empirical Analysis of Vertical and Horizontal Equity." SSRN Scholarly Paper. Rochester, NY: Social Science Research Network. https://papers.ssrn.com/abstract=953821.

Davis, Diane E. 1991. "Urban Fiscal Crisis and Political Change in Mexico City: From Global Origins to Local Effects." *Journal of Urban Affairs* 13 (2): 175–99. https://doi.org/10.1111/j.1467-9906.1991.tb00247.x.

De Cremer, David, and Tom R. Tyler. 2007. "The Effects of Trust in Authority and Procedural Fairness on Cooperation." *Journal of Applied Psychology* 92 (3): 639–49. https://doi.org/10.1037/0021-9010.92.3.639.

Farrar, Jonathan, Morina Rennie, and Linda Thorne. 2022. "Fairness, Legitimacy, and Tax Compliance." *Journal of Tax Research* 19 (2).

Finocchiaro Castro, Massimo, and Ilde Rizzo. 2014. "Tax Compliance under Horizontal and Vertical Equity Conditions: An Experimental Approach." International Tax and Public Finance 21 (4): 560–77.

Gomez, Laura, and Rocio Gonzalez. 2008. "Enojos y Largas Filas Por Fallida Expectativa de Baja En Predial - La Jornada." LaJornada, January 30, 2008.

Gonzalez, Rocio. 2024. "La Jornada: Gasto para transporte público será de 30 mil mdp en 2025: Brugada." 2024. https://www.jornada.com.mx/2024/12/24/capital/025n2cap.

Gribnau, Hans, and Jane Frecknall Hughes. 2021. "The Enlightenment and Influence of Social Contract Theory on Taxation." SSRN Scholarly Paper. Rochester, NY: Social Science Research Network. https://doi.org/10.2139/ssrn.3963285.

Grimes, Marcia. 2006. "Organizing Consent: The Role of Procedural Fairness in Political Trust and Compliance." *European Journal of Political Research* 45 (2): 285–315. https://doi.org/10.1111/j.1475-6765.2006.00299.x.

Hengstermann, Andreas, Linda McElduff, and Heather Ritchie. 2025. "Capturing or Compensating? Comparing Legitimacies, Legitimations and Rationales of Added Value Capture Instruments." *Land Use Policy* 150 (March):107464. https://doi.org/10.1016/j.landusepol.2024.107464.

Hodge, Timothy R., Timothy M. Komarek, and Andrew McAllister. 2024. "A Double Negative: Capitalizing on Assessment Regressivity." *Public Finance Review*, September.

Horn, Rebecca. 1997. *Postconquest Coyoacan.*

Kuri, Ariel Rodríguez. 2012. Historia Política de La Ciudad de México (Desde Su Fundación Hasta El Año 2000). El Colegio de Mexico AC.

Lajous, Alejandra, ed. 1984. Las Razones y Las Obras: Gobierno de Miguel de La Madrid: Crónicadel Sexenio 1982-1988, Primer Año. México: Presidencia de la República.

Levi, Margaret. 1988. *Of Rule and Revenue*. University of California Press.

Levi, Margaret, Audrey Sacks, and Tom Tyler. 2009. "Conceptualizing Legitimacy, Measuring Legitimating Beliefs." *American Behavioral Scientist* 53 (3): 354–75.

Martin, Isaac, Ajay Mehrotra, and Monica Prasad. 2010. *The New Fiscal Sociology*. Cambridge University Press.

Morales Schechinger, Carlos. 2002. "Base Valor vs. Base Renta En El Impuesto Predial Del Distrito Federal, México: Estudio de Caso." Revista Hacienda Municipal, no. 78, 51–71.

Netzer, Dick, and Robert Berne. 1995. "Discrepancies Between Ideal Characteristics of a Property Tax System and Current Practice in New York." Journal of Education Finance 21 (1): 38–56.

Nyabwengi, Lucy M. 2019. "Assessment of Equity in Property Taxation in Nairobi City- Case Study of Residential Properties in Buruburu, Kilimani and Riruta." Thesis, University of Nairobi. http://erepository.uonbi.ac.ke/handle/11295/106692.

Oldman, Oliver. 1967. Financing Urban Development in Mexico City: A Case Study of Property Tax, Land Use, Housing, and Urban Planning. Harvard University Press.

Peña-Medina, Sergio. 2016. "El impuesto predial en Ciudad Juárez desde una perspectiva de equidad." *Economía, sociedad y territorio* 16 (51): 519–42.

Ross, Robert. 2017. "The Impact of Property Tax Appeals on Vertical Equity in Cook County, IL." The University of Chicago, Center for Municipal Finance.

Rothstein, Bo, and Jan Teorell. 2008. "What Is Quality of Government? A Theory of Impartial Government Institutions." *Governance* 21 (2): 165–90. https://doi.org/10.1111/j.1468-0491.2008.00391.x.

Scharpf, Fritz W. 2009. "Legitimacy in the Multilevel European Polity." *European Political Science Review* 1 (2): 173–204. https://doi.org/10.1017/S1755773909000204.

Scott, James C. 2020. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed.* Yale University Press.

Sears, David O., and Jack Citrin. 1982. *Tax Revolt: Something for Nothing* in California. Harvard University Press.

Slack, Enid. 2001. "Property Taxation." In The Challenge of Urban Government: Policies and Practices. World Bank Development Studies.

Spicer, Michael W., and Lee A. Becker. 1980. "Fiscal Inequity and Tax Evasion: An Experimental Approach." National Tax Journal 33 (2): 171–75. https://doi.org/10.1086/NTJ41862299.

Steinmo, Sven. 1993. Taxation and Democracy: Swedish, British, and American Approaches to Financing the Modern State. Yale University Press.

Strobel del Moral, Héctor. 2020. "Los impuestos a puertas, ventanas, perros, caballos y carros de Santa Anna, 1853-1855." Secuencia, no. 106 (April).

Taylor, Zack. 2019. "Pathways to Legitimacy." Planning Theory 18 (2): 214–36.

Tyler, Tom R. 1997. "Procedural Fairness and Compliance with the Law." Swiss Journal of Economics and Statistics (SJES) 133 (II): 219–40.

Von Haldenwang, Christian. 2010. "Taxation, Fiscal Decentralisation and Legitimacy: The Role of Semi-Autonomous Tax Agencies in Peru." *Development Policy Review* 28 (6): 643–67. https://doi.org/10.1111/j.1467-7679.2010.00503.

Weber, Rachel. 2010. "Selling City Futures: The Financialization of Urban Redevelopment Policy." *Economic Geography* 86 (3): 251–74. https://doi.org/10.1111/j.1944-8287.2010.01077.

Woestenburg, Alexander, Erwin van der Krabben, and Tejo Spit. 2019. "Legitimacy Dilemmas in Direct Government Intervention: The Case of Public Land Development, an Example from the Netherlands." Land 8 (7): 110. https://doi.org/10.3390/land8070110.

7.4 Essay 3

Aguayo Ayala, Adriana. 2020. "Gestión del espacio público y renovación urbana. El caso de la avenida Presidente Masaryk." *Espacialidades*9(1): 57–77.

Alesina, Alberto, and George-Marios Angeletos. 2005. "Fairness and Redistribution." *American Economic Review* 95(4): 960–80. doi:10.1257/0002828054825655.

Alesina, Alberto F., and Paola Giuliano. 2009. "Preferences for Redistribution."(April 16, 2025).

Alesina, Alberto, and Eliana La Ferrara. 2005. "Ethnic Diversity and Economic Performance." *Journal of Economic Literature* 43(3): 762–800. doi:10.1257/002205105774431243.

Alexander, Gregory. 2009. "The Social-Obligation Norm in American Property Law." Cornell Law Faculty Publications. https://scholarship.law.cornell.edu/lsrp$_papers$/92.

Ansell, Ben. 2014. "The Political Economy of Ownership: Housing Markets and the Welfare State." *The American Political Science Review* 108(2): 383–402.

Azuela, Antonio. 2013. "Introduction." *In Eminent Domain and Social Conflict in Five Latin American Metropolitan Areas*, Lincoln Institute of Land Policy.

Azuela, Antonio, Lidia González Malagón, and Camilo Saavedra Herrera. 2020. *Ciudad de México. Inercias urbanísticas y proceso constitucional.*Ciudad de México: Centro de Investigación y Docencia Económicas

Babie, P. T., and Jessica Viven-Wilksch. 2020. "Léon Duguit and the Social Obligation Norm of Property: A Translation and Global Exploration." https://papers.ssrn.com/abstract=3632602 (May 1, 2025).

Blackstone, sir William. 1844. *Commentaries on the Laws of England.* Edmund Spettigue.

Boone, Catherine. 2019. "Legal Empowerment of the Poor through Property Rights Reform: Tensions and Trade-Offs of Land Registration and Titling in Sub-Saharan Africa." The Journal of Development Studies 55(3): 384–400. doi:10.1080/00220388.2018.1451633.

Cohen, Morris R. 1927. "Property and Sovereignty." *Cornell Law Review* 13(1).

Echavarria, Aurora, and Paavo Monkkonen. 2025. "Challenges to Equitable and Effective Land Value Capture: Lessons from Mexico City." *Urban Affairs Review*: doi:10.1177/10780874251323896.

Elizalde, Andrea. 2025. "Presentan Avances Del Programa Vivienda Para El Bienestar; Construcción Iniciará En Febrero - El Sol de Toluca — Noticias Locales, Policiacas, Sobre México, Edomex y El Mundo." El Sol de Toluca.

Esquivel Hernández. 2007. "Análisis e implicaciones del Bando 2, en la distribución de la población metropolitana." https://hdl.handle.net/11191/7229 (May 1, 2025).

Ferreira, Marcela Alonso. 2024. "The Bureaucratic Politics of Urban Land Rights: (Non)Programmatic Distribution in São Paulo's Land Regularization Policy." *Latin American Politics and Society* 66(3): 52–78. doi:10.1017/lap.2023.35.

Fischel, William A. 1995. *Regulatory Takings: Law, Economics, and Politics.* Harvard University Press.

Flores Dewey, Onesimo, and Diane E. and Davis. "Planning, Politics, and Urban Mega-Projects in Developmental Context: Lessons from Mexico City's Airport Controversy." *Journal of Urban Affairs* 35, no. 5 (2013).

Freyfogle, Eric T. 2003. *The Land We Share: Private Property And The Common Good.* Island Press.

Friendly, Abigail. 2020. "Sharing the Unearned Increment: Divergent Outcomes in Toronto and São Paulo." *Land Use Policy* 91: 104270. doi:10.1016/j.landusepol.2019.104270.

George, Henry. 1879. *Progress and Poverty.*

Goodfellow, Tom. 2017. "Taxing Property in a Neo-Developmental State: The Politics of Urban Land Value Capture in Rwanda and Ethiopia." *African Affairs* 116(465): 549–72. doi:10.1093/afraf/adx020.

Gwaleba, Method Julius, and Uchendu Eugene Chigbu. 2020. "Participation in Property Formation: Insights from Land-Use Planning in an Informal Urban Settlement in Tanzania." *Land Use Policy* 92: 104482. doi:10.1016/j.landusepol.2020.104482.

Hammar, Olle. 2019. "It's Where You're From, It's Where You're At: Culture, Individualism and Preferences for Redistribution." Unoublished.

Hankinson, Michael. 2018. "When Do Renters Behave Like Homeowners? High Rent, Price Anxiety, and NIMBYism." *American Political Science Review* 112(3): 473–93.

Holland, Alisha C. 2023. "Roadblocks: How Property Rights Undermine Development in Colombia." *American Journal of Political Science* 67(3): 639–55. doi:10.1111/ajps.12706.

de Janvry, Alain, Marco Gonzalez-Navarro, and Elisabeth Sadoulet. 2014. "Are Land Reforms Granting Complete Property Rights Politically Risky? Electoral Outcomes of Mexico's Certification Program." *Journal of Development Economics*/.110: 216–25. doi:10.1016/j.jdeveco.2013.04.003.

Kohn, Margaret. 2016. *The Death and Life of the Urban Commonwealth*. Oxford University Press.

Kuziemko, Ilyana, Michael I. Norton, Emmanuel Saez, and Stefanie Stantcheva. 2015. "How Elastic Are Preferences for Redistribution? Evidence from Randomized Survey Experiments." *American Economic Review*. 105(4): 1478–1508. doi:10.1257/aer.20130360.

Lewis, Blane D. 2006. "Local Government Taxation: An Analysis of Administrative Cost Inefficiency." *Bulletin of Indonesian Economic Studies* 42(2): 213–33. doi:10.1080/00074910600873666.

Locke, John. 1824. *Two Treatises of Government. C.* and J. Rivington.

Mercedes Maldonado, Maria. 2013. "Strengths and Weaknesses in the Use of Urban Eminent Domain in Colombia: Review Based on the Experience of Bogota." In Eminent Domain and Social Conflict in Five Latin American Metropolitan Areas, Lincoln Institute of Land Policy.

Mercedes Maldonado, Maria, and Diego Isais Pena. 2013. "Courts, Human Rights Cases, and Compensation of Eminent Domain: Case Studies in Ecuador." In Eminent Domain and Social Conflict in Five Latin American Metropolitan Areas, Lincoln Institute of Land Policy.

Mill, John Stuart. 1848. *Principles of Political Economy.* Prometheus Books.

Muñoz-Gielen, Demetrio. 2014. "Urban Governance, Property Rights, Land Readjustment and Public Value Capturing." *European Urban and Regional Studies* 21(1): 60–78. doi:10.1177/0969776412440543.

Ondetti, Gabriel. 2016. "The Social Function of Property, Land Rights and Social Welfare in Brazil." *Land Use Policy*. 50: 29–37. doi:10.1016/j.landusepol.2015.08.028.

Penalver, Eduardo M. 2005. “Property as Entrance.” SSRN Electronic Journal.

Perez-Moreno, Oscar. 2024. “Urban Inequality and the Social Function of Land Value Capture: The Credibility Thesis, Financing Tools and Planning in Latin America.” *Land Use Policy*. 146: 107285. doi:10.1016/j.landusepol.2024.107285.

Qian, Zhu. 2010. “Without Zoning: Urban Development and Land Use Controls in Houston.” *Cities* 27(1): 31–41. doi:10.1016/j.cities.2009.11.006.

Ranehill, Eva, and Roberto A. Weber. 2022. “Gender Preference Gaps and Voting for Redistribution.” *Experimental Economics*.25(3): 845–75. doi:10.1007/s10683-021-09741-8.

Rousseau, Jean-Jacques. 1762. *The Social Contract*. Wordsworth Editions.

Roy, A. (2009). Why India Cannot Plan Its Cities: Informality, Insurgence and the Idiom of Urbanization. *Planning Theory*, 8(1), 76-87. https://doi.org/10.1177/1473095208099299

Schargrodsky, Ernesto, and Sebastian Galiani. 2010. “Property Rights for the Poor: Effects of Land Titling.” doi:10.2139/ssrn.1544578.

Schwartz, Herman, and Leonard Seabrooke. 2008. “Varieties of Residential Capitalism in the International Political Economy: Old Welfare States and the New Politics of Housing.” *Comparative European Politics* 6(3): 237–61. doi:10.1057/cep.2008.10.

Shepherd, Edward. 2020. “Liberty, Property and the State: The Ideology of the Institution of English Town and Country Planning.” *Progress in Planning* 135: 100425. doi:10.1016/j.progress.2018.09.001.

Singer, Joseph William. 2000.*Entitlement: The Paradoxes of Property.* Yale University Press.

Trounstine, Jessica. 2020. “The Geography of Inequality: How Land Use Regulation Produces Segregation.” *American Political Science Review* 114(2): 443–55. doi:10.1017/S0003055419000844.

Trounstine, Jessica. 2023. “You Won’t Be My Neighbor: Opposition to High Density Development.” *Urban Affairs Review* 9(1): 294–308. doi:10.1177/10780874211065776.

Varley, Ann, and Clara Salazar. 2021. “THE IMPACT OF MEXICO’S LAND REFORM ON PERIURBAN HOUSING PRODUCTION: Neoliberal or Neocorporatist?” *International Journal of Urban and Regional Research* 45(6): 964–84. doi:10.1111/1468-2427.12999.

Wicki, Michael, Kauer ,Fiona, Hofer ,Katrin, and David and Kaufmann. 2025. “Nuancing NIMBYism: How Regulatory Preferences Shape Public Acceptance of Housing Densification.” *Journal of Urban Affairs* 0(0): 1–21. doi:10.1080/07352166.2025.2486040.