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**Essays on Economic and Social Barriers to
Long-Term Development:
A Colombian Case Study**

Maria Paola Padilla Montoya

University of Sheffield
Faculty of Social Science
Department of Economics

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Abstract

This thesis consists of three empirical studies which analyse key socioeconomic barriers to a country's prospects of long-term development and growth. Using Colombia as a case study, the following analyses focus on deepening our understanding of crucial issues, ranging from financial literacy and economic behaviour, to the effect of conflict-related violence on social preferences and youth's wellbeing.

The first empirical study assesses financial literacy levels amongst Colombian consumers and its role in promoting optimal economic behaviour. Following the approach developed by Lusardi and Mitchell (2008; 2009; 2011a), this chapter examines individuals' understanding of three financial concepts, including interest rate compounding, inflation rates and risk diversification. Moreover, it relies on two novel instruments, namely local development funds and the number of schools at the locality-level, to control for the potential endogeneity of financial literacy. The results indicate that financial illiteracy is widespread across our sample, with only 52% of respondents understanding interest rate compounding and less than half of individuals grasping both inflation rates and risk diversification. Most importantly, the findings show a positive relationship between financial illiteracy and welfare-reducing economic practices. Specifically, those who are financially savvy are not only less likely to rely on informal borrowing methods but are also significantly less likely to incur debt as a means to make ends meet.

The second empirical study examines the impact of Colombia's 58-year-long armed conflict on individual-level social outcomes, including political polarisation and attitudes towards the use of violence, vigilantism and iron-fist policies. To address potential sources of endogeneity, the identification strategy relies on a difference-in-differences model that exploits variation in the geographical and temporal distribution of municipality-level violence during 2013-2016. The findings show that conflict exposure is a key determinant of social preferences. In particular,

respondents living in areas highly exposed to violence are significantly less likely to support the use of violence, relative to their counterparts in lower exposure municipalities. Interestingly, whilst individuals living in conflict-ridden areas are significantly less likely to support iron-fist policies that erode the rule of law, a high exposure to threats is also associated with a greater likelihood of individual-level political polarisation.

Building on the analysis of the previous chapter, the final study examines the impact of conflict-related violence on the probability of risk behaviour amongst 9-16-year old children and adolescents. While the analysis focuses predominantly on alcohol use, it also examines the effect of violence on additional measures of externalising behaviours. Using a child fixed effects model, the results show that changes in exposure to threats and forced displacement increase the probability of alcohol use, particularly amongst 13-16-year old adolescents. By contrast, we find no significant effects of conflict exposure amongst 9-12-year old children. This evidence is consistent with research from developmental neuroscience which highlights mid-adolescence as a critical period for the emergence of risk behaviour. Additionally, we find no gender differences in the impact of violence, with both older female and male adolescents experiencing a significant increase in their likelihood of alcohol use. Finally, we also find a significant effect of changes in conflict exposure on our additional measures of externalising behaviours and index scores that summarise adolescents' maladaptive outcomes.

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Chapter 1

Introduction

1.1 Background and Motivation

While Colombia's recent history has been plagued by a series of unfortunate events, including an internal conflict, the rise of the drug trade, and a subsequent surge of organised crime, the country was once a leading example of economic success across the Latin American region. As highlighted by Cardenas (2007), the early and mid-20th century were periods of strong macroeconomic performance, characterised by rapid economic growth, declining growth volatility, and increasing Gross Domestic Product (GDP) per capita. Similarly, while the 1980s signalled the beginning of the so-called "lost decade" across Latin America – defined by sharp declines of GDP, soaring inflation, and excessive foreign debt – Colombia escaped the worst consequences of the crisis by avoiding negative growth rates and a sovereign default (Cardenas, 2007). In fact, the country displayed significant economic resilience, with an average annual growth rate of 3.31% during 1980-1990 – more than twice as much as the regional average (Perez-Reyna and Osorio-Rodríguez, 2018).

Yet, despite its strong potential for sustained economic growth and development, the country began to stagnate towards the end of the 20th century. Notably, whilst its GDP per capita followed that of South Korea and Malaysia during the 1980s, these countries' subsequent performance significantly outpaced Colombia's decelerating growth. Since then, Malaysia's per capita income has doubled that of Colombia, while individuals in South Korea are now 4 times richer than the average Colombian citizen (World Bank, 2022). Although this sudden decline in prosperity is often attributed to various factors, such as external shocks, a growing fiscal deficit,

and the structural reforms of the 1990s, limiting divergences in economic development to either macroeconomic or fiscal performance indicators runs the risk of ignoring the root causes of Colombia's slow growth. This approach is particularly problematic given the extensive research highlighting the role of societal outcomes – e.g. institutions, preferences, and both human and social capital – in promoting long-term economic performance (Rodrik et al., 2004; Acemoglu et al., 2002; Knack and Keefer, 1997; Carpenter and Seki, 2011; Guiso et al., 2011; Krueger and Lindahl, 2001).

Using this literature as a starting point, this thesis seeks to understand the micro-level causes of Colombia's reversal of fortune. To do so, it examines two key broad themes, including financial literacy and conflict. Notably, insofar as financial sophistication equips individuals with the necessary knowledge and skills to make optimal economic decisions and achieve financial stability, financial literacy may be key for supporting the poverty and inequality reduction programmes often seen in emerging economies. Nevertheless, such growth efforts may be ultimately undermined if recurrent violence and conflict impacts pivotal elements for sustained economic development. These include not only standard neoclassical growth factors – e.g. labour and capital – but also social outcomes linked to growth and reduced inequality and poverty, such as social capital, altruism, and cooperation, amongst others (Cardenas and Carpenter, 2008).

1.1.1 Implications of Financial Literacy and Education

Focusing on financial literacy and education, a growing body of research highlights the importance of consumers' financial skills for promoting optimal economic behaviour. For example, using data from the United States, Lusardi and Mitchell (2009) show that financially savvy individuals are significantly more likely to plan and save for retirement, relative to their less sophisticated peers. Similar effects have also been observed in Japan (Sekita, 2011), the Netherlands (van Rooij et al., 2011b), Italy (Fornero and Monticone, 2011), and Germany (Bucher-Koenen and Lusardi, 2011). Additionally, a related set of studies have linked financial literacy to increased wealth accumulation (Behrman et al., 2012; van Rooij et al., 2012), stock market participation (Christiansen et al., 2008; van Rooij et al., 2011a), and greater spending capacity (Klapper et al., 2013).

Whilst the aforementioned studies shed light on the importance of financial literacy for subsequent economic behaviour, several gaps still remain in the literature. First, an overwhelming majority of these studies continue to rely exclusively on data from developed economies. Although assessing the effects of financial sophistication in the context of advanced financial systems is indeed crucial, understanding its effect across emerging countries like Colombia – where households remain highly vulnerable to everyday economic uncertainty and income shocks – may be paramount for supporting individuals’ financial security and stability.

Second, although most of the existent analyses tend to focus on the asset side of households’ balance sheet – particularly retirement planning – there is significant value in understanding the causal impact of financial literacy on outcomes related to households’ financial liabilities. Thus, the first empirical study assesses the impact of financial sophistication on less studied economic behaviours. While we provide a broad examination of outcomes, such as debt accumulation and financial strain, the chapter’s main focus lies on individuals’ probability of informal credit use. This is due not only to the vast detrimental effects of such loans on consumers’ financial wellbeing and security, but also to the relationship between informal credit markets and the second theme of this thesis, namely Colombia’s armed conflict. Unfortunately, a lack of effective regulation has ultimately transformed these lending practices into one of the various money laundering mechanisms used by criminal groups, thus further fuelling violence across the country (Portafolio, 2018a; Fiscalía General de la Nación, 2020). Consequently, understanding how financial literacy may protect individuals against the dangers of informal credit may be paramount for thwarting armed groups’ activity and alleviating violence.

1.1.2 Implications of Conflict-Related Violence

While the intensity of the conflict has declined steadily since the late 1990s and early 2000s, violence continues to impose severe humanitarian costs on Colombian society. By 2018, the armed conflict had resulted in the disappearance of roughly 122,000 innocent civilians, the recruitment of more than 16,000 children, and the forceful displacement of nearly 8 million people across the country (Comisión de la Verdad, 2022). Unfortunately, the recent wave of violence observed across rural areas has put upward pressure on these figures, with more than 2,400 direct attacks on the civilian population and approximately 74,000 people displaced in 2021 alone (Reuters,

2022).

Unsurprisingly, such acute consequences of violence have been critical determinants of the high levels of poverty and inequality that have historically afflicted conflict-ridden regions and victimised populations throughout the country. As highlighted by Ibáñez and Moya (2010), forced displacement has exposed victims to severe financial vulnerabilities, such as sharp declines in consumption and labour income, the loss of assets, and adverse economic conditions in destination areas. Similarly, Rodríguez and Sánchez (2012) show that conflict-related violence has significantly increased school dropout rates and child labour across conflict-ridden communities, thus contributing to poverty traps and exacerbating inequality rates in these areas.

At the same time, the risks associated with the conflict have suppressed local economic activity and job availability, thus putting further pressure on communities' livelihoods and wellbeing. For example, Camacho and Rodríguez (2012) show that increases in the number of municipality-level attacks significantly increases the likelihood of firm exit, particularly for newer manufacturing plants with a low workforce and capital levels. Echoing these results, Rozo (2018) finds that firms operating in violence-afflicted areas face significantly lower output prices and production levels, which ultimately increases their risk of exiting local markets. Similarly, their study also indicates a negative effect of violence on workers' wages and real incomes, further worsening poverty in conflict-ridden areas. Finally, using time-series evidence, Cardenas (2007) shows that, whilst the deceleration of growth observed towards the end of the 20th century was due to a decline in productivity, the latter was ultimately the consequence of the rise of drug trafficking, the strengthening of armed groups, and the subsequent escalation of violence.

In line with these studies, a growing area of research has documented the vast detrimental consequences of violence on intangible, yet crucial outcomes for development. For instance, Voors et al. (2012) find that individuals exposed to Burundi's war display greater altruistic and risk-seeking behaviour which could, in turn, positively impact victimised communities' development. Nevertheless, as exposed individuals also appear to display significantly less levels of patience, violence could ultimately discourage savings and hurt investment. Similarly, Cassar et al. (2013) show that exposure to the Tajikistan war significantly eroded trust within local communities, whilst lowering individuals' willingness to participate in impersonal market transactions. Un-

fortunately, given the role of trust in driving financial and market development (Fafchamps, 2006; Guiso et al., 2004), such an erosion of social capital could significantly halt communities overall economic development and growth.

To contribute to this area of research, the second study examines the impact of conflict-related violence on outcomes that remain unexplored in the literature. These include political polarisation and attitudes towards the use of violence, vigilantism, and iron-fist policies. Notably, in addition to worsening communities' social capital and collective action capacity, evidence suggests that polarisation can severely impair the effective provision of public goods (Easterly and Levine, 1997; Alesina et al., 1999), whilst also hindering the economic recovery of victimised communities (Rohner et al., 2013). Similarly, greater support for the use of violence and vigilante groups could further increase the risk of conflict traps, thus impeding the possibility of a peaceful and enduring resolution to the conflict. Finally, favourable attitudes towards repressive state security measures that erode democratic institutions and incite greater violence could ultimately magnify such a wide array of detrimental effects on Colombian society. As a result, assessing the impact of the conflict on the aforementioned outcomes remains crucial for understanding the social, political, and economic trajectories of victimised communities.

Finally, in an effort to deepen our knowledge of the social legacies of violence, the last empirical study examines the impact of conflict-related exposure on youth's wellbeing. Although there is an extensive literature on the negative impact of violence on children's health status (Akresh et al., 2012; Kim, 2019; Bundervoet et al., 2009), forced labour (Rodríguez and Sánchez, 2012), and human capital formation (Akresh and de Walque, 2018; Chamarbagwala and Morán, 2011; León, 2012), far less is understood about its potential consequences on youth's behaviour. Thus, to fill this gap in the literature, we assess the impact of conflict-related violence exposure on the probability of maladaptive behaviour amongst 9-16-year old children and adolescents. While we provide a broad examination of various externalising outcomes, including enjoying peer fights, retributive behaviour, and taking the low road, particular attention is given to youths' probability of alcohol use.

This distinct focus is motivated by various reasons. Specifically, extant research suggests that early onset of alcohol use significantly impairs adolescents' cognitive and behavioural abilities,

thus increasing the risk of poor educational achievement (Renna, 2007), criminal behaviour (Ellickson et al., 2003), and reckless sexual activity (MacArthur et al., 2012). At the same time, evidence shows that the short-term consequences of early alcohol use often carry over into adulthood. For example, Sidorchuk et al. (2012) find that drinking early in life is associated with a greater probability of early disability pension, while Mullahy and Sindelar (1993, 1996) show that it reduces later-life earnings and employment. Using this evidence as a point of motivation, the last aim of this thesis is to understand whether and how violence may impact youths' risk of alcohol use. Doing so is crucial not only for ensuring children's positive development in the short term but also for promoting the socioeconomic recovery of victimised communities in the longer term.

1.2 Chapter Overview

1.2.1 Overview of Chapter 2

Chapter 2 is motivated by the recent growing number of studies linking financial literacy to welfare-increasing practices, such as savings, wealth accumulation, and retirement planning, amongst others (Lusardi and Mitchell, 2008, 2009, 2011a; Lusardi and de Bassa Scheresberg, 2013; Lusardi and Tufano, 2015; van Rooij et al., 2011a,b, 2012; Behrman et al., 2012). To contribute to this literature, this chapter examines the effect of financial literacy on debt-related outcomes that have often been overlooked by existing studies. These include financial strain, debt accumulation, and the use of informal credit. Moreover, whilst most of the existing literature focuses on developed countries, chapter 2 assesses the importance of financial literacy in the context of a developing economy, where individuals may reap the greatest benefits of increased financial sophistication.

The analysis relies on data from the Household Financial Burden and Education Survey (IEFIC) conducted in Bogota during the period 2010-2016. To capture individuals' level of financial literacy, the analysis employs the so-called "Big Three" questions developed by Lusardi and Mitchell (2008, 2009, 2011a) that were included in the IEFIC survey. These questions measure individuals' knowledge of simple, yet important concepts that underpin most day-to-day financial decision-making, including interest rate compounding, inflation, and risk diversification. Moreover, given that analyses of financial literacy are often prone to issues of reverse causality and

measurement error, the chapter employs two novel instruments to capture exogenous variation in individuals' financial sophistication. These include local development funds and the number of private schools, both measured at the locality-level.

The initial set of findings reveal high levels of financial illiteracy amongst Colombian consumers, with only half of the sample grasping interest rates compounding and only 13% of them answering correctly all 3 questions. Moreover, in line with the existing literature, the evidence suggests that such a lack of sophistication is particularly acute amongst disadvantaged demographic groups, such as women, individuals with a low income and no university degree, and both the young and the elderly. Furthermore, as expected, the main results show that greater financial literacy significantly reduces consumers' probability of engaging in detrimental financial practices, particularly informal credit use and debt accumulation.

The analysis in this chapter has important policy implications. Notably, as financial markets continue to develop and financial products become ever more complex, there is a critical need to equip consumers – particularly those from disadvantaged groups – with the necessary skills to make optimal financial decisions and ultimately promote their long-term economic well-being and security. In the context of a developing economy, such as Colombia, these financial education programmes may be the key to addressing the country's high levels of inequality while advancing the vital goal of greater economic development.

1.2.2 Overview of Chapter 3

By combining individual-level panel data with municipality-level reports on violence exposure, chapter 3 examines the social legacies of Colombia's armed conflict during the period 2013-2016. In particular, the analysis focuses on understanding whether conflict-related violence is a significant predictor of social attitudes, including political polarisation and preferences towards the use of violence, vigilante groups, and the so-called "iron-fist" policies. The chapter contributes to the literature by examining a new set of individual-level outcomes and investigating the effects of victimisation in the context of ongoing peace negotiations and active violence.

The estimation strategy in this chapter involves a difference-in-differences model that exploits the uneven geographic and temporal distribution of violence across the country. To do so, we

focus on various key violent events, including terrorist attacks, threats, forced displacement, kidnappings, and homicides. Moreover, following a careful examination of the aforementioned violence measures, these were ultimately categorised into quintiles to account for their non-normal distribution. Thus, the main analysis compares changes in the social preferences of municipalities in the top quintile of each violent event, with changes in the social preferences of areas in the respective bottom 4 quintiles.

The results of this chapter indicate that conflict-related violence is a significant determinant of social preferences. Specifically, individuals living in municipalities with a high exposure to the armed conflict are significantly less likely to hold favourable views towards the use of violence, relative to their counterparts in low-exposure areas. Interestingly, however, while individuals living in municipalities with a high exposure to threats and forced displacement are less likely to support iron-fist policies, a high exposure to threats is also associated with a significant increase in the likelihood of political polarisation. These findings have important implications. Notably, while exposure to the conflict reduces preferences for violence and policies that perpetuate the conflict itself, it ultimately impairs the possibility of conflict resolution and recovery by leading to the fragmentation and polarisation of victimised communities.

1.2.3 Overview of Chapter 4

Expanding on the findings from the previous chapter, chapter 4 examines the effect of changes in conflict-related violence exposure on youth's risk behaviour. While the analysis focuses particularly on early onset of alcohol consumption, it also sheds light on the role of violence in promoting other externalising behaviours, including children's likelihood of enjoying peer fights, retributive behaviour, and taking the low road. To do so, the chapter employs individual-level panel data from 9-16-year-old children and adolescents from 2013 and 2016. Moreover, to capture violence exposure, it relies on municipality-level reports on threats and forced displacement during the period of analysis. Similar to chapter 3, we continue to categorise these variables to account for their non-normal distribution.

The study contributes to the literature by providing a closer estimate of the causal effect of violence on youth's outcomes. It does so by implementing a child fixed effects model and controlling

for an extensive set of household- and municipality-level characteristics that may confound the results. Additionally, as evidence from developmental neuroscience highlights mid-adolescence as a critical period for the emergence of risk behaviours (Steinberg, 2008), the analysis also allows for heterogeneous effects of violence across age groups. In line with these studies, we find that changes in municipality-level violence significantly increase the probability of alcohol use amongst 13-16-year old adolescents. By contrast, the evidence suggests no significant effects of violence exposure amongst younger children, particularly those aged 9-12. Furthermore, subsample analyses reveal minimal differences in risk behaviours across gender groups, with changes in violence exposure increasing the probability of alcohol use amongst both male and female adolescents.

Turning to the additional externalising behaviour outcomes, we find that changes in municipality-level threats and forced displacement significantly increase children's probability of enjoying peer fights and exhibiting retributive behaviour. Similarly, conflict-related violence exposure also appears to have a positive and significant effect on index scores that summarise the different maladaptive behaviours that children engage in. This chapter's findings highlight the dire need to develop prevention programs that safeguard children across conflict-ridden areas, especially as they transition to mid-adolescence.

1.3 Organisation of the Thesis

The following three chapters examine various socio-economic issues that negatively impact Colombia's prospects of long-term development, ranging from poor financial literacy and financial behaviour, to the consequences of the country's armed conflict on individuals' preferences and youth's development. In each analysis, we employ different econometric techniques to get closer to the causal effect of interest. The remainder of this thesis is organised as follows.

Chapter 2 starts by introducing the concept of financial literacy and the popular measures used to capture such knowledge, namely the "Big Three" questions developed by Lusardi and Mitchell (2008, 2009, 2011a). This is followed by an overview of financial literacy levels across the world and an extensive review of the causal effects of financial sophistication on consumers' behaviour and wellbeing. The following sections describe the relevant data and set out the instrumental

variable strategy adopted in the analysis. Following this, we present the results of the baseline models. In the proceeding section, we conduct various robustness tests, such as using alternative measures of financial literacy and testing for conditional effects of such knowledge on various demographic characteristics, including age, gender, and educational attainment. The chapter finishes by presenting concluding remarks and policy recommendations.

Chapter 3 begins by providing an overview of Colombia's armed conflict since the early 20th century, starting with the pivotal period known as "*La Violencia*", and ending with a description of the ongoing conflict. We then proceed by presenting the chapter's theoretical framework which is based on theories from the fields of evolutionary science and psychology. In the next section, we review recent empirical studies on the social legacies of violence and highlight the key gaps that remain largely unexplored in the literature. Following this, we present the individual- and municipality-level panel data employed throughout the analysis and describe the variables of interest. We also show the spatial distribution of the conflict, focusing on how a selected number of regions bear disproportionate levels of violence, relative to the rest of the country. The proceeding section sets out the empirical strategy used to isolate the causal effects of violence, namely a difference-in-differences model. Following this, we report the main results of the analysis and discuss the various robustness tests used to assess the strength of the findings. In the final section, we discuss the limitations of the analysis and provide policy implications.

Chapter 4 begins by reviewing the empirical literature on two related phenomena, including the role of early life conditions in determining later-life outcomes and the effect of violence exposure on youth's risk behaviour. Following this, we describe the data and the various outcomes of interest analysed throughout the chapter. We also use descriptive statistics to motivate both the choice of our non-migrant youth sample and the choice of violence measures. The proceeding section sets out the empirical strategy which entails a child fixed effects model. Next, we report the results of the baseline analysis, focusing particularly on the heterogeneous effects of violence across age and gender groups. These effects are explained through a developmental neuroscience lens, which posits that mid-adolescence is a critical stage for the emergence of risk attitudes. The chapter then proceeds by conducting various robustness checks and testing the impact of violence exposure on additional measures of youth's externalising behaviours. Moreover, given the potential relationship between the different behavioural outcomes examined

throughout the chapter, we also test the impact of violence on index measures that summarise children's responses to the various attitudes questions. Finally, in the last section, we highlight the limitations of the analysis and provide policy recommendations.

Lastly, chapter 5 offers a conclusion to this thesis. It begins by summarising the main findings and the key policy and economic implications of the three different chapters. It then discusses the limitations of the analyses and identifies opportunities for future research.

Chapter 2

Financial Literacy and Economic Behaviour: An Overview of the Colombian Case

2.1 Introduction

Over the years, global financial markets have undergone a rapid and critical process of development and liberalisation, which has resulted in the proliferation of increasingly complex financial products and services. Whilst the accessibility and consumption of such products may certainly benefit individuals through increased financial wellbeing, this effect is likely to be conditional on consumers' overall financial literacy levels. However, evidence suggests that such knowledge and skills are scarce (Lusardi and Mitchell, 2008, 2009, 2011a,b). That is, around the world, individuals exhibit difficulties in grasping basic financial concepts and themes, such as interest rates, inflation and risk diversification. Most importantly, evidence indicates that such a lack of financial sophistication may pose a great risk for individuals' own financial wellbeing and security. In particular, financial illiteracy appears to be associated with a myriad of undesirable economic outcomes, including lack of savings, lower wealth accumulation, over-indebtedness and failure to plan for retirement, amongst others (Lusardi and Mitchell, 2008, 2009, 2011a; Lusardi and de Bassa Scheresberg, 2013; Lusardi and Tufano, 2015; van Rooij et al., 2011a,b, 2012; Behrman et al., 2012).

Using the set of questions developed by Lusardi and Mitchell (2008, 2009, 2011a), this chapter

examines the extent of financial literacy in Colombia and its impact on economic behaviour, including the use of informal credit, financial strain and debt incurrence. Moreover, given that the analyses of financial literacy may suffer from endogeneity and/or measurement error, the study relies on an Instrumental Variable (IV) approach. Specifically, two new set of instruments measured at the locality level are used. These include local development funds and the number of private schools. On the one hand, development funds are assigned to areas with less developed public services, such as education, thus potentially affecting individuals' financial literacy levels. On the other hand, individuals living in areas with a greater density of private schools may have a greater exposure to financially literate individuals, and thus, become more financially knowledgeable themselves. Furthermore, given these instruments are measured at the locality level, they can influence respondents' economic outcomes only indirectly through the treatment variable, i.e. financial literacy.

The results from the descriptive analysis indicate that the vast majority of respondents fail to understand basic financial concepts, including interest rate compounding, inflation rates and risk diversification. In particular, only half of individuals demonstrate an adequate understanding of interest rates, whilst only 13% of them were able to answer all financial literacy questions correctly. Moreover, lack of financial sophistication appears to be particularly acute amongst certain demographic groups. These include women, individuals with low income and no university degree, as well as the young and the elderly. Most importantly, our main analysis indicate that financially literate individuals are significantly less likely to engage in suboptimal economic behaviour, even after controlling for key individual and household-level characteristics. In particular, the IV-2SLS estimates show that understanding of risk diversification lowers the likelihood of using informal credit by 18 percentage points. Similarly, answering correctly an additional financial literacy question leads to a 9 percentage points decline in the probability of using such borrowing methods. Lastly, we also find a negative effect of both measures of financial literacy on the probability of debt incurrence.

These estimates have important policy implications. Namely, they indicate a clear need to develop initiatives, which promote consumers' understanding of financial subjects. Such programs would, in turn, allow consumers to make well-informed financial choices, and thus, achieve long-term economic wellbeing and security. Moreover, given that low financial literacy levels are

more pronounced amongst disadvantaged groups, the analysis highlights the importance of developing targeted financial education initiatives to avoid a further exacerbation of these groups' socioeconomic vulnerabilities.

This chapter contributes to the literature in several ways. First, whilst the interest on financial literacy has grown over the last years, most studies continue to focus on developed countries. Therefore, this research addresses this gap by presenting the first study on Colombia. Notably, the country has undergone an important series of reforms centred on both financial inclusion and financial education, thus making it an ideal case study. Second, the analysis extends the field's understanding of financial literacy by examining less studied outcomes, as well as by applying IV on them. In particular, it focuses on outcomes related to the liability side of households' balance sheet – as opposed to savings, wealth accumulation or retirement planning. Equally, as mentioned earlier, the analysis relies on the use of two novel instruments – i.e. number of private schools and development funds.

The remainder of this chapter is organised as follows. Section 2.2 reviews the literature on financial literacy and its effects on various economic outcomes. Section 2.3 describes both the data and the empirical strategy used throughout the analysis. Section 2.4 provides a discussion of the empirical results, while Section 2.5 discuss the robustness checks. Finally, Section 2.6 presents some concluding remarks.

2.2 Literature Review

Given the increasing complexity of today's financial markets, financial literacy, and its role in promoting economic wellbeing, have both gained considerable attention in the past two decades. In particular, financially literate individuals have been found to engage in a wide range of recommend financial practices, including greater stock market participation, wealth accumulation and retirement planning (Lusardi and Mitchell, 2008, 2009, 2011a; Behrman et al., 2012; van Rooij et al., 2011a,b, 2012). Conversely, evidence indicates that a lack of financial sophistication may be related to lower precautionary savings, over-indebtedness and the use of high cost borrowing methods (Babiarz and Robb, 2014; Beckmann, 2013; Gathergood, 2012; Lusardi and Tufano,

2015; Klapper et al., 2013).

While such financial decisions have obvious effects on individuals' own wellbeing, these choices may also have important consequences on society's general welfare. For example, classical economics dictates that well-informed consumers are crucial for ensuring market efficiency, as well as for preventing deceitful sellers from operating in financial markets (Hilgert et al., 2003). Moreover, ill-informed financial decisions – such as both lower wealth accumulation and precautionary savings – may leave economies susceptible to shocks, whilst also resulting in the diversion of resources (Lusardi, 2011). Likewise, to the extent that knowledgeable individuals are in a better position to secure their own financial wellbeing and security, financial literacy may also be key in assisting overall development in emerging economies. Whilst not an exhaustive list, such economic consequences underscore the need to analyse financial literacy and its role in promoting financial wellbeing, both at a micro and a macro-level. In what follows, this section will discuss the existing measures of financial literacy adopted by the related literature, as well as the research linking financial literacy to economic behaviour.

2.2.1 Measuring Financial Literacy

Whilst there is no single unique characterisation for financial literacy, the existing academic literature often provides definitions, which share two vital components: knowledge and application. On the one hand, financial literacy requires individuals to possess an adequate understanding of key financial concepts and products, which underlie most day-to-day financial decision-making. These could include an understanding of inflation and interest rates, as well as an understanding of products such as stocks, bonds and mortgages (Hastings et al., 2013). On the other hand, financial literacy requires individuals to have the capacity and confidence to apply such financial understanding when managing their own personal finances. Thus, as Lusardi and Mitchell (2014) highlight, financial literacy refers to consumers' ability to not only understand financial information, but also to make well-informed financial decisions which ensure long-term financial wellbeing and stability.

Such a conceptualisation of financial literacy was first observed in 1997 in the “Survey of Personal Financial Literacy among High-School Students” and administered biannually by the Jump\$tart Coalition since 2000 in the United States (Hastings et al., 2013). The survey now covers both

high school and college students and is used to evaluate individuals' financial literacy using 31 multiple-choice questions on topics, such as money management, taxes and inflation, saving and investment practices, as well as risk and insurance (Mandell, 2009). In a similar manner, Hilgert et al. (2003) analyse financial literacy in the United States using a set of 28 true or false questions obtained from the 2001 Survey of Consumers, which covered themes on saving, investment, credit management and mortgages, amongst others.¹ More recently, however, Lusardi and Mitchell (2008, 2009, 2011a) developed a set of questions, initially designed as an experimental financial literacy module for the 2004 US Health and Retirement Study (HRS), aimed at capturing the intricacies of financial literacy. These questions are worded as follows (correct answers are in bold):

1. Interest Rates: Suppose you had \$100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you let the money grow?

More than \$102

Exactly \$102

Less than \$102

Do not know

Refuse to answer

2. Inflation Rate: Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per year. After 1 year, how much would you be able to buy with the money in this account?

More than today

Exactly the same as today

Less than today

Do not know

Refuse to answer.

¹The financial knowledge section developed for the 2001 Survey of Consumers was largely based on the JumpStart Coalition's survey, and thus, shares key similarities with the latter's financial literacy questionnaire (Hilgert et al., 2003). Notably, both test knowledge on similar topics and include nearly identical questions regarding the principles of various financial practices and services, such as savings account and credit ratings. However, the JumpStart Coalition's survey also tests knowledge on basic concepts such as inflation and taxes which are not included in the Survey of Consumers.

3. Risk Diversification: Please tell me whether this statement is true or false. “Buying a single company’s stock usually provides a safer return than a stock mutual fund.”

True

False

Do not know

Refuse to answer.

These questions – commonly referred to as the “Big Three” – measure three key concepts which underlie day-to-day financial decisions, such as saving and investing. These core concepts include: i) numeracy and understanding of interest rate compounding; ii) understanding inflation rates; iii) and understanding risk diversification. Indeed, grasping these basic concepts is particularly relevant in today’s world, where consumers are increasingly being held responsible for their personal finances, whilst also being exposed to more complex financial products such as mortgages, mutual funds and student loans (Lusardi, 2019; Hastings et al., 2013). Moreover, while any set of questions can only proxy for the true financial knowledge consumers require, the “Big Three” capture financial concepts that may be regarded as universal. That is, concepts which influence all economic environments, and which determine household financial decisions around the world.

Given the ubiquitous nature of these questions, the “Big Three” have become the standard measure of financial literacy in numerous studies around the world, thus ensuring comparability of financial knowledge across a wide range of institutional settings and contexts. To summarise these literacy questions into a single metric, most analyses rely on the construction of three broad sets of variables. These include: i) a dummy variable which is equal to 1 if the respondent answers all three questions correctly; ii) a dummy variable for answering each of the financial literacy questions correctly; and iii) a variable which counts the number of total correct answers (Lusardi and Mitchell, 2008, 2009, 2011a; Arrondel et al., 2013; Bucher-Koenen and Lusardi, 2011; Sekita, 2011; Agnew et al., 2013; Fornero and Monticone, 2011; Babiarz and Robb, 2014; Beckmann, 2013; Lusardi and de Bassa Scheresberg, 2013).

Nevertheless, a handful of studies – which analyse additional questions to the “Big Three” – use a more sophisticated approach. For example, van Rooij et al. (2011a,b, 2012) employ a set

of 12 multiple-choice questions, which test knowledge of both basic and advanced financial concepts, including time value of money, money illusion and the function of stock markets, amongst others. However, rather than relying on the use of dummy variables or total financial literacy scores, the authors use factor analysis to construct a financial literacy index that captures basic knowledge, as well as an additional index for knowledge of more advanced financial concepts.

Meanwhile, Behrman et al. (2012) use the “Big Three” and an additional set of questions that capture numeracy skills and understanding of the Chilean pension system. To construct a financial literacy measure, they rely on the two-step weighting method known as PRIDIT. As a first step, the authors weight each question by difficulty, thus applying a greater penalty if a respondent did not provide the correct answer to a question which most of the sample answered correctly. Conversely, the method gives greater credit for answering correctly the questions that most respondents answered incorrectly. In the second step, Behrman et al. (2012) use principal components analysis – a type of factor analysis – to take into account correlations across their extensive set of questions. As such, the final PRIDIT scores indicate: i) an individual’s level of financial literacy, relative to the average sample population and to the specific question asked; and ii) how informative any given financial question is, relative to the other questions (Behrman et al., 2012).

Given this chapter provides an exclusive examination of the “Big Three”, rather than a more extensive set of questions, the analysis ultimately relies on the use of financial literacy dummies and scores commonly employed by the literature. It is important to highlight, however, that these measures are likely to be highly correlated to the PRIDIT scores, and thus, to produce similar results to the latter (Behrman et al., 2010). Consequently, we employ an index that captures the total number of correct answers, as well as a risk diversification dummy that is equal to 1 if the respondent answered the question correctly. Notably, evidence indicates that the risk diversification question best distinguishes naïve and sophisticated consumers, whilst also producing a larger effect on financial outcomes (Lusardi and Mitchell, 2011a; Brown and Graf, 2013; Almenberg and Säve-Söderbergh, 2011; Boisclair et al., 2017). Moreover, while the questions on interest rate compounding and inflation rates capture understanding of key financial concepts, they are also likely to test basic numeracy and mathematical reasoning skills. By contrast, the question on risk diversification directly tests financial sophistication insofar as

individuals must possess a certain degree of understanding of risk, stock markets and mutual funds. Consequently, one could expect more robust results when employing this variable.

2.2.2 Cross-Country Comparison of Financial Literacy

Evidence suggests that financial literacy is perilously low across both advanced and emerging economies. For example, using the 2004 American Health and Retirement Study (HRS), Lusardi and Mitchell (2011a) show that only half of the respondents understood basic financial concepts, including interest rate compounding and inflation rates. Moreover, more recent US surveys, including the 2016 SCF and the 2017 Survey of Household Economics and Financial Decision Making (SHED), indicate these low levels of financial literacy are persistent over time (Lusardi, 2019). Similarly, results from the 2016 OECD International Survey of Adult Financial Literacy Competencies, which collected evidence from 30 countries – including 17 OECD members – indicate only 58% of individuals could calculate a simple interest on savings, whilst only 42% understood the benefits of interest compounding on savings (OECD, 2016). Likewise, only two in three adults were aware of risk diversification and its benefits for securing financial wellbeing. This is supported by the 2016 Allianz survey, which shows that only 28% of respondents across European countries could answer correctly questions related to risk diversification (Allianz, 2017).

Additionally, evidence from the Financial Literacy around the World (FLat World) – a project covering 15 countries – ² suggests that countries at varying stages of economic development exhibit similar (low) levels of financial literacy (Lusardi, 2019). Notably, across all countries, only 30% of respondents were able to answer all three financial literacy questions correctly, whilst only 50% understood the concepts of interest compounding and inflation rates (Lusardi, 2019). These findings are further confirmed by the 2014 Standard Poor’s Ratings Services Global Financial Literacy Survey (S&P Global FinLit Survey), which covered over 140 countries, including Colombia (Klapper et al., 2015). On a global scale, 50% individuals understood inflation and numeracy, whilst only 35% of adults grasped risk diversification. Moreover, while advanced economies tend to display higher levels of financial literacy than emerging economies,

²The group of countries covered by the Financial Literacy around the World (FLat World) project include: the US, Russia, Netherlands, Romania, Chile, Canada, France, New Zealand, Australia, Japan, Sweden, Germany, Finland, Switzerland and Italy.

these disparities are not as pronounced as one would initially expect. For instance, knowledge on inflation rates and interest rate compounding differ roughly by 15 and 10 percentage points, respectively (Klapper et al., 2015). This evidence, in turn, suggests that high income levels and fully developed financial markets do not by themselves translate into a more financially knowledgeable and sophisticated society (Lusardi, 2019). Nevertheless, more evidence for emerging countries is needed to draw more robust conclusions about the relationship between countries' economic development and consumers' financial literacy levels.

Interestingly, evidence from both the S&P Global FinLit Survey and the FLat World project also suggest that individuals display greater knowledge of certain financial concepts when they have experienced these in the past. For example, Swedish respondents, who have experienced pension privatisation, exhibit a greater understanding of risk diversification than either Russians or East Germans, who have had less experience with stock markets (Lusardi, 2019). Likewise, countries that have undergone periods of hyperinflation, such as Argentina, Peru and Georgia, show an understanding of inflation rates, which exceeds the world average (Klapper et al., 2015). Conversely, individuals from Japan – a country that has experienced deflation, rather than hyperinflation – have greater difficulties with answering correctly the question on inflation (Lusardi, 2019). Evidently, these patterns may have important implications for the analysis in this chapter. In particular, whilst Colombia avoided the hyperinflation observed across Latin America during the 1980s and 1990s, the country still experienced annual inflation rates close to 30% until the beginning of the 2000s (Banco de la República, 1999). Such an experience can translate into a greater understanding of inflation, relative to other concepts consumers lack familiarity with, particularly risk diversification. For a broader summary of financial literacy and behaviours in Colombia, see Appendix 2A.

Overall, since their initial formulation, an increasing number of studies have adopted the “Big Three” questions, therefore ensuring comparability of financial literacy across a wide range of countries and institutional settings. Unfortunately, existent evidence suggests that consumers around the world lack substantial understanding of basic financial themes and concepts. Moreover, while there are certain disparities across countries with varying degrees of economic development, financial illiteracy appears to be pervasive amongst both advanced and emerging economies. In other words, neither high-income levels, nor fully developed financial markets are

enough for financially literate populations to develop. To further understand the dynamics and determinants of financial sophistication, the next subsection examines financial literacy across various subpopulation groups.

2.2.3 Financial Literacy Across Demographic Groups

While a country's overall economic development is a poor proxy for the prevalence of financial literacy, research shows that financial literacy, or lack of it, is more pronounced amongst certain demographic groups, thus potentially amplifying any pre-existing economic vulnerabilities. For example, with regards to age, financial literacy appears to follow an inverted U-shape, whereby both the young and the elderly exhibit the poorest understanding of financial matters (Lusardi and Mitchell, 2011a; van Rooij et al., 2011a,b, 2012; Jappelli and Padula, 2013). Thus, whilst individuals may acquire financial literacy either formally or through experience as they grow older; these gains appear to be offset by the decline in cognitive capabilities experienced at later stages of the life cycle (Hastings et al., 2013). Such a response pattern may, in turn, explain why middle-aged adults make better-quality financial decisions, such as borrowing at lower interest rates and paying lower fees, than either younger or older individuals (Agarwal et al., 2009)

Likewise, existing research highlights sharp differences in financial literacy levels across both men and women. In a study by Lusardi and Tufano (2015), estimates suggested that women were more likely to choose the "do not know" option and roughly 20 percentage points less likely to answer correctly a particular literacy question than men. Similarly, not only are older women less financially literate than older men, but similar effects are also observed amongst younger samples (Lusardi and Mitchell, 2008; Lusardi and Tufano, 2015). Nevertheless, whilst these gender differences are a robust finding across the literature, there is a less clear understanding about the determinants of such pattern. On the one hand, potential explanations suggest that such differences in financial literacy may arise due to specialisation within households. In other words, married women may have an incentive to delay the acquisition of financial knowledge until being confronted by widowhood (Hsu, 2016). Nevertheless, as Lusardi and Mitchell (2014) note, such an explanation fails to account for the low levels of financial literacy exhibited by women who are both single and in charge of their own finances. On the other hand, the gender disparity may be a consequence of women's lower exposure to financial and labour markets, and thus, the possibility of learning by experience (OECD, 2013). For example, evidence shows that

women face more stringent borrowing requirements (Alesina, Lotti and Mistrulli, 2013), whilst also being less likely to obtain formal loans (Muravyev et al., 2009). Likewise, women often have more difficulties entering the labour market, earn lower income than men and are less likely to work full-time (OECD, 2013). Such factors, in turn, may limit women's ability to advance their financial literacy and wellbeing.

With respect to other patterns, employed and high-income individuals appear to exhibit greater financial literacy levels than their unemployed and less wealthy counterparts (Lusardi and Tufano, 2015). Furthermore, as expected, individuals with lower educational attainment tend to exhibit lower financial literacy levels (Lusardi and Mitchell, 2009, 2011a,b; van Rooij et al., 2011a,b). Notably, while the relationship between financial literacy and educational attainment may be driven partly by cognitive abilities, there is empirical evidence to suggest the latter cannot fully explain the observed heterogeneity in financial literacy levels. In particular, using data from the National Longitudinal Survey of Youth (NLSY), Lusardi et al. (2010) show that differences in financial literacy levels persist, even after controlling for cognitive abilities, thereby highlighting the importance of understanding financial literacy dynamics.

2.2.4 Financial Literacy and Its Effect on Debt, Financial Distress and High-Cost Borrowing Methods

Whilst examining determinants of an individuals' financial literacy remains a key endeavour in itself, there is also significant value in understanding its impact on different financial outcomes and behaviours. Notably, a lack of financial literacy may limit individuals' ability to optimise their own financial wellbeing, and thus, to achieve financial security. Consequently, financially illiterate individuals may be left in a position of economic vulnerability and uncertainty, thereby worsening social inequalities and injustices. Moreover, ill-informed consumers may also lack the necessary skills and abilities to effectively contribute to their communities, thus limiting the prospects of growth both at a micro- and a macro-economic level. Understanding such consequences is therefore paramount for public policy formulation and recommendation. However, while the vast majority of academic studies focus on the effects of financial literacy on retirement planning, this study focuses on the liability side of individuals' balance sheet. Consequently, this section reviews the existing research on financial literacy and its effects on outcomes related to financial strain, debt accumulation and informal credit use.

Standard economic models can help one understand the processes through which financial literacy may affect different economic outcomes. In particular, intertemporal choice models suggest that rational and forward-looking consumers choose both consumption and saving levels so as to smooth expected utility over the course of their lives (Jappelli and Padula, 2013). In its simplest setup, this theory assumes that consumers are fully-informed and able to forecast key factors, such as future income and interest rates, whilst also having the capacity to discount them correctly. In practice, however, individuals may not possess the necessary financial awareness and numeric skills required to make such calculations. Consequently, one could expect financially illiterate individuals to engage in detrimental practices, such as managing cash flows inadequately and over-indebtedness, amongst others. Furthermore, such negative behaviour may be aggravated by the increasingly complex products and services offered by the financial sector, including mortgages, credit cards, and loans, amongst others. Specifically, whilst consumers now face a wide range of options regarding fees, maturities and interest rates, the effective evaluation of such options is likely to be conditional on individuals' financial knowledge and awareness. However, without such financial sophistication, the consumption of these various financial products may ultimately hurt consumers' overall financial wellbeing.

Lusardi and Tufano (2015) examine the relationship between debt literacy and debt burden in the United States. According to the authors, debt literacy refers to individuals' ability to apply basic financial knowledge to decisions regarding debt, thus constituting a key component of financial literacy. To measure its effect, Lusardi and Tufano (2015) construct dummies for each of the three debt literacy questions in their dataset. While these questions are related to the "Big Three" insofar as they measure understanding of interest rate compounding, they also capture advanced concepts, such as credit card debt and time value of money. The results from their logit model suggest that debt literacy is significantly related to self-reported measures of over-indebtedness, even after controlling for key factors, including age, gender, race, wealth, and family size, amongst others. In particular, respondents who failed to answer correctly the debt literacy questions were more likely to report having problems paying off their debt, whilst those who chose the "do not know" option were less likely to describe their debt load as adequate. Likewise, their estimates indicate that a lack of understanding of both interest compounding and time value of money can explain approximately one-third of the excess fees paid by illiterate

consumers.

Similar results are found by French and McKillop (2016), who analyse the impact of financial literacy on over-indebtedness amongst low-income households. However, rather than employing the “Big Three”, the authors measure financial literacy using questions which capture understanding of interest rate compounding and percentages, as well as money management skills. Their results indicate that financial literacy is significantly associated with lower debt-to-income ratios and lower use of high-cost borrowing, such as internet moneylenders and pawnshops.

Gathergood (2012) examines the link between financial literacy and three different measures of over-indebtedness in the United Kingdom. These include both a 1- and a 3-month delinquency on at least one credit item, as well as a self-reported measure of financial distress. The results indicate that financially literate individuals are 40% less likely to be 1-month delinquent, even after controlling for various sociodemographic factors and behavioural characteristics, such as impulsivity and time preference. Nevertheless, across the two other measures of over-indebtedness, self-control problems – rather than financial literacy – appear to explain most of the variation observed in debt behaviour. Echoing these results, Ottaviani and Vandone (2018) find evidence on the dual effect of financial literacy and impulsivity on debt burden. Unfortunately, whilst these papers point to an important effect of personality traits on economic outcomes, particularly debt behaviour, the dataset used throughout this analysis lacks this type of variable. Although the inability to control for such factors could bias our estimates, the instrumental variable approach that we adopt in this chapter helps us to account for such potential sources of endogeneity.

Using similar measures to those used by Lusardi and Tufano (2015), Disney and Gathergood (2013) examine the impact of financial literacy on the use of high-cost credit in the United Kingdom. According to their results, a one-point increase in the financial literacy score is associated with a 5 percentage point decrease decrease in a household’s high-cost credit share. Interestingly, their analysis also suggests that those who perform worse in the financial literacy test tend to report having greater difficulties with interpreting information regarding financial products. Moreover, using the “Big Three” questions, Lusardi and de Bassa Scheresberg (2013) evaluate the impact of financial literacy on high-cost borrowing in the United States. Their results indicate that financial illiteracy is strongly related to the use of payday loans, pawnshops and

auto title loans, even after controlling for both sociodemographic factors and risk preferences. These results are further confirmed by de Bassa Scheresberg (2013) who finds that, amongst young American adults, financial literacy is negatively and significantly associated with the use of pawnshops and pay-day loans. Likewise, in Russia, Klapper et al. (2013) find that financial literacy significantly decreases the use of informal credit, whilst also significantly increasing the use of formal bank credit and the likelihood of having a bank account.

Additionally, financial literacy has also been linked to better cash-flow management skills. For example, Lusardi (2011) examine the relationship between financial literacy and various measures of financial capability, such as planning ahead and making ends meet. Whilst her results are based on simple correlation analyses, the evidence indicates financially literate individuals do tend to engage in behaviour that demonstrates greater financial capability. Moreover, while their study does not focus directly on individuals' ability to make ends meet, Klapper et al. (2013) examine the impact of financial literacy on related outcomes. These include individuals' spending capacity and availability of unspent income. Their results indicate that answering correctly an additional financial literacy question is linked to an 11.6% lower probability of reporting low spending capacity, and a 12% higher probability of having unspent income.

Overall, standard economic theory suggests that consumers have the necessary skills and abilities to engage in optimal financial behaviour, and thus, maximise lifetime expected utility. Nevertheless, a growing body of evidence indicates that individuals around the world may lack such financial knowledge. Accordingly, several studies have found low levels of financial literacy to be associated with various measures of over-indebtedness, the use of high-cost borrowing methods and poor cash-flow management. Yet, whilst these studies are informative of the detrimental consequences of financial illiteracy in developed economies, there is significantly less understanding of such dynamics in emerging countries. Consequently, this study contributes to this line of research by examining the impact of financial literacy in Colombia. Moreover, it also contributes to the literature by analysing financial strain – rather than just proxy measures – as well as by looking at a new dimension of debt behaviour. In particular, whilst most analyses focus on debt-to-income ratio, or self-reported measures of over-indebtedness, this study analyses individuals' tendency to use debt incurrence as a means to make ends meet.

2.2.5 Financial Literacy and Other Economic Outcomes

Whilst recent studies have examined the effects of financial literacy on debt behaviour and the use of high-cost borrowing, the vast majority of research has focused predominantly on outcomes, such as retirement planning, precautionary savings, stock ownership and overall wealth accumulation. Hilgert et al. (2003) were amongst the first to find a positive association between financial literacy and a wide range of household economic outcomes, including budgeting, savings, and paying bills on time. Similarly, Agarwal et al. (2009) show that groups with lower financial literacy, such as the young and the elderly, tend to make more financial mistakes, including suboptimal credit card balance transfers, as well as paying excess interest rate and fees on loans, mortgages and credit cards.

Using the “Big Three” questions, Lusardi and Mitchell (2011a) find a positive and significant relationship between financial literacy and retirement planning in the United States. Amongst the three financial literacy dummies, understanding of risk diversification appears to best differentiate between financially literate and illiterate individuals. In other words, it produces a larger marginal effect than either the interest or the inflation dummy and remains significant, even after controlling for various demographic factors. Similar results have been found in Switzerland (Brown and Graf, 2013), Sweden (Almenberg and Säve-Söderbergh, 2011) and Canada (Boisclair et al., 2017). Moreover, such a relationship appears to have significant consequences on wealth accumulation, with economic simulations predicting roughly 30% to 40% of retirement wealth inequality in the United States can attributed to differences in individuals’ financial literacy (Lusardi et al., 2017).

Additionally, Lusardi and Tufano (2015) find that financially illiterate individuals are more likely to hold credit card debt and pay only minimum balance on their credit cards, rather than paying the full balance. These results are supported by other studies, which link financial illiteracy to costly credit card behaviour (Mottola, 2013; Allgood and Walstad, 2016), having costly mortgages (Moore, 2003), and borrowing from one own’s 401(k) pension plans (Utkus and Young, 2011). Conversely, financial literacy has been related to wealth accumulation (van Rooij et al., 2012; Behrman et al., 2012), greater stock market participation (van Rooij et al., 2011a; Yoong, 2011; Christiansen et al., 2008; Christelis et al., 2010), optimal saving behaviour

(de Bassa Scheresberg, 2013; Babiarz and Robb, 2014; Beckmann, 2013) and the ability to cope with emergency expenses and income shocks (Hasler et al., 2018).

2.2.6 The Causality Nexus between Financial Literacy and Economic Outcomes

Whilst the studies discussed thus far help shed light on the importance of financial literacy, it is vital to establish a causal link between financial knowledge and economic behaviour. A failure to address the potential endogeneity of financial literacy may, in turn, result in reverse causality and/or omitted variables driving the association observed between financial literacy and economic outcomes. For example, planning and saving for retirement may help individuals acquire financial literacy, rather than the reverse. Notably, Hilgert et al. (2003) found that most individuals in their analysis reported personal experience as their principal source of financial learning, thus suggesting a degree of reverse causality in financial literacy models is indeed likely. On the other hand, unobserved variables – e.g. patience, cognitive abilities or risk attitudes – may affect both financial literacy and economic behaviour, hence driving the relationship observed in previous studies. For example, evidence from field-experiment studies suggest that patient individuals are more likely to invest in health and have greater savings for retirement (Hastings and Mitchell, 2020). Thus, unless one is able to account for such factors, omitted variables of this type could bias the relationship between financial literacy and economic outcomes in standard models.

Equally, given that any financial literacy measure can only proxy for individuals' true level of financial literacy, studies on financial literacy face a measurement error problem, and thus, potential attenuation bias. In particular, some respondents may either guess the answers at random, or simply misunderstand the question itself (Lusardi and Mitchell, 2011b). To examine these concerns, van Rooij et al. (2011a) and Lusardi and Mitchell (2009) inverted the wording of the financial literacy questions using Dutch and American surveys, respectively. For example, with regards to knowledge on risk diversification, half of the respondents were randomly given the question in its original format, whilst the other half were randomly given the altered question:

- a. Buying a company stock usually provides a safer return than a stock mutual fund. True or false? (Original)

- b. Buying a stock mutual fund usually provides a safer return than a company stock. True or false? (Inverted)

The results found in both studies suggest that individuals are indeed sensitive to the framing of the questions. For instance, in the Dutch case, the number of correct answers doubled when respondents were asked the risk diversification question in its original format, rather than in inverted order. According to van Rooij et al. (2011a), this is not the result of a rule of thumb, whereby individuals pick the first option as the correct answer. Indeed, if this were the case, there would be a lower – rather than a higher – percentage of correct answers for question (a). Instead, these results suggest some individuals often fail to understand the questions, and thus, choose the correct answers simply by guessing (van Rooij et al., 2011a; Lusardi and Mitchell, 2011b). As a result, measures of financial literacy can only serve as a noisy proxy of individuals' true financial literacy.

Given these potential sources of endogeneity and measurement error, a growing body of research has relied on IV methods to isolate the causal effect of financial literacy on financial behaviour. Christiansen et al. (2008) examine the impact of economics knowledge on stock market participation. Notably, they use a rich panel dataset containing information on the educational history, socioeconomic characteristics and financial instruments owned by Danish investors for the period 1997-2001. To establish causality, the authors use the opening of a new university as an instrumental variable for acquiring a degree in economics. According to Christiansen et al. (2008), the new university produced an exogenous variation in the costs of acquiring economic education, thus allowing a greater number of high school graduates in the surrounding areas to obtain an economics-related degree. The IV estimates are positive, statistically significant and greater in magnitude than the standard Probit coefficients, therefore indicating that economics education induces greater stock market participation.

Klapper et al. (2013) use a panel dataset during the period 2008-2009 to examine the effect of financial literacy of economic behaviour in Russia. Similar to Christiansen et al. (2008), the authors use the number of universities across regions in order to measure respondents' exposure to financial knowledge of peers. As an additional instrument, they exploit the number of newspapers in circulation at both regional and national level. Their IV estimates suggest that financial literacy has a positive and significant effect on bank account ownership, as well as on the use of

formal bank credit. In particular, each additional correct financial literacy answer increases the use of formal credit by 12.4%. Conversely, answering an additional financial literacy question correctly reduces the probability of using informal credit by 23.5% – an effect which is double the size than the coefficient produced by the standard Probit model.

Behrman et al. (2012) use Chilean data to analyse the impact of financial literacy on wealth accumulation. To establish causality, the authors rely on two main instrumental variables: i) exposure to the 1981 national schooling voucher policy and ii) pension fund-marketing efforts. While individuals who turned 18 prior to 1981 were not benefited by the policy, respondents who were still school age had varying years of exposure to the school voucher. Thus, to the extent that this policy change affected individuals' financial knowledge, rather than household wealth directly, one could expect the school voucher system to provide an effective instrument for financial literacy. Likewise, pension-marketing efforts around a respondent's early work life could also raise awareness of the importance of both wealth accumulation and pensions, therefore enhancing financial literacy (Behrman et al., 2012). The final IV results indicate that a 0.2 standard deviation increase in financial literacy levels – as measured by the PRIDIT score – causes net household wealth to increase by roughly \$13,800. Similarly, the same standard deviation increase in financial literacy leads to a 3% rise in pension contributions, as well as a 0.5% increase in the likelihood of calculating monetary needs for retirement.

Using data from the Rand American Life Panel (ALP), Lusardi and Mitchell (2009) examine the impact of financial literacy on retirement planning. To instrument financial literacy, they exploit US state mandates, which required high schools to teach financial education across different states and periods. Specifically, they use the state in which a respondent was born as a proxy for the state in which the respondent resided at the time financial education was mandated. As expected, the IV estimates show the impact of financial literacy on retirement planning is positive, statistically significant and larger than the OLS estimates, even when splitting the sample by age groups and retirement status. Similar results are found for Japan by Sekita (2011) who uses the level of Japanese language skills to instrument for financial literacy. Specifically, the author constructs two instruments based on the respondent's rank in Japanese language class when they were age 15, as well as the average language ability in the area where the respondent lives. According to Sekita (2011), individuals with a good comprehension of

words should be able to understand the sentences in the financial literacy questions better. Likewise, respondents surrounded by peers with high language skills have a greater propensity to learn from them and to become more financially knowledgeable. The Generalised Method of Moments (GMM) indicate that financial literacy – as measured by answering correctly all the Big Three questions – increases the likelihood of planning for retirement by 47 percentage points.

van Rooij et al. (2011b) estimate the effect of financial literacy on retirement planning. Using a rich Dutch household survey, the authors use economics education to instrument for financial literacy. In particular, they exploit the extent to which a respondents' education prior to entering the labour market was devoted to economics. Their results indicate that a one standard deviation increase in financial literacy increases the likelihood of planning by retirement by 28% – an effect much larger than the OLS estimate. In a related study, van Rooij et al. (2012) exploit the same instrument to estimate the effect of financial literacy on household wealth. As expected, the IV estimates suggest that financial literacy increases household wealth, thus confirming the results found by Behrman et al. (2012).

A similar set of instruments are used by Fornero and Monticone (2011). Specifically, the authors use information on whether a member of the respondent's household has a degree in economics, as well as whether a household member uses a computer (either at home, at work, or elsewhere). The results indicate that answering an additional financial literacy question correctly increases the likelihood of pension plan participation in Italy by 14 percentage points. Similar evidence is found by Zanghieri (2013). To examine the impact of financial sophistication on pension plan enrolment in Italy, the author constructs three instruments based on whether the respondent has a mortgage and a high discount rate, as well as whether they live in a region with high bank density. The GMM estimates show that financial literacy has a positive and significant effect on pension fund participation – with an eightfold increase in the instrumented coefficient, relative to the standard Probit model. Nevertheless, unlike in the analysis performed by Fornero and Monticone (2011), the instruments employed by Zanghieri (2013) appear to be weak. Consequently, the IV estimates may be inconsistent and unreliable.

Using data from the SAVE survey, Bucher-Koenen and Lusardi (2011) estimate the impact of financial literacy on retirement planning amongst German households. To establish causality,

the authors instrument financial literacy using regional variation in exposure to financial knowledge of peers. Logically, respondents who are exposed to financially literate individuals should experience an increase in their own financial literacy levels. To capture such regional knowledge, the authors use voting patterns at the regional level. Notably, Kaustia and Torstila (2011) show that left-wing voters are significantly less likely to invest in stocks than their right-wing peers, while van Rooij et al. (2011a) find that individuals who fail to participate in the stock market tend to be less financially sophisticated than those who do. As such, Bucher-Koenen and Lusardi (2011) use voting shares for both the Libertarian Party and the Leftist Party in the 2005 national election at the administrative district level. The final results indicate that financial literacy has a positive and significant effect on planning for retirement, even after controlling for key socio-demographic factors. Moreover, the IV model shows a larger effect of financial literacy on retirement planning than the OLS model, thus suggesting that standard estimates may suffer from downward bias.

The effect of financial literacy on retirement planning is further confirmed by Alessie et al. (2011). Using a detailed Dutch panel dataset, the authors instrument financial literacy using information on the financial situation of the respondents' siblings. In particular, whilst respondents can improve on their financial literacy by learning from their siblings' financial experiences, it is reasonable to assume they cannot directly control a sibling's economic circumstances. Additionally, Alessie et al. (2011) also exploit parents' financial literacy – as perceived by the respondent – as an additional instrument. As expected, results from the GMM regression indicate that financial literacy exerts a positive and significant influence on retirement planning. Using the same instruments, Agnew et al. (2013) examine the impact of financial literacy on retirement preparedness in Australia. Unsurprisingly, the coefficient on the financial literacy instrument is positive and significant. These results are further confirmed by Arrondel et al. (2013) who show that financial literacy has a positive and statistically significant effect on the propensity to plan for retirement in France.

The studies discussed thus far provide robust evidence of causal effects of financial literacy on various outcomes, including greater stock market participation and wealth accumulation, as well as greater retirement planning. Yet, while these effects highlight the importance of financial literacy, several gaps remain in the literature. First, an overwhelming number of IV studies focus

almost exclusively on the asset side of household's balance sheet, and especially, retirement and pension-related outcomes. Although these effects are pivotal for individuals' long-term wellbeing, there is also significant value in understanding the causal impact of financial literacy on outcomes related to households' financial liabilities. Consequently, this paper contributes to the literature by performing IV analysis on less studied behaviours, including debt incurrence, financial strain and use of informal credit. Indeed, such outcomes are often significant components of day-to-day financial activities, and are thus, key in determining individuals' short-term economic welfare.

Second, this paper contributes to the literature by employing two novel instruments at the locality level, including number of private schools and local development funds. Notably, evidence indicates that consumers often learn about economic and financial matters through their peers (Duflo and Saez, 2003; Brown et al., 2008). Given that Colombian private schools are of greater quality than public institutions, respondents living in areas with a greater number of such schools may have greater exposure to better-educated and more financially literate individuals, thus becoming more financially savvy themselves. This is akin to Klapper et al. (2013) who use the number of universities in an individual's region to instrument financial literacy. Moreover, given that development funds are usually directed towards localities with underdeveloped public services, such as education and health, it is likely individuals in these areas may exhibit lower financial literacy levels. Lastly, given the instruments are measured at a regional level, they are likely to affect the outcomes of interest only indirectly through their effect on financial literacy.

2.2.7 Informal Credit and Financial Literacy in the Context of Colombia

Analysing consumers' behaviour regarding the use of informal credit is an increasingly relevant task given Colombia's current experience with the so-called "Gota a Gota" loans. Notably, estimates suggest that operations in this informal credit market amount to approximately \$71 billion per year in Bogotá alone (Ojeda, 2019). This is particularly worrying as the excessive interest rates charged by these informal lenders range from 20% to 40% monthly, thus often leaving individuals trapped in an endless cycle of debt and economic vulnerability. Nevertheless, if those with a greater understanding of finance and numeracy skills are less likely to rely on high cost borrowing methods, then policies centred on financial literacy may provide the best safeguard against the various risks of informal credit. Furthermore, in the specific case of

Colombia, these lending practices are often controlled by criminal groups who use these mechanisms to launder money from drug trafficking, extortions and kidnappings. Unfortunately, this has led notorious groups, such as “Clan del Golfo” and “Los Caparrapos”, to fight over the control of these informal markets, thus worsening violence and forced displacement rates across the country (Portafolio, 2018a; Fiscalía General de la Nación, 2020). As such, understanding the determinants of informal credit may be of paramount importance for alleviating the consequences of Colombia’s 58-year-old civil conflict.

Moreover, differences in financial literacy may also help explain differences in outcomes, such as financial strain and debt accumulation. In particular, those who fail to understand basic financial concepts, such as interest rate compounding may lack the skills to both accumulate and manage their resources effectively. For example, financially illiterate individuals may struggle to make ends meet, and thus, may be more prone to accumulating excess debt in an effort to meet their monthly expenses. Indeed, evidence suggest these dynamics may be at play in Colombia’s particular case. According to a World Bank survey, at least 65% of Colombians reported experiencing financial strain, while 28% reported the use of borrowing as a method to mitigate its various effects (Reddy et al., 2013). The consequences of such outcomes may prove to be detrimental not only for consumers’ wellbeing, but also for Colombia’s overall development. On the one hand, financial strain may limit individuals’ capacity to save for short-term needs (e.g. meeting unexpected shocks), as well as for long-term goals (e.g. building assets, preparing for retirement, paying children’s education). On the other hand, lack of savings, in conjunction with an over-indebted population, may leave the overall economy exposed to shocks, thereby curtailing the country’s economic development. Understanding the potential role of financial literacy in determining both financial strain and debt accumulation is therefore vital for public-policy formulation in Colombia.

Furthermore, as mentioned earlier, most analyses of financial literacy focus on advanced economies. However, given the important wellbeing consequences highlighted by these studies, there is a clear incentive to understand the dynamics of financial literacy in emerging economies. In particular, such effects may be key in improving the financial security of populations who are susceptible to income shocks and everyday economic uncertainty. Moreover, insofar as it equips individuals with the necessary knowledge and skills to both accumulate and improve the use of

resources, financial literacy may also contribute to the poverty and inequality reduction efforts often seen in developing countries. Therefore, in order to address these gaps in the literature, this paper presents the first analysis of financial literacy in Colombia. Notably, the country has undergone a series of institutional reforms – with both financial inclusion and education as core tenets – which makes it an ideal case study. Some of these reforms include the Law 1328 of 2009, which decreed financial education as a right for all Colombian consumers, as well as the Law 1450 of 2011, which mandated schools to incorporate basic financial and economic skills in their curricula (Álvarez-Franco et al., 2017). For further discussion of these financial reforms, see Appendix 2B.

2.3 Data and Methodology

2.3.1 Data

Individual-level data for the period 2010-2016 were obtained from the National Administrative Department of Statistics (DANE). Since 2010, DANE – in conjunction with the Central Bank of Colombia – have conducted the annual Household Financial Burden and Education Survey (IEFIC) with the purpose of evaluating individuals’ financial and economic behaviour. The survey entails a repeated cross-sectional design and samples individuals over the age of 18 who own at least one financial instrument, such as current or savings account, loans, credit cards or mortgages. While the first 6 waves of the IEFIC survey samples only individuals with formal access to the financial system in Bogota, this is not necessarily a limitation. Colombia is characterised by a financial system which has exhibited 100% physical coverage since early 2015 (Banca de las Oportunidades, 2016).³ Likewise, Bogota – the most populous city in the country –⁴ has continuously exhibited both the highest levels and increases of financial deepening during the period of analysis (Banco de la República, 2010; Banca de las Oportunidades, 2016). As such, Bogota remains the country’s key locus of financial activity, with estimates suggesting the city accounts for approximately 45 percent of the financial system’s total loan portfolio (Reddy et al., 2013).

In terms of variables, the IEFIC includes questions which cover a wide range of households’

³Coverage is defined as the physical presence and availability of at least one access point to the financial system at the municipality-level. This includes bank branches, ATMs, and/or banking correspondents.

⁴According to the latest census, approximately 16.3% of Colombians lived in Bogota in 2018.

financial characteristics. These include assets and mortgage debt, household consumption, use of insurance and pensions, non-mortgage debt, ownership of financial and real assets, and subjective perception of financial burden and credit restrictions. Importantly, though outcomes such as mortgage debt and financial assets are closely related to those commonly analysed in the literature, the variables presented a high number of missing values, thus affecting the ability to draw meaningful inferences from the data. To avoid such particular issues, alternative measures related to the liability side of households' balance sheet were employed. These include household financial strain, debt accumulation and use of informal credit. For the exact wording of the questions that the dependent variables are based on, see Appendix 2C.

The outcomes of interest were all coded as dichotomous variables. In particular, financial strain is a dummy variable equal to 1 if a respondent indicates their expenses exceeded their income in the month prior to the survey. Likewise, debt accumulation is a dummy indicating whether an individual accumulates debt when expenses exceed income and is a question asked to all respondents, regardless of whether financial strain was indeed experienced in the month prior to the survey. Lastly, the variable of informal credit is a dummy equal to 1 if a respondent indicates having obtained loans from pawnbrokers, or convenience shops in the past. Summary statistics for the dependent variables are given in Panel A of Table 2.1. Roughly 41% of respondents reported having experienced financial strain the month prior to the survey and 55% indicated they accumulated debt when expenses exceeded their income. By contrast, we observe low levels of informal credit use, with only 3% of the sample reporting having ever used these borrowing methods in the past.

Before proceeding further, it is important note that these self-reported measures of financial behaviour – particularly informal credit use – may suffer from social desirability bias. In particular, while the low levels of informal borrowing may be due to the nature of the population sampled in the IEFIC – i.e. those with formal access to the financial system – it is also possible that individuals misreport their actual use of informal loans. For example, insofar as these informal practices are deemed as socially undesirable or morally wrong, respondents may have an incentive to deny or under-report these behaviours to avoid embarrassment or making a negative impression (Tourangeau and Yan, 2007). As such, social desirability could alter the relationship between financial literacy and financial behaviour, thus ultimately biasing our main estimates.

In terms of covariates, the existent literature on financial literacy informs the set of controls included in the model. As mentioned in subsection 2.2.3, several studies have uncovered robust financial literacy patterns, whereby specific demographic factors – e.g. gender, age, education, income – determine financial knowledge levels. Consequently, these characteristics are controlled for in the regression analysis. Panel B of Table 2.1 reports descriptive statistics of such control variables. In particular, 46% of individuals are men and roughly 72% are employed. Interestingly, although nationally representative studies suggest that only 22% of Colombians have a university degree (World Bank, 2018), 44% of our sample report having such a level of education. It is important to note that this disparity may be the result of the sample covered by the IEFIC. As mentioned earlier, the survey covers only those with formal access to the financial system – who may also have greater education, relative to the rest of the population. Consequently, such a selective sampling could bias our analysis. Specifically, our results could overstate the true impact of financial literacy insofar as those with greater education are less likely to engage in detrimental financial practices regardless of their financial literacy.

Turning to our other control variables, 54% of the sample are married or living with a partner. Furthermore, whilst the IEFIC reports age as a continuous measure, the variable was ultimately classified into 6 different categories to account for the non-linear relationship between financial literacy and age discussed in subsection 2.2.3. According to these age brackets, approximately 18% of respondents are ages 18 to 24, 23% are 25 to 34, 19% are 35 to 44, 18% are 45 to 54, and 22% are over the age of 55. Lastly, the average household income for the period 2010-2016 is COP 3,461,646 per month,⁵ while the average sample household size is 3.9.

Referring back to the outcomes of interest, Table 2.2 shows participation in each financial practice across sociodemographic groups. Both men and women appear to make similar use of informal credit, whilst younger and older respondents report a lower use of such methods, relative to those between the ages of 34 and 54. Likewise, as expected, informal credit is lowest amongst individuals with a university degree and those with greater household income. Furthermore, financial strain appears to be higher amongst both female and younger respondents, as well as those with lower household income and no university degree. Lastly, debt incurrence decreases with both age and household income, but remains high amongst those with no higher

⁵Based on the 2016 currency exchange rate, this sum is equivalent to £1,488.

education.

Furthermore, in order to analyse the potential impact of financial literacy on the three economic outcomes mentioned above, this chapter employs the “Big Three” questions pioneered by Lusardi and Mitchell (2008, 2009, 2011a) and which are covered in the IEFIC survey. As previously mentioned, these questions capture understanding of basic economic concepts which underlie most day-to-day financial decisions. These core concepts include: i) numeracy and understanding of interest rate compounding; ii) understanding inflation rates; iii) understanding risk diversification. Nevertheless, the exact wording of the inflation question differs slightly to the original “Big Three”. Likewise, whilst the original financial literacy questions include both a “do not know” and a “refuse to answer” option, the IEFIC condenses these two into a single option, i.e. “do not know, refuse to answer”. The exact wording of these questions can be found in Appendix 2C. Moreover, following the common approaches adopted by the existing literature, this chapter constructs two measures of financial literacy. Particularly, for the main analysis, the measure of choice consists of a financial literacy dummy, as well as a continuous variable measuring the total number of correct answers.

Table 2.3 reports the responses to the Big Three financial literacy questions. Approximately 52% of individuals provided the correct answer for the numeracy and interest compounding question, whilst roughly 49% answered the inflation question correctly. Furthermore, nearly 16% and 17% of respondents indicated not knowing the answer to the compounding and inflation questions, respectively. Importantly, the concept of risk diversification appeared to pose the greatest difficulties, with only 44% of respondents providing the correct answer to that particular question and roughly 22% choosing the “do not know” option. Similar patterns of financial literacy levels are found in countries like the United States (Lusardi and Mitchell, 2011a), Chile (Behrman et al., 2012), as well as other OECD member countries (OECD, 2016).

To further understand financial literacy levels, Table 2.4 reports the distribution of the total number of correct answers to all three financial literacy questions. Remarkably, whilst roughly 34% of respondents were able to answer one or two questions correctly, only 13% answered all three questions correctly. These are indeed worrying findings. As Jappelli and Padula (2013) highlight, most intertemporal choice models assume that individuals are rational, well-informed

and capable of making complex calculations which ultimately allow them to smooth expected utility over their lifetimes. In practice, however, individuals may not possess the necessary financial awareness and numeric skills required to make such calculations. The findings obtained thus far suggest this may be the case in Colombia. In particular, the levels of financial literacy reported in Tables 2.3 and 2.4 suggest that adults in Bogota lack considerable financial understanding which may, in turn, lead to poor financial decision-making. These include managing cash flows inadequately, over-accumulation of debt and the use of high-cost borrowing methods.

Furthermore, from a public policy perspective, it is also critical to evaluate whether these deficiencies in financial literacy are more severe amongst particular demographic groups than others. To evaluate such potential heterogeneity, Table 2.5 shows financial literacy across key subgroups, including gender, age, income, education and employment status. Financial knowledge amongst men and women is relatively similar, with the percentage of correct answers being higher only by a small margin for the former group. Moreover, financial literacy initially increases with age, but declines at later stages of life across all three basic financial concepts. This hump-shaped pattern is consistent with the results reported in other studies (Lusardi and Mitchell, 2009; van Rooij et al., 2011a,b; Jappelli and Padula, 2013). With regards to education, those with a university degree exhibit a greater understanding of basic financial concepts than those with only high-school or primary school education. Likewise, as expected, financial literacy increases with household income.

Finally, Table 2.6 suggests that the outcomes of interest are negatively correlated with financial literacy, principally risk diversification knowledge. In particular, individuals who answered the risk question correctly are less likely to engage in adverse financial practices, such as informal credit use, financial strain and debt incurrence. Interestingly, this inverse relationship is not robust across the two other financial literacy components, with minimal differences in financial behaviour amongst those who answered the interest rate compounding and inflation question correctly. Consequently, as explained in subsection 2.4.1, risk diversification is employed as one of the main measures of financial literacy. Finally, choosing the “do not know” option is correlated with negative financial practices, thus suggesting similar financial behaviour between this financial literacy group and those who answer incorrectly. This simple descriptive analysis reveals interesting relations between financial literacy and financial behaviour. In the next

section, we turn to a more systematic analysis that uncovers the causal nature of this relationship.

2.3.2 Methodology

To begin analysing the relationship between financial literacy and the outcomes of interest, logit models were first estimated. Nevertheless, given that instrumental variables were later used to circumvent potential sources of endogeneity and/or measurement error, the main analysis had to ultimately rely on the use of Linear Probability Models (LPM). This was done in order to obtain results, which were comparable to those obtained by IV-2SLS. It is worth noting, however, that the logit models yielded estimates similar to the LPM results. These estimates are discussed in the robustness section.

As mentioned earlier, financial literacy analyses may be biased for various reasons. For example, omitted variables (e.g. risk preference, cognitive abilities, patience, etc.) may affect both financial behaviour and financial literacy, and thus, bias the estimates obtained in simple LPM analyses. Moreover, insofar as individuals gain financial knowledge through experience, reverse causality may also affect the results. In other words, causation may run from financial behaviour to financial literacy, rather than vice versa. Lastly, given that any financial literacy measure can only proxy for individuals' true financial knowledge, the estimates may also suffer from measurement error, and thus, attenuation bias. The combination of such factors imply that the LPM analyses may result in biased estimates of the effect of financial literacy on economic behaviour.

To address such endogeneity concerns, as well as the potential measurement error, this paper employs an IV approach. Panel A of Table 2.7 presents summary statistics of these instruments, which include the number of private schools and local development funds. Data on private schools were obtained from Bogota's Department for Education and covers the year 2016, whilst the variable on local development funds was constructed using data from the Office of The Mayor of Bogota and covers the year 2010. Moreover, data on all available instruments were obtained at the locality-level. Notably, employing variables at such regional-level ensures the instruments influence respondents' economic outcomes only indirectly through its effect on individual-level financial literacy.

Whilst Bogota is divided into 20 administrative localities, the IEFIC excludes the Sumapaz locality due to its highly rural nature. Consequently, the analysis extends to all 19 remaining areas in the city for which the IEFIC survey covers a representative sample. Panel B of Table 2.7 shows how the estimation sample is distributed across these localities. For instance, roughly 7% of individuals reside in Usaquén, whilst 12% and 15% of respondents live in Engativa and Suba, respectively. Moreover, these localities exhibit substantial heterogeneity with respect to the instruments. Whilst there are 0.12 private schools per 1000 people in Usme, there are roughly 0.66 in La Candelaria. Likewise, whilst the former received COP 4,670 funds per capita (\$000s) in 2010, Suba received roughly COP 0,621 funds per capita (\$000s) in the same year. Such differences, in turn, ensure that the instruments capture sufficient (exogenous) variation in financial literacy levels.

Furthermore, several reasons suggest that the instruments are potential predictors of financial literacy levels. On the one hand, data published by Bogota's authorities indicate that development funds are usually directed towards localities with underdeveloped infrastructure and public services, including education and health. Thus, if greater quality education fosters individuals' numeracy and financial skills, one could expect individuals living in such areas to exhibit lower financial literacy levels. On the other hand, private schools in Colombia tend to provide higher-quality education than public schools. This is evidenced by the yearly national test, Saber 11, which ranks schools' performance across five different subjects, including mathematics, English, critical reading, and social and natural sciences (Abadia-Alvarado and Bernal, 2017). Thus, to the extent that private schools foster greater and better-quality learning related to finance, one could expect individuals living in localities with a higher density of private schools, to exhibit greater financial literacy levels. Evidently, a key assumption for the use of this instrument is that individuals may become more financially knowledgeable when exposed to financially sophisticated individuals – a phenomenon which has received ample support in the literature (Duflo and Saez, 2003; Hong et al., 2004; Brown et al., 2008).

Given the use of IV-2SLS, the basic estimating specification can be represented in two stages. The second-stage regression estimates the impact of financial literacy on the outcomes of interest. This is given by:

$$y_{it} = \alpha_{it} + \beta(FL_{it}) + X_{it}\phi + \delta_t + \varepsilon_{it} \quad (2.1)$$

where y_{it} is a dichotomous variable measuring the three different outcomes of interest. These include include informal credit use, financial strain and debt incurrence. A more detailed description of these variables is provided in subsection 2.3.1. Moreover, FL_{it} is a variable which captures individuals' financial literacy and is measured in two main ways, including a financial literacy score and a dummy variable on each question separately. Specifically, the former variable measures the total number of correct answers a particular individual obtained, whilst the latter is equal to 1 if a respondent answered a given question correctly and 0 if they either answered incorrectly or if they chose the "do not know" option. β is the parameter of interest which is associated with the financial literacy variable. X_{it} is a vector of socioeconomic and demographic controls, including gender, age, household income, household size, as well as employment and marital status; ϕ is the associated parameter vector. δ_t denotes year fixed effects, which are included in order to capture any variations or shocks to outcomes y_{jt} which are common to all respondents in year t. Lastly, ε_{it} is the standard error, which has been clustered at the household level.

The first-stage equation measures the impact of the instruments on the chosen financial literacy measures. This is given by:

$$FL_{it} = \alpha_{it} + \beta_1 schools_l + \beta_2 funds_l + X_{it}\lambda + \delta_t + u_{it} \quad (2.2)$$

Where FL_{it} denotes respondents' financial literacy. The variables $schools_l$ and $funds_l$ are private schools and local development funds in locality l, respectively. δ_t are time-fixed effects, whilst X_{it} denotes the set of regressors included in equation (2.1), and λ is the associated parameter vector. Lastly, u_{it} is the error term clustered at the household level.

Before discussing the results from the LPM and the IV-2SLS obtained in the following section, it is important to highlight that potential violations of the exogeneity assumption cannot be completely ruled out. This condition dictates the instruments should: 1) have no effect on the outcomes of interest after controlling for all relevant factors; 2) and should be uncorrelated with unobservable factors that may affect the dependent variables (Wooldridge, 2014). Whilst

the regional-level instruments are expected to affect financial behaviour only through its effect on individual financial literacy, they may still affect the outcomes of interest through channels other than financial sophistication. For example, as mentioned earlier, areas that receive greater development funds are characterised by lower quality education which could then determine individuals' financial literacy, and thus, the outcomes of interest. However, such localities may also be characterised by underdeveloped financial markets, which could affect the outcomes of interest directly, principally informal credit use. In particular, this underdevelopment may imply certain localities have less access to formal financial markets, which could induce individuals to rely on more convenient and accessible options, such as informal credit, regardless of their financial literacy levels.

Moreover, the validity of the chosen instruments relies on the implicit assumption that individuals are fixed at the locality level. Nevertheless, individuals are not static within these localities, but rather can move (relatively) freely between these areas. This could, in turn, result in self-selection problems if individuals move to localities with a greater density of private schools and/or greater affluence for motives which are correlated with the outcomes of interest, i.e. their propensity to experience financial strain, accumulate debt or access informal credit. Consequently, the impossibility to control for such potential unobservable factors may affect the validity of the obtained IV estimates. Nevertheless, whilst these aforementioned violations cannot be completely ruled out, the instruments pass the relevant tests of significance and over-identification across most of the regression models. These results are discussed in the following section.

2.4 Results

2.4.1 Informal Credit

Tables 2.8 and 2.9 report the LPM and the IV-2SLS regression results of informal credit using the risk diversification dummy and financial literacy score, respectively. The exclusive use of the former variable as a financial literacy measure is motivated by the relevant literature. Specifically, extant research finds knowledge on risk diversification to best distinguish naïve and sophisticated consumers, whilst also producing a larger effect on outcomes, such as retirement planning (Lusardi and Mitchell, 2011a; Brown and Graf, 2013; Almenberg and Säve-Söderbergh,

2011; Boisclair et al., 2017). Moreover, while the questions on interest rate compounding and inflation rates capture understanding of key financial concepts, they are also likely to test basic numeracy and mathematical reasoning skills. By contrast, the question on risk diversification directly tests financial sophistication insofar as individuals must possess a certain degree of understanding of risk, stock markets and mutual funds. Consequently, one could expect more robust results when employing this variable.

This is confirmed by the preliminary results based on LPM. That is, out of the “Big Three”, the risk diversification question produced the most economically sensible coefficients and signs. Conversely, the variable on inflation resulted mostly in insignificant coefficients, whilst the dummy on interest rate compounding produced signs that were contrary to initial expectations. Nevertheless, given that such results may have risen due to potential endogeneity and/or measurement error, IV was also applied on these two questions. These results are discussed in the robustness section.

Furthermore, across both Tables 2.8 and 2.9, the analysis based on LPM is conducted by progressively including the set of controls across different specifications. Column 1 regresses the variable on informal credit use on financial literacy only. This is followed by the inclusion of individual-level regressors, including gender, age, education, employment status and marital status. Column 3 controls for household-level characteristics, such as household income and household size. Columns 4 and 5 include time-fixed effects and locality fixed effects, respectively. Lastly, column 6 re-estimates the equation in Column (4) using IV-2SLS, which remains the preferred estimation strategy.

Across Tables 2.8 and 2.9, sex appears to be strongly related to the use of informal credit, with men being 0.5 to 0.6 percentage points more likely to access such borrowing methods. Conversely, the likelihood of informal credit use is lower amongst individuals with a university degree and those who report greater household income. Thus, given the use of informal credit is most prevalent amongst disadvantaged groups – i.e. those with lower income and education – critical patterns of economic vulnerabilities may be exacerbated by these lending practices. Moreover, age appears to affect the probability of informal credit use, with individuals over the age of 65 being less reliant on these high cost borrowing methods than younger respondents.

Additionally, the likelihood of using informal credit decreases amongst single respondents but increases with household size. These results differ from those found by Klapper et al. (2013) in Russia, who find that single individuals have a higher probability of using informal credit.

Turning now to the key variable of interest, columns (1) and (2) in Table 2.8 indicate that financial literacy – as measured by the risk diversification question – lowers the likelihood of informal credit use, albeit these estimates lose significance when including household-level characteristics and fixed effects. Nevertheless, as mentioned earlier, the analysis based on LPM may suffer from endogeneity and/or measurement error, thus biasing the observed results. Consequently, in column (6), financial literacy is instrumented using both the number of private schools and development funds at the locality level. As expected, the coefficient on financial knowledge becomes significant and larger in magnitude than the LPM estimates. Specifically, individuals who answered correctly the question on risk diversification are roughly 18 percentage points less like to make use of these borrowing methods and this is significant at the 1% level.

Table 2.9 estimates the model on informal credit using the number of correct answers as the key explanatory variable. Similar to Table 2.8, the results obtained by LPM initially show that financial literacy is negatively and significantly related to informal credit use, but the coefficient loses significance as one includes the full set of controls. However, when excluding the locality fixed effects in column (4), the LPM analysis indicates that answering correctly an additional financial literacy question is associated with a 0.1 percentage point decrease in the probability of using informal credit. The effect is statistically significant at the 5% level. Column (6) shows the results from the IV-2SLS regressions using the same set of instruments employed in Table 2.8. Expectedly, the analysis confirms the inverse relationship between informal credit use and financial literacy, albeit the estimate is larger than the LPM coefficient and is now significant at the 1% level. In particular, answering correctly an additional question decreases the probability of informal credit use by 9.1 percentage points. These estimates mirror the analysis by Klapper et al. (2013) who find similar results using an identical financial literacy measure in Russia.

While these estimates are indicative of a significant causal impact of financial literacy on informal credit use, determining whether the chosen instruments satisfy the required conditions for validity is still necessary. In particular, the instruments must be: 1) sufficiently correlated to

the endogenous financial literacy variable, and 2) uncorrelated with the error term. As such, the results of the first-stage regression and the over-identification test are reported at the bottom of Tables 2.8 and 2.9. Across both models, the number of private schools and local development funds are positively and negatively related to financial literacy, respectively. Moreover, the F-Statistic is 62.37 (Prob>F=0.000) in Table 2.8 and 68.44 (Prob>F=0.000) in Table 2.9. This evidence, in turn, indicates that the instruments are both jointly significant in first stage model, and thus, good predictors of the financial literacy variable. Additionally, the Hansen J statistic indicates that the instruments are valid as the over-identification restriction is not rejected in either of the estimations. In other words, they are uncorrelated with the error term in the second stage equation. Lastly, it is worth noting that both the number of private schools and local development funds were significant in the reduced form regressions.

Finally, although our sample is comprised exclusively of individuals in Bogotá, we believe the findings are generalisable to the populations outside the city. As mentioned in subsection 2.2.1, the popularity of the “Big Three” questions lays partly upon their ability to capture fundamental concepts which underlie day-to-day financial decisions around the world. Providing support for the universality and relevancy of these measures, the literature has uncovered a strong, positive effect of financial literacy on economic behaviour that remains robust across a wide range of institutional and economic environments. Thus, while our sample may not be representative of other regions in the country, we expect financial literacy to exert similar effects on financial behaviour outside Bogotá, particularly in areas which may exhibit similar levels of financial development and deepening. Nonetheless, we are aware that such financial literacy dynamics could potentially differ in remote, rural areas where populations may differ more systematically and financial system may remain underdeveloped, relative to the rest of the country.⁶

2.4.2 Conditional Effects

Whilst informal credit use may be determined by various factors, such as credit rationing in formal markets (Bell et al., 1997; Mushinski, 1999), ineffective state policies and microfinance programs (Tsai, 2004), and the stringent repayment plans of microfinance loans (Jain and Mansuri, 2003), the ultimate accessibility and convenience of informal finance often attracts particular

⁶For example, financial literacy could have a weaker effect in these areas insofar as an underdeveloped financial system induces individuals to rely on informal borrowing, regardless of their financial sophistication.

subgroups of consumers. In particular, the inability to secure formal loans through effective collateral provision often implies that those in low-income groups must often rely on informal sources of finance, such as family and moneylenders (Banerjee and Duflo, 2007). Likewise, lower formal savings, in conjunction with a lack of access to formal insurance, may also induce individuals to mitigate the effects of adverse shocks through informal borrowing (Fafchamps and Lund, 2003). Thus, insofar as the use of informal credit is more prevalent amongst particular demographic groups, one could expect the effect of financial literacy to be stronger for these individuals. To test such potential heterogeneous effects, this section analyses the effects of risk diversification knowledge on informal credit conditional on three distinct individual-level characteristics. These include gender, educational attainment and household income.

To perform the analysis, equation (2.1) was augmented with an interaction term between risk diversification and each of the aforementioned individual-level characteristics. Moreover, to account for the potential endogeneity of financial literacy, risk diversification was instrumented using both development funds and number of private schools across each of the three augmented equations. Table 2.10 shows the results when each of the interactions is included separately in the informal credit model. The interaction terms for educational attainment and top income quintile are significant at the 1% and 10% level, respectively. However, no significant effect was found for the interaction coefficient on sex, thus suggesting no differential effect of risk knowledge across gender groups.

To understand how the effect of financial literacy differs across demographic groups, Figure 2.1 graphs the results to the conditional effects analysis. Panel (a) shows similar effects of risk diversification knowledge on the use of informal credit across gender groups. However, as mentioned above, the interaction term on gender was not significant at any conventional level. Conversely, panels (b) and (c) suggest that educational attainment and household income serve as key intermediaries of the effect of financial literacy on informal credit use. In particular, risk diversification knowledge appears to induce a greater marginal reduction in the likelihood of informal credit use amongst those without university degree and those in the bottom income quintiles. Furthermore, as shown in Table 2.10, both interaction terms entered significantly in their respective estimations.

As alluded to earlier, such observed outcomes may in part be explained by the usage patterns of informal credit. Whilst such borrowing methods tend to be characterised by high-interest rates, its accessibility and convenience ultimately attracts those already in a position of economic disadvantage. However, the evidence presented in this section suggests that fostering greater financial sophistication may provide an efficient safeguard against the dangers of informal credit, whilst also generating stronger effects amongst those who principally need it.

2.4.3 Financial Strain and Debt Incurrence

Table 2.11 shows both the LPM and IV-2SLS results of the likelihood of financial strain and debt incurrence. As mentioned earlier, financial strain is a binary variable that measures respondents' ability to make ends meet in the month prior to the survey, whilst debt incurrence is a dummy indicating whether a respondent resorts to accumulating debt in an effort to meet their monthly expenses. Across all specifications, year fixed effects and both individual- and household-level characteristics are controlled for. Moreover, the results to the first-stage regressions and the Hansen J statistics are shown at the bottom of the table. Similar to Tables 2.8 and 2.9, the F-Statistic suggest that both instrumental variables are jointly significant in the first-stage models, whilst the over-identification restriction is not rejected across any of the specifications.

With regards to the analysis, the LPM estimates in columns (1) and (2) indicate that financial literacy is negatively related to the probability of experiencing financial strain, albeit the coefficient is insignificant when using the number of correct answers. Likewise, column (3) indicates knowledge of risk diversification is negatively and significantly related to the likelihood of financial strain, whilst in column (4), the estimate on the financial literacy score remains insignificant. To establish causality, columns (5) – (8) instrument both measures of financial literacy using the number of private schools and local development funds. Contrary to the LPM analysis, however, the key explanatory variables are now insignificant across the two specifications on financial strain. That is, neither understanding of risk diversification nor the number of correct answers appears to lower the likelihood of experiencing financial distress.

Several factors may help explain these results. In particular, whilst financial literacy can equip consumers with the necessary skills to ensure economic wellbeing, individuals' behavioural and psychological characteristics may have an effect on economic behaviour beyond that of financial

knowledge. For example, McCarthy (2016) show that traits, such as self-control, planning and time preference may often have a greater effect on the likelihood of financial distress, than either educational attainment or financial literacy levels. Their analysis indicates that, whilst financially savvy individuals may have a lower risk of experiencing economic distress, traits such as impulsiveness can undo this effect. Likewise, Stango and Zinman (2009) posit that consumers exhibit certain behavioural biases which cause them to make wrong financial assessments, and thus, to engage in suboptimal behaviour, including over-borrowing, lack of savings and lower asset accumulation. Other studies have found financial behaviour to be influenced by individuals' inattention (Karlan et al., 2016), social interactions (Georgarakos et al., 2014), and both social capital and socio-political beliefs (Georgarakos and Fürth, 2015). Thus, whilst financial literacy may remain a powerful antidote for poor financial behaviour, its effect may be weakened by consumers' inherent cognitive biases.

Additionally, the results in columns (7) and (8) show a strong negative effect of both the financial literacy index score and risk diversification question on individuals' probability of accumulating debt in order to make monthly ends meet. These findings are in line with the existing literature linking financial literacy to debt behaviour in developed countries (Lusardi and Tufano, 2015; French and McKillop, 2016; Gathergood, 2012; Disney and Gathergood, 2013). In particular, it relates to Lusardi and Tufano (2015), who find that consumers in the United States over-accumulate debt due to not understanding the consequences of their own financial decisions, as well with Disney and Gathergood (2013) who show that over-indebted individuals are those who report finding financial matters confusing and/or complicated.

2.5 Robustness Checks

The results in section 2.4 offer compelling evidence for the effects of financial literacy on economic behaviour. To provide further support for this finding, this section conducts various robustness tests, including the estimation of logit models, the use of alternative financial literacy measures, the estimation of Seemingly Unrelated Regressions (SUR), and the restriction of the analysis sample to heads of household only.

2.5.1 Logit Models

As mentioned earlier, the main analysis relied on the use of LPM in order to obtain estimates that were comparable to the IV-2SLS findings. However, given that the outcomes of interest are dichotomous variables, Table 2.12 re-estimates the analysis using logit models. Across columns (1),(3) and (5), financial literacy is measured using the risk diversification question, whilst columns (2),(4) and (6) show the results for the financial literacy score. Moreover, across all specifications, both locality and time-fixed effects are controlled for. As expected, the risk diversification question is negatively related to informal credit use, financial strain and debt incurrence – albeit only the last two estimates are statistically significant. Moreover, whilst the financial literacy score produces an insignificant effect on both informal credit and financial strain, it produces a positive and significant effect on the likelihood of debt incurrence. Though this may appear to be counterintuitive, it is likely that such a positive effect is driven by endogeneity concerns – such as reverse causality and/or omitted variable bias – which simple logit models are unable to account for. The need to control for these biases, in turn, motivates the use of instrumental variables – and the ultimate reliance on LPM models – in the main analysis.

2.5.2 Alternative Financial Literacy Measures

Additionally, whilst the baseline analysis revealed a significant effect of both the risk diversification and financial literacy score measures on the outcomes of interest, understanding the effect of additional dimensions of financial literacy is still a necessary task. Consequently, Tables 2.13 and 2.14 re-estimate the model of informal credit using two of such dimensions, namely understanding of interest rates compounding and inflation rates. Similar to the LPM results obtained in section 2.4, the analysis is conducted by gradually including the set of controls in each specification. Column (1) regresses informal credit use on financial literacy only, whilst Columns (2) and (3) control for individual-level and household-level characteristics, respectively. Column (4) includes time-fixed effects, while Column (5) adds locality fixed effects. Lastly, Column (6) re-estimates the equation in Column (4) using IV-2SLS.

As observed in Table 2.13, knowledge of interest rates compounding produces similar effects to the main financial literacy measures used in the baseline analysis. In particular, the LPM results

in Column (4) indicate that answering correctly this question is associated with a 0.2 percentage point decrease in the use of these borrowing methods, whilst Column (6) suggests a decline of 19.7 percentage points when instrumenting the variable on interest rate compounding. This is akin to the 17.8 percentage points decrease caused by the risk diversification question. Moreover, the results to both the first-stage regressions and the over-identification test are presented at the bottom of Table 2.13. While the high F-statistic imply the instruments are good predictors of knowledge of interest rates, the Hansen-J statistic indicates that the instruments do not pass the exogeneity condition, thus casting doubt over the validity of the estimates.

Table 2.14 shows the results for understanding of inflation rates. Unlike the analysis on interest rate compounding, the effects across columns (4) and (6) are not significant at any of the conventional levels. However, it is worth noting that low F-statistic reported at the bottom of Table 2.13 indicate that the instruments are not strong predictors of the inflation rate measure. Thus, similar to the analysis of interest rate compounding, any causal inferences from this model remains dubious, and thus, further research that employs alternative instruments is required.

Table 2.15 examines the effect of interest rates compounding and inflation rates on both financial strain and debt incurrence. Across all specifications, time fixed effects and both individual and household-level characteristics are controlled for. With the exception of Column (2), the LPM results indicate that financial literacy – as measured by knowledge of interest rate compounding and inflation rates – is positively and significantly related to both financial strain and debt incurrence. However, as mentioned earlier, the multiple endogeneity concerns surrounding financial literacy analyses imply there is a need to rely on methods that can effectively account for the presence of such biases. As such, Columns (5)-(8) re-estimate the models using IV-2SLS. As expected, the estimates suggest a negative relationship between financial literacy and the outcomes of interest, albeit only specification (7) remains significant. This particular result indicates that knowledge of interest rate compounding decreases the probability of debt incurrence and this is statistically significant at all levels. Finally, the F-Statistic in Column (7) suggests that both instrumental variables are jointly significant in the first-stage models, whilst the over-identification restriction is not rejected.

2.5.3 Seemingly Unrelated Regressions

Additionally, there is a possibility that the outcomes of interest are interrelated. For example, those who exhibit negative financial behaviour, such as failing to make ends meet, may be more likely to engage in other negative financial practices, particularly incurring debt and informal credit use. Indeed, as mentioned in subsection 2.2.7, evidence indicates that Colombian consumers often rely on the latter methods to mitigate the various effects of financial strain (Reddy et al., 2013). Furthermore, potential (unobserved) personality traits, such as time and risk preference, may also influence all three dependent variables simultaneously. To explore such potential interrelatedness, we estimate Seemingly Unrelated Regressions (SUR) to allow for the error terms in the full set of regressions to be correlated. As demonstrated by Zellner (1962), when regressions are related through the errors, SUR models may result in more efficient estimates, relative to the standard equation-by-equation application of least squares.

Tables 2.16 and 2.17 show the SUR results and the correlation of residuals, respectively. Whilst the analysis indicates that the error terms are positively and significantly correlated, the correlations are not particularly strong in either the risk diversification or financial literacy score model. Moreover, even though the standard errors in the SUR model are marginally lower, the coefficients and their respective significance levels are nearly identical to the simple LPM estimates. Thus, while the errors are significantly correlated, the correlation is too small for the SUR model to result in efficiency gains, relative to the use of standard LPM.

2.5.4 Household Heads Analysis

Finally, evidence from the 2013 Financial Capabilities Survey (FCS) implemented by the Development Bank of Latin America (CAF) in Colombia, revealed day-to-day financial decisions are not generally shared by Colombian households, but are rather taken by a single member (CAF, 2014a). To explore such dynamics of financial decision-making, Tables 2.18-2.20 restrict the analysis to household heads who are likely to be in charge of household financial decision-making. Across all key specifications, the results remain qualitatively unchanged to those obtained in the baseline analysis. In particular, the IV-2SLS estimates in Tables 2.18 and 2.19 suggest that risk diversification knowledge and the financial literacy score lower the probability of informal credit use by 24.3 and 12.6 percentage points, respectively. Moreover, as shown at the bottom

of both tables, neither model suffers from weak instruments and the overidentification test is not rejected either.

Table 2.20 shows the effect of financial literacy on financial strain and debt incurrence amongst households heads. Focusing on the preferred estimation strategy, the IV-2SLS estimates across specifications (5) and (6) indicate that neither the financial literacy index score nor the risk diversification question has a significant effect on the probability of financial strain, thus confirming the evidence obtained in Table 2.11. By contrast, we find a negative and significant impact of both financial literacy measures on the likelihood of debt incurrence. These results are larger in magnitude than the OLS estimates and significant at all conventional levels. Lastly, as shown at the bottom of the table, the overidentification test is not rejected in any of the models, except in columns (6) and (7) where it is rejected at the 10% level.

2.6 Conclusion

This chapter investigates financial literacy and its effect on financial behaviour in Colombia during the period 2010-2016. It does so by focusing on three main outcomes, including the use of informal credit, financial strain and debt incurrence. Moreover, financial literacy is measured using the set of questions developed by Lusardi and Mitchell (2008, 2009, 2011a) and which have been adopted by numerous studies and surveys worldwide.

Amongst the key findings, the analysis indicates that Colombian consumers display a substantial lack of financial sophistication and awareness. Notably, only 52% and 49% of respondents answered correctly the questions on interest rate compounding and inflation rates, respectively. Likewise, the concept of risk diversification appears to pose the most difficulties, with only 44% of individuals answering correctly this particular question and 22% stating they did not know the answer. Similarly, low levels of financial literacy appear to be significantly acute amongst disadvantaged demographic groups, including women, those with no university degree and low-income, and both the young and the elderly. Similar response patterns are found in the United States (Lusardi and Mitchell, 2011a), the Netherlands (van Rooij et al., 2011a,b, 2012), Germany (Bucher-Koenen and Lusardi, 2011), and Russia (Klapper et al., 2013).

Most importantly, the research indicates that standard LPM analyses result in downwardly biased estimates of the effect of financial literacy on economic behaviour. Thus, to circumvent these endogeneity concerns, the chapter relies on an IV estimation strategy and proposes two new instruments in the context of Colombia. These include number of private schools and local development funds, both measured at the locality level. Expectedly, the results to this analysis suggest that financial literacy has a significant impact on financial behaviour. In particular, financially savvy individuals are significantly less likely to make use of informal credit and to incur debt when experiencing financial distress, even after controlling for key socio-demographic factors and time-fixed effects. Likewise, whilst the results are robust to the use of different measures of financial literacy, including the number of correct answers and financial literacy dummies, knowledge of risk diversification appears to best characterise financially literate consumers. In other words, it exerts a critical effect on the economic outcomes examined throughout the analysis. Lastly, neither measure of financial literacy had a significant effect on individuals' capacity to make ends meet. As mentioned in the analysis, evidence suggests that factors, such as personality traits and cognitive biases are critical determinants of financial strain. Nonetheless, the inability to control for such variables in the model, limits our ability to explore such mechanism and its interplay with financial literacy skills in the particular context of Colombia.

It is worth highlighting that the analysis has some limitations. First, as mentioned above, the lack of variables on personality traits prevents an adequate exploration of its potential effects on economic outcomes and its interaction with financial literacy. Second, whilst the IEFIC survey helps understand key financial characteristics of individuals in Bogotá, the exclusive focus on the city prevents an adequate analysis of the financial literacy across other regions of the country. Although we expect our results to be broadly generalisable outside Bogotá, it is possible that financial literacy dynamics differ across rural settings, particularly in remote areas where the financial system may remain underdeveloped. Thus, future research could focus on acquiring data on financial sophistication across other areas in Colombia.

Third, given that the IEFIC survey only samples individuals with formal access to the financial system, the impact of financial literacy upon the unbanked – who may reap the greatest benefits of increased financial awareness — remains unexplored. More importantly, such a selective sampling also implies our estimates could suffer from potential selection bias. As mentioned ear-

lier, our main findings indicate that the financially savvy are less likely to make poor financial decisions, such as using informal credit. Nevertheless, our results could overestimate the true effect of financial sophistication insofar as those with formal access to the financial system are less likely to make use of informal credit, regardless of their financial literacy levels. Indeed, relative to the national average, our sample appears to be composed of individuals with higher levels of education who are less likely to engage in such financially detrimental practices.

The results of this analysis have important policy implications. First, given the important effects of financial literacy on outcomes that are pivotal for financial wellbeing, there is a clear need to continue developing policies that successfully promote financial knowledge and awareness amongst Colombian consumers. This is particularly important given the low levels of financial literacy observed throughout the analysis. Likewise, whilst the latest financial reforms and programs signify a big step in this area, such policies must also be accompanied by efficient impact evaluation research that assesses the effectiveness of this policy work.

Second, as mentioned earlier, the results show that low financial literacy levels are particularly pervasive amongst disadvantaged demographic groups. Thus, given the effect of financial literacy on economic behaviour, there is a need to continue developing financial education programs which reach such populations efficiently. This, in turn, would equip individuals with the skills required to achieve financial wellbeing, whilst also preventing a further exacerbation of existent socioeconomic vulnerabilities and inequalities. Indeed, this is especially important in Colombia where, despite the government's continuous efforts, high levels of inequality remain deeply entrenched in society. In a similar manner, knowledge of risk diversification needs to be prioritised by future financial education initiatives. That is, whilst Colombians appear to know the least about risk, the analysis indicates that understanding such financial theme could provide an efficient safeguard against the many dangers of informal credit and over-indebtedness.

Overall, it is evident that financial literacy constitutes a key determinant of economic wellbeing, and thus, demands special attention in developing countries, such as Colombia. In particular, as the country's financial system continues to develop, there is an ever-increasing need to equip consumers with the necessary skills and abilities that allow them to reap the benefits of more developed financial markets, whilst also identifying the potential risks that come with it. Like-

wise, given its effect on economic wellbeing and stability, it seems clear that promoting greater financial literacy levels may not only benefit consumers, but also complement the government's efforts of achieving greater socioeconomic development.

2.7 Tables

Table 2.1: Summary Statistics of Dependent and Control Variables

	Mean	St. Dv	Min	Max
<i>Panel A: Dependent Variables</i>				
Informal Credit	0.03	0.29	0	1
Financial Strain	0.41	0.49	0	1
Incurring Debt	0.55	0.50	0	1
<i>Panel B: Socioeconomic and Demographic Controls</i>				
Male	0.46	0.50	0	1
Age:				
1. $18 \preceq \text{Age} \preceq 24$	0.18	0.38	0	1
2. $25 \preceq \text{Age} \preceq 34$	0.23	0.42	0	1
3. $35 \preceq \text{Age} \preceq 44$	0.19	0.39	0	1
4. $45 \preceq \text{Age} \preceq 54$	0.18	0.38	0	1
5. $55 \preceq \text{Age} \preceq 64$	0.12	0.33	0	1
6. $\text{Age} \succeq 65$	0.10	0.30	0	1
University Degree	0.44	0.50	0	1
Employed	0.72	0.45	0	1
Marital Status:				
1. Married or Cohabiting	0.54	0.50	0	1
2. Divorced	0.13	0.33	0	1
3. Widowed	0.04	0.21	0	1
4. Single	0.29	0.45	0	1
Household Income Quintile:				
1	0.20	0.40	0	1
2	0.20	0.40	0	1
3	0.20	0.40	0	1
4	0.20	0.40	0	1
5	0.20	0.40	0	1
Household Size	3.94	1.70	1	15
Observations	97896			

Table 2.2: Informal Credit, Financial Strain, and Debt Incurrence by Groups (Percentages)

	Informal Credit		Financial Strain		Debt Incurrence	
	0	1	0	1	0	1
Age Group						
18 \preceq Age \preceq 24	98.18	1.82	56.89	43.11	42.69	57.31
25 \preceq Age \preceq 34	96.70	3.30	60.04	39.96	44.65	55.35
35 \preceq Age \preceq 44	95.47	4.53	58.44	41.56	42.61	57.39
45 \preceq Age \preceq 54	95.11	4.89	57.39	42.61	43.01	56.99
55 \preceq Age \preceq 64	96.46	3.54	59.50	40.50	47.44	52.56
Age \succeq 65	97.90	2.10	60.35	39.65	55.75	44.25
Gender						
Female	96.73	3.27	57.77	42.23	45.26	54.74
Male	96.33	3.67	59.74	40.26	44.96	55.04
University Degree						
No	95.28	4.72	56.18	43.82	43.33	56.67
Yes	98.20	1.80	61.92	38.08	47.44	52.56
Household Income Quintiles						
1	94.10	5.90	54.63	45.37	42.11	57.89
2	95.83	4.17	54.49	45.51	42.06	57.94
3	96.57	3.43	57.26	42.74	44.02	55.98
4	97.61	2.39	59.12	40.88	45.65	54.35
5	98.64	1.36	67.91	32.09	51.79	48.21

Table 2.3: Responses to the “Big Three” Financial Literacy Questions: Percentages of Total Number of Respondents

	Interest Compounding	Inflation	Risk Diversification
Correct	51.7	48.7	43.7
Incorrect	32.8	34.7	34.3
Do not know	15.5	16.5	22.0

Table 2.4: Number of Correct, Incorrect and Do Not Know Answers: Percentage of Total Number of Respondents

	None	1	2	3
Correct	17.4	34.2	35.1	13.2
Incorrect	29.7	42.2	24.4	3.5
Do not know	69.8	15.2	6.1	8.8

Table 2.5: Financial Literacy Response Patterns by Groups (Percentages)

	Interest Rates			Inflation Rate			Risk Diversification			
	Correct	Incorrect	DK	Correct	Incorrect	DK	Correct	Incorrect	DK	
Age Group										
18 ≤ Age ≤ 24	51.99	32.78	15.23	47.84	35.80	16.36	44.24	34.20	34.20	21.56
25 ≤ Age ≤ 34	54.72	31.38	13.90	47.77	36.27	15.95	44.92	34.86	34.86	20.22
35 ≤ Age ≤ 44	53.49	32.62	13.89	49.81	35.48	14.71	44.46	35.35	35.35	20.19
45 ≤ Age ≤ 54	51.75	33.93	14.32	50.85	34.62	14.53	44.58	34.89	34.89	20.53
55 ≤ Age ≤ 64	48.62	34.45	16.93	49.74	32.95	17.32	42.31	33.56	33.56	24.13
Age ≥ 65	44.48	32.60	22.92	45.78	30.55	23.67	39.24	30.92	30.92	29.84
Gender										
Female	51.36	32.75	15.90	48.37	34.68	16.95	43.39	22.41	22.41	34.20
Male	52.05	32.89	15.06	49.18	34.84	15.98	44.17	21.48	21.48	34.36
University Degree										
No	46.43	33.67	19.91	45.40	33.91	20.69	39.52	33.67	33.67	26.80
Yes	58.48	31.71	9.81	53.08	35.83	11.09	49.22	35.05	35.05	15.73
Household Income Quintiles										
1	45.94	33.88	20.18	45.33	33.72	20.95	38.72	33.62	33.62	27.66
2	48.44	32.57	18.99	45.98	33.72	20.31	39.75	34.46	34.46	25.79
3	50.08	33.74	16.18	47.94	34.78	17.28	43.32	33.41	33.41	23.27
4	52.72	33.41	13.88	49.02	36.20	14.78	45.17	35.44	35.44	19.39
5	61.23	30.48	8.29	55.48	35.34	9.17	51.79	34.44	34.44	13.77

^a Note: DK indicates the respondent chose the “Do not know, refuse to answer” option.

Table 2.6: Financial Literacy Responses by Financial Behaviour Groups

	Informal Credit		Financial Strain		Debt Incurrence	
	No	Yes	No	Yes	No	Yes
Risk Question						
Correct	43.89	39.63	45.85	40.76	45.99	41.90
DK	21.83	26.19	19.63	25.32	20.92	22.85
Interest Question						
Correct	51.85	46.91	51.78	51.53	50.15	52.93
DK	15.34	20.12	14.33	17.19	15.84	15.24
Inflation Question						
Correct	48.76	48.45	48.68	48.84	48.82	48.69
DK	16.36	20.48	15.62	17.76	17.29	15.86
Overall Performance						
Number Correct	1.44	1.34	1.46	1.41	1.46	1.43
All Three Correct	13.31	12.13	13.71	12.63	14.33	12.39
At least one DK	29.97	36.85	27.73	33.73	29.48	30.82
No. of observations	94,517	3,379	57,443	40,453	44,170	53,726

^a Note: DK indicates the respondent chose the “Do not know, refuse to answer” option.

Table 2.7: Summary Statistics of Instrumental Variables

Panel A: Sample Means of Instrumental Variables at the Locality Level						
Instrumental Variable	Definition	Sample Mean	St. Dev.	Min	Max	
Private Schools	Private schools per 1000 people in each locality in 2016 – excludes childcare and primary schools	0.253	0.091	0.124	0.663	
Local Development Funds	Funds assigned to localities in 2010 – includes investment in health, education and infrastructure, amongst others.	1.136	0.501	0.621	4.670	
Panel B: Distribution of Private Schools and Local Development Funding across Localities						
Locality Name	Sample Population	Population in 2010	Number of Private Schools	Private Schools per 1000 people	Local Development Funds (\$000s)	Local development funds per capita (\$000s)
Usaquén	6,539	469,635	124	0.264	364,052.34	0.775
Chapinero	1,933	132,271	26	0.197	205,128.98	1.551
Santa Fe	1,012	110,049	20	0.182	325,443.25	2.957
San Cristobal	6,917	410,148	78	0.190	688,099.44	1.678
Usme	4,838	363,707	45	0.124	524,603.44	1.442
Tunjuelito	2,980	202,010	50	0.248	289,905.56	1.435
Bosa	8,724	569,093	88	0.155	687,270	1.208
Kennedy	9,545	1,009,527	212	0.210	701,395	0.695
Fontibón	4,443	338,198	98	0.289	314,197.78	0.929
Engativá	12,099	836,124	257	0.307	652,441.69	0.780
Suba	14,665	1,044,006	357	0.342	648,682.75	0.621
Barrios Unidos	2,640	232,802	58	0.249	239,658.39	1.029
Teusaquillo	1,363	145,157	85	0.586	215,562.91	1.485
Mártires	1,250	97,611	30	0.307	169,555.71	1.737
Antonio Nariño	1,791	108,150	41	0.379	218,592.53	2.021
Puente Aranda	5,579	258,751	89	0.344	354,853.06	1.371
Candelaria	426	24,117	16	0.663	112,631.30	4.670
Rafael Uribe	3,261	377,836	87	0.230	649,118.81	1.718
Ciudad Bolívar	7,891	628,366	79	0.126	932,371.5	1.484
Total	97,896	7,357,558	1,840		8,293,565.44	

Table 2.8: Regression Results using the Risk Diversification Question

	(1)	(2)	(3)	(4)	(5)	(6)
	Informal Credit					
	OLS	OLS	OLS	OLS	OLS	IV-2SLS
Risk Diversification Correct	-0.006*** (0.001)	-0.004*** (0.001)	-0.002 (0.001)	-0.001 (0.001)	-0.001 (0.001)	-0.178*** (0.026)
Male		0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.005*** (0.001)
<i>Age Groups (Base Category: 18 ≤ Age < 24)</i>						
1. 25 ≤ Age < 34		0.005*** (0.002)	0.007*** (0.002)	0.006*** (0.002)	0.007*** (0.002)	0.005*** (0.002)
2. 35 ≤ Age < 44		0.009*** (0.002)	0.012*** (0.002)	0.011*** (0.002)	0.012*** (0.002)	0.010*** (0.002)
3. 45 ≤ Age < 54		0.010*** (0.002)	0.015*** (0.002)	0.015*** (0.002)	0.016*** (0.002)	0.014*** (0.003)
4. 55 ≤ Age < 64		-0.004* (0.002)	0.004* (0.002)	0.004 (0.002)	0.005** (0.002)	-0.001 (0.003)
5. Age ≥ 65		-0.019*** (0.002)	-0.010*** (0.002)	-0.010*** (0.002)	-0.008*** (0.002)	-0.019*** (0.003)
University Degree		-0.027*** (0.001)	-0.016*** (0.001)	-0.017*** (0.001)	-0.015*** (0.001)	-0.005*** (0.002)
Employed		0.007*** (0.001)	0.010*** (0.001)	0.010*** (0.001)	0.010*** (0.001)	0.010*** (0.002)
<i>Marital Status (Base Category: Married or Cohabiting)</i>						
1. Divorced		0.010*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	0.003 (0.002)
2. Widowed		0.005 (0.003)	0.005 (0.003)	0.005 (0.003)	0.005 (0.003)	-0.000 (0.004)
3. Single		-0.016*** (0.001)	-0.014*** (0.001)	-0.014*** (0.001)	-0.014*** (0.001)	-0.021*** (0.002)
HH Income Qtile 2			-0.019*** (0.002)	-0.018*** (0.002)	-0.018*** (0.002)	-0.017*** (0.003)
HH Income Qtile 3			-0.026*** (0.002)	-0.025*** (0.002)	-0.023*** (0.002)	-0.017*** (0.003)
HH Income Qtile 4			-0.035*** (0.002)	-0.033*** (0.002)	-0.031*** (0.002)	-0.023*** (0.003)
HH Income Qtile 5			-0.041*** (0.002)	-0.039*** (0.002)	-0.035*** (0.002)	-0.020*** (0.004)
HH Size			0.004*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.001 (0.001)
Year FEs				Yes	Yes	Yes
Locality FEs					Yes	
Number of Private Schools						0.187
p-value						0.000
Local Development Funds						-0.046
p-value						0.000
Kleibergen-Paap rk Wald F						62.368
Statistic						
Hansen J Statistic						0.281
p-value						0.596
Observations	97896	97896	97896	97896	97896	97896

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the household-level.

Table 2.9: Regression Results using the Financial Literacy Score

	(1)	(2)	(3)	(4)	(5)	(6)
	Informal Credit OLS	Informal Credit IV-2SLS				
Number of Correct Answers	-0.004*** (0.001)	-0.002*** (0.001)	-0.001 (0.001)	-0.001** (0.001)	-0.001 (0.001)	-0.091*** (0.013)
Male		0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.006*** (0.001)
<i>Age Groups (Base Category: 18 ≤ Age ≤ 24)</i>						
1. 25 ≤ Age ≤ 34		0.005*** (0.002)	0.007*** (0.002)	0.006*** (0.002)	0.007*** (0.002)	0.006*** (0.002)
2. 35 ≤ Age ≤ 44		0.010*** (0.002)	0.012*** (0.002)	0.011*** (0.002)	0.012*** (0.002)	0.014*** (0.002)
3. 45 ≤ Age ≤ 54		0.010*** (0.002)	0.015*** (0.002)	0.015*** (0.002)	0.016*** (0.002)	0.016*** (0.003)
4. 55 ≤ Age ≤ 64		-0.004 (0.002)	0.004* (0.002)	0.004 (0.002)	0.005** (0.002)	-0.001 (0.003)
Age ≥ 65		-0.019*** (0.002)	-0.010*** (0.002)	-0.010*** (0.002)	-0.008*** (0.002)	-0.023*** (0.003)
University Degree		-0.027*** (0.001)	-0.016*** (0.001)	-0.016*** (0.001)	-0.015*** (0.001)	0.003 (0.003)
Employed		0.007*** (0.001)	0.010*** (0.001)	0.010*** (0.001)	0.010*** (0.001)	0.007*** (0.002)
<i>Marital Status (Base Category: Married or Cohabiting)</i>						
1. Divorced		0.010*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	-0.000 (0.003)
2. Widowed		0.005 (0.003)	0.005 (0.003)	0.005 (0.003)	0.005 (0.003)	-0.002 (0.004)
3. Single		-0.016*** (0.001)	-0.014*** (0.001)	-0.014*** (0.001)	-0.014*** (0.001)	-0.024*** (0.002)
HH Income Qtile 2			-0.019*** (0.002)	-0.018*** (0.002)	-0.018*** (0.002)	-0.015*** (0.003)
HH Income Qtile 3			-0.026*** (0.002)	-0.025*** (0.002)	-0.023*** (0.002)	-0.015*** (0.003)
HH Income Qtile 4			-0.035*** (0.002)	-0.033*** (0.002)	-0.031*** (0.002)	-0.019*** (0.003)
HH Income Qtile 5			-0.041*** (0.002)	-0.039*** (0.002)	-0.035*** (0.002)	-0.009* (0.005)
HH Size			0.004*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.000 (0.001)
Year FEs				Yes	Yes	Yes
Locality FEs					Yes	
Number of Private Schools						0.469
p-value						0.000
Local Development Funds						-0.072
p-value						0.000
Kleibergen-Paap rk Wald F						68.440
Statistic						
Hansen J Statistic						0.798
p-value						0.372
Observations	97896	97896	97896	97896	97896	97896

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the household-level.

Table 2.10: Conditional Effects of Risk Diversification

	(1)	(2)	(3)
	Informal Credit	Informal Credit	Informal Credit
	IV-2SLS	IV-2SLS	IV-2SLS
Risk Diversification Correct	-0.173***	-0.220***	-0.207***
	(0.029)	(0.036)	(0.027)
Male	0.007		
	(0.013)		
University Degree		-0.053***	
		(0.002)	
Top Income Qtile			-0.045*
			(0.024)
<i>Interactions</i>			
Male x Risk Diversification	-0.005		
	(0.029)		
University Degree x Risk Diversification		0.108***	
		(0.038)	
Top Income Qtile x Risk Diversification			0.085*
			(0.049)
Year FEs	Yes	Yes	Yes
Sociodemographic Controls	Yes	Yes	Yes
Kleibergen-Paap rk Wald F	31.760	24.835	7.691
Observations	97896	97896	97896

Standard errors are in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Notes: Standard errors clustered at the household-level.

Table 2.11: Regression Results of Financial Strain and Debt Incurrence

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
	Financial Strain OLS	Financial Strain OLS	Financial Strain OLS	Debt Incurrence OLS	Financial Strain OLS	Debt Incurrence OLS	Financial Strain OLS	Debt Incurrence OLS	Financial Strain IV-2SLS	Debt Incurrence IV-2SLS						
Measures of Financial Literacy																
Risk Diversification Correct	-0.031*** (0.005)		-0.036*** (0.005)		-0.008 (0.090)		-0.008 (0.090)		-0.008 (0.090)		-0.709*** (0.109)		-0.709*** (0.109)		-0.372*** (0.057)	
Number of Correct Answers		-0.003 (0.003)		0.005 (0.002)		0.005 (0.002)		0.005 (0.002)		-0.015 (0.046)		-0.015 (0.046)		-0.015 (0.046)		-0.372*** (0.057)
Constant	0.391*** (0.018)	0.381*** (0.018)	0.598*** (0.018)	0.575*** (0.018)	0.380*** (0.045)	0.380*** (0.045)	0.380*** (0.045)	0.575*** (0.018)	0.380*** (0.045)	0.400*** (0.075)	0.400*** (0.075)	0.400*** (0.075)	0.380*** (0.045)	0.908*** (0.055)	0.908*** (0.055)	1.166*** (0.092)
Observations	97896	97896	97896	97896	97896	97896	97896	97896	97896	97896	97896	97896	97896	97896	97896	97896
R-squared	0.030	0.029	0.034	0.033	0.029	0.033	0.029	0.033	0.029	0.028	0.028	0.028	0.029	-0.404	-0.404	-0.436
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sociodemographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kleibergen-Paap rk Wald F Statistic					62.368	62.368	62.368	62.368	62.368	68.440	68.440	68.440	62.368	62.368	68.440	68.440
Hansen J Statistic					1.421	1.421	1.421	1.421	1.421	1.321	1.321	1.321	1.954	1.954	0.002	0.002
p-value					0.233	0.233	0.233	0.233	0.233	0.251	0.251	0.251	0.162	0.162	0.967	0.967

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the household-level.

Table 2.12: Logit Results of Informal Credit Use, Financial Strain and Debt Incurrence

	(1)	(2)	(3)	(4)	(5)	(6)
	Informal Credit	Informal Credit	Financial Strain	Financial Strain	Debt Incurrence	Debt Incurrence
Measures of Financial Literacy						
Risk Diversification Correct	-0.020 (0.039)		-0.132*** (0.023)		-0.133*** (0.023)	
Number of Correct Answers		-0.029 (0.021)		-0.012 (0.013)		0.030** (0.012)
Male	0.109*** (0.036)	0.109*** (0.036)	-0.054*** (0.010)	-0.054*** (0.010)	0.010 (0.010)	0.009 (0.010)
<i>Age (Base Category: 18 ≤ age ≤ 24)</i>						
1. 25 ≤ Age ≤ 34	0.294*** (0.075)	0.294*** (0.075)	-0.029 (0.025)	-0.028 (0.025)	-0.087*** (0.025)	-0.086*** (0.025)
2. 35 ≤ Age ≤ 44	0.423*** (0.078)	0.424*** (0.078)	0.017 (0.027)	0.018 (0.027)	-0.054** (0.027)	-0.053* (0.027)
3. 45 ≤ Age ≤ 54	0.520*** (0.078)	0.521*** (0.078)	0.094*** (0.027)	0.095*** (0.027)	-0.054** (0.027)	-0.053* (0.027)
4. 55 ≤ Age ≤ 64	0.269*** (0.088)	0.268*** (0.088)	0.037 (0.033)	0.041 (0.033)	-0.190*** (0.032)	-0.183*** (0.032)
5. Age ≥ 65	-0.208* (0.108)	-0.211* (0.108)	-0.017 (0.039)	-0.011 (0.039)	-0.514*** (0.038)	-0.500*** (0.038)
University Degree	-0.515*** (0.049)	-0.510*** (0.049)	-0.014 (0.018)	-0.020 (0.018)	-0.021 (0.018)	-0.035* (0.018)
Employed	0.342*** (0.050)	0.341*** (0.050)	-0.047*** (0.017)	-0.047*** (0.017)	0.044** (0.017)	0.045*** (0.017)
<i>Marital Status: (Base Category: Married or Cohabiting)</i>						
1.Divorced	0.190*** (0.048)	0.188*** (0.048)	0.137*** (0.024)	0.139*** (0.024)	0.037 (0.024)	0.044* (0.024)
2.Widowed	0.167* (0.098)	0.165* (0.098)	0.101*** (0.038)	0.104*** (0.038)	0.091** (0.037)	0.097*** (0.037)
3.Single	-0.566*** (0.062)	-0.569*** (0.062)	0.104*** (0.022)	0.108*** (0.022)	-0.093*** (0.022)	-0.084*** (0.022)
HH Income Qtile 2	-0.383*** (0.050)	-0.383*** (0.050)	-0.038 (0.032)	-0.038 (0.032)	-0.040 (0.033)	-0.041 (0.033)
HH Income Qtile 3	-0.536*** (0.055)	-0.535*** (0.055)	-0.190*** (0.035)	-0.193*** (0.035)	-0.120*** (0.035)	-0.127*** (0.035)
HH Income Qtile 4	-0.838*** (0.064)	-0.835*** (0.064)	-0.297*** (0.037)	-0.301*** (0.037)	-0.173*** (0.037)	-0.183*** (0.037)
HH Income Qtile 5	-1.196*** (0.084)	-1.190*** (0.084)	-0.638*** (0.041)	-0.646*** (0.041)	-0.325*** (0.039)	-0.345*** (0.039)
Household Size	0.087*** (0.012)	0.086*** (0.012)	0.136*** (0.009)	0.137*** (0.009)	0.087*** (0.009)	0.089*** (0.009)
Constant	-3.252*** (0.159)	-3.217*** (0.161)	-0.590*** (0.086)	-0.635*** (0.088)	0.100 (0.086)	-0.016 (0.088)
Observations	97896	97896	97896	97896	97896	97896
Pseudo R2	0.073	0.073	0.023	0.023	0.029	0.028
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Locality Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the household-level.

Table 2.13: Regression Results of Informal Credit using the Interest Rate Compounding Question

	(1)	(2)	(3)	(4)	(5)	(6)
	Informal Credit OLS	Informal Credit IV-2SLS				
Interest Rate Correct	-0.007*** (0.001)	-0.004*** (0.001)	-0.002* (0.001)	-0.002* (0.001)	-0.002 (0.001)	-0.197*** (0.033)
Male		0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.005*** (0.001)
<i>Age Groups (Base Category: 18 ≤ Age ≤ 24)</i>						
1. 25 ≤ Age ≤ 34		0.005*** (0.002)	0.007*** (0.002)	0.006*** (0.002)	0.007*** (0.002)	0.007*** (0.002)
2. 35 ≤ Age ≤ 44		0.009*** (0.002)	0.012*** (0.002)	0.011*** (0.002)	0.012*** (0.002)	0.011*** (0.002)
3. 45 ≤ Age ≤ 54		0.010*** (0.002)	0.015*** (0.002)	0.014*** (0.002)	0.015*** (0.002)	0.010*** (0.003)
4. 55 ≤ Age ≤ 64		-0.004* (0.002)	0.004 (0.002)	0.004 (0.002)	0.005** (0.002)	-0.007** (0.003)
5. Age ≥ 65		-0.019*** (0.002)	-0.010*** (0.002)	-0.010*** (0.002)	-0.008*** (0.002)	-0.027*** (0.004)
University Degree		-0.027*** (0.001)	-0.016*** (0.001)	-0.017*** (0.001)	-0.015*** (0.001)	-0.000 (0.003)
Employed		0.007*** (0.001)	0.010*** (0.001)	0.010*** (0.001)	0.010*** (0.001)	0.009*** (0.002)
<i>Marital Status (Base Category: Married or Cohabiting)</i>						
1. Divorced		0.010*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	0.002 (0.003)
2. Widowed		0.005 (0.003)	0.005 (0.003)	0.005 (0.003)	0.005 (0.003)	0.001 (0.004)
3. Single		-0.016*** (0.001)	-0.014*** (0.001)	-0.014*** (0.001)	-0.014*** (0.001)	-0.026*** (0.003)
HH Income Qtile 2			-0.019*** (0.002)	-0.018*** (0.002)	-0.018*** (0.002)	-0.014*** (0.003)
HH Income Qtile 3			-0.026*** (0.002)	-0.025*** (0.002)	-0.023*** (0.002)	-0.017*** (0.003)
HH Income Qtile 4			-0.035*** (0.002)	-0.033*** (0.002)	-0.031*** (0.002)	-0.021*** (0.003)
HH Income Qtile 5			-0.041*** (0.002)	-0.039*** (0.002)	-0.035*** (0.002)	-0.014*** (0.005)
HH Size			0.004*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	0.000 (0.001)
Year FEs				Yes	Yes	Yes
Locality FEs					Yes	
Number of Private Schools						0.246
p-value						0.000
Local Development Funds						-0.021
p-value						0.000
Kleibergen-Paap rk Wald F						43.563
Statistic						
Hansen J Statistic						5.611
p-value						0.018
Observations	97896	97896	97896	97896	97896	97896

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the household-level.

Table 2.14: Regression Results of Informal Credit using the Inflation Rate Question

	(1)	(2)	(3)	(4)	(5)	(6)
	Informal Credit	Informal Credit	Informal Credit	Informal Credit	Informal Credit	Informal Credit
	OLS	OLS	OLS	OLS	OLS	IV-2SLS
Inflation Rate Correct	-0.000 (0.001)	0.001 (0.001)	0.002* (0.001)	-0.001 (0.001)	-0.001 (0.001)	-1.225 (0.777)
Male		0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.015** (0.008)
<i>Age Groups (Base Category: 18 ≤ Age ≤ 24)</i>						
1. 25 ≤ Age ≤ 34		0.005*** (0.002)	0.007*** (0.002)	0.006*** (0.002)	0.007*** (0.002)	0.007 (0.007)
2. 35 ≤ Age ≤ 44		0.009*** (0.002)	0.012*** (0.002)	0.011*** (0.002)	0.012*** (0.002)	0.051* (0.026)
3. 45 ≤ Age ≤ 54		0.010*** (0.002)	0.015*** (0.002)	0.015*** (0.002)	0.016*** (0.002)	0.070* (0.036)
4. 55 ≤ Age ≤ 64		-0.004* (0.002)	0.004 (0.002)	0.004 (0.002)	0.005** (0.002)	0.043 (0.027)
5. Age ≥ 65		-0.019*** (0.002)	-0.010*** (0.002)	-0.010*** (0.002)	-0.008*** (0.002)	-0.011 (0.011)
University Degree		-0.027*** (0.001)	-0.017*** (0.001)	-0.017*** (0.001)	-0.015*** (0.001)	0.059 (0.048)
Employed		0.007*** (0.001)	0.010*** (0.001)	0.010*** (0.001)	0.010*** (0.001)	-0.016 (0.017)
<i>Marital Status (Base Category: Married or Cohabiting)</i>						
1. Divorced		0.010*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	0.008*** (0.002)	-0.034 (0.028)
2. Widowed		0.005 (0.003)	0.005* (0.003)	0.005 (0.003)	0.005 (0.003)	-0.037 (0.029)
3. Single		-0.016*** (0.001)	-0.014*** (0.001)	-0.014*** (0.001)	-0.014*** (0.001)	-0.026*** (0.010)
HH Income Qtile 2			-0.019*** (0.002)	-0.018*** (0.002)	-0.018*** (0.002)	-0.009 (0.012)
HH Income Qtile 3			-0.026*** (0.002)	-0.025*** (0.002)	-0.023*** (0.002)	0.013 (0.026)
HH Income Qtile 4			-0.035*** (0.002)	-0.033*** (0.002)	-0.031*** (0.002)	0.015 (0.033)
HH Income Qtile 5			-0.041*** (0.002)	-0.039*** (0.002)	-0.035*** (0.002)	0.070 (0.071)
HH Size			0.004*** (0.000)	0.003*** (0.000)	0.003*** (0.000)	-0.004 (0.005)
Year FEs				Yes	Yes	Yes
Locality FEs					Yes	
Number of Private Schools						0.035
p-value						0.246
Local Development Funds						-0.005
p-value						0.333
Kleibergen-Paap rk Wald F						1.286
Statistic						
Hansen J Statistic						0.058
p-value						0.809
Observations	97896	97896	97896	97896	97896	97896

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the household-level.

Table 2.15: Regression Results of Financial Strain and Debt Incurrence using the Interest and Inflation Rate Questions

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Financial Strain	Financial Strain	Debt Incurrence	Debt Incurrence	Financial Strain	Financial Strain	Debt Incurrence	Debt Incurrence
	OLS	OLS	OLS	OLS	IV-2SLS	IV-2SLS	IV-2SLS	IV-2SLS
Interest Rate Correct	0.018*** (0.005)		0.040*** (0.005)		-0.061 (0.107)		-0.836*** (0.143)	
Inflation Correct		0.002 (0.005)		0.011* (0.005)		-0.219 (0.641)		-5.035 (3.211)
Constant	0.367*** (0.018)	0.375*** (0.018)	0.560*** (0.018)	0.576*** (0.018)	0.410*** (0.061)	0.501 (0.364)	1.035*** (0.082)	3.437* (1.824)
Obs.	97896	97896	97896	97896	97896	97896	97896	97896
R-squared	0.029	0.029	0.035	0.033	0.023	-0.019	-0.716	-24.392
Sociodemographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Locality Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kleibergen-Paap rk Wald F Statistic					43.563	1.286	43.563	1.286
Hansen J Statistic					1.070	1.271	1.986	0.001
p-value					0.301	0.259	0.159	0.977

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the household-level.

Table 2.16: Seemingly Unrelated Regressions

	(1) Informal Credit	(2) Informal Credit	(3) Financial Strain	(3) Financial Strain	(3) Debt Incurrence	(3) Debt Incurrence
Risk Diversification Correct	-0.002 (0.113)		-0.035*** (0.003)		-0.032*** (0.003)	
Number of Correct Answers		-0.005 (0.000)		-0.002 (0.229)		-0.003* (0.002)
Observations	97896	97896	97896	97896	97896	97896
R-squared	0.017	0.001	0.027	0.025	0.020	0.019

Standard errors are in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Table 2.17: Correlation Matrix of Residuals from Seemingly Unrelated Regressions

	Informal Credit	Financial Strain	Debt Incurrence
<i>Risk Diversification Model</i>			
Informal Credit	1.000		
Financial Strain	0.054	1.000	
Debt Incurrence	0.065	0.210	1.000
<i>Financial Literacy Score Model</i>			
Informal Credit	1.000		
Financial Strain	0.054	1.000	
Debt Incurrence	0.065	0.211	1.000

Table 2.18: Regression Results of Informal Credit using the Risk Diversification Question amongst Household Heads

	(1)	(2)	(3)	(4)	(5)	(6)
	Informal Credit					
	OLS	OLS	OLS	OLS	OLS	IV-2SLS
Risk Diversification Correct	-0.010*** (0.002)	-0.006*** (0.002)	-0.004* (0.002)	-0.003 (0.002)	-0.002 (0.002)	-0.243*** (0.044)
Male		-0.004 (0.003)	-0.002 (0.003)	-0.002 (0.003)	-0.002 (0.003)	0.002 (0.003)
<i>Age Groups (Base Category: 18 ≤ Age ≤ 24)</i>						
1. 25 ≤ Age ≤ 34		-0.011* (0.006)	-0.008 (0.006)	-0.009 (0.006)	-0.008 (0.006)	-0.016** (0.007)
2. 35 ≤ Age ≤ 44		-0.010* (0.006)	-0.008 (0.006)	-0.010 (0.006)	-0.009 (0.006)	-0.019*** (0.007)
3. 45 ≤ Age ≤ 54		-0.011* (0.006)	-0.006 (0.006)	-0.007 (0.006)	-0.006 (0.006)	-0.017** (0.007)
4. 55 ≤ Age ≤ 64		-0.027*** (0.006)	-0.017*** (0.006)	-0.018*** (0.006)	-0.017*** (0.006)	-0.033*** (0.008)
5. Age ≥ 65		-0.047*** (0.007)	-0.033*** (0.007)	-0.033*** (0.007)	-0.032*** (0.007)	-0.056*** (0.009)
University Degree		-0.040*** (0.002)	-0.021*** (0.003)	-0.022*** (0.003)	-0.020*** (0.003)	0.001 (0.005)
Employed		0.004 (0.003)	0.008** (0.003)	0.008** (0.003)	0.008** (0.003)	0.010*** (0.004)
<i>Marital Status (Base Category: Married or Cohabiting)</i>						
1. Divorced		0.012*** (0.003)	0.015*** (0.003)	0.015*** (0.003)	0.015*** (0.003)	0.014*** (0.004)
2. Widowed		0.002 (0.005)	0.007 (0.005)	0.007 (0.005)	0.007 (0.005)	-0.001 (0.006)
3. Single		-0.010*** (0.004)	-0.003 (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.004 (0.005)
HH Income Qtile 2			-0.022*** (0.003)	-0.022*** (0.003)	-0.021*** (0.003)	-0.017*** (0.004)
HH Income Qtile 3			-0.037*** (0.003)	-0.035*** (0.003)	-0.034*** (0.003)	-0.023*** (0.004)
HH Income Qtile 4			-0.044*** (0.004)	-0.042*** (0.004)	-0.039*** (0.004)	-0.027*** (0.005)
HH Income Qtile 5			-0.054*** (0.004)	-0.052*** (0.004)	-0.048*** (0.004)	-0.027*** (0.006)
HH Size			0.009*** (0.001)	0.009*** (0.001)	0.008*** (0.001)	0.007*** (0.001)
Year FEs				Yes		Yes
Locality FEs					Yes	
Number of Private Schools						0.176
p-value						0.000
Local Development Funds						-0.042
p-value						0.000
Kleibergen-Paap rk Wald F						64.738
Statistic						
Hansen J Statistic						0.216
p-value						0.642
Observations	39994	39994	39994	39994	39994	39994

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Table 2.19: Results of Informal Credit using the Financial Literacy Score amongst Household Heads

	(1)	(2)	(3)	(4)	(5)	(6)
	Informal Credit					
	OLS	OLS	OLS	OLS	OLS	IV-2SLS
Number of Correct Answers	-0.006*** (0.001)	-0.003** (0.001)	-0.001 (0.001)	-0.002* (0.001)	-0.002 (0.001)	-0.126*** (0.024)
Male		-0.004 (0.003)	-0.002 (0.003)	-0.002 (0.003)	-0.002 (0.003)	0.010** (0.004)
<i>Age Groups (Base Category: 18 ≤ Age ≤ 24)</i>						
1. 25 ≤ Age ≤ 34		-0.011* (0.006)	-0.008 (0.006)	-0.009 (0.006)	-0.008 (0.006)	-0.011 (0.007)
2. 35 ≤ Age ≤ 44		-0.010* (0.006)	-0.008 (0.006)	-0.009 (0.006)	-0.009 (0.006)	-0.011* (0.007)
3. 45 ≤ Age ≤ 54		-0.011* (0.006)	-0.006 (0.006)	-0.007 (0.006)	-0.006 (0.006)	-0.011 (0.007)
4. 55 ≤ Age ≤ 64		-0.026*** (0.006)	-0.017*** (0.006)	-0.018*** (0.006)	-0.017*** (0.006)	-0.030*** (0.007)
Age ≥ 65		-0.047*** (0.007)	-0.033*** (0.007)	-0.034*** (0.007)	-0.032*** (0.007)	-0.059*** (0.009)
University Degree		-0.040*** (0.002)	-0.022*** (0.003)	-0.022*** (0.003)	-0.020*** (0.003)	0.013* (0.007)
Employed		0.004 (0.003)	0.008** (0.003)	0.008** (0.003)	0.008** (0.003)	0.012*** (0.004)
<i>Marital Status (Base Category: Married or Cohabiting)</i>						
1. Divorced		0.012*** (0.003)	0.015*** (0.003)	0.015*** (0.003)	0.015*** (0.003)	0.013*** (0.004)
2. Widowed		0.002 (0.005)	0.008 (0.005)	0.007 (0.005)	0.006 (0.005)	0.000 (0.006)
3. Single		-0.010*** (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.002 (0.004)	-0.000 (0.005)
HH Income Qtile 2			-0.022*** (0.003)	-0.022*** (0.003)	-0.021*** (0.003)	-0.014*** (0.004)
HH Income Qtile 3			-0.037*** (0.003)	-0.035*** (0.003)	-0.034*** (0.003)	-0.019*** (0.005)
HH Income Qtile 4			-0.044*** (0.004)	-0.041*** (0.004)	-0.039*** (0.004)	-0.020*** (0.006)
HH Income Qtile 5			-0.054*** (0.004)	-0.052*** (0.004)	-0.048*** (0.004)	-0.012 (0.009)
HH Size			0.009*** (0.001)	0.009*** (0.001)	0.008*** (0.001)	0.007*** (0.001)
Year FEs				Yes		Yes
Locality FEs					Yes	
Number of Private Schools						0.414
p-value						0.000
Local Development Funds						-0.065
p-value						0.000
Kleibergen-Paap rk Wald F						66.627
Statistic						
Hansen J Statistic						2.246
p-value						0.134
Observations	39994	39994	39994	39994	39994	39994

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Table 2.20: Regression Results of Financial Strain and Debt amongst Household Heads

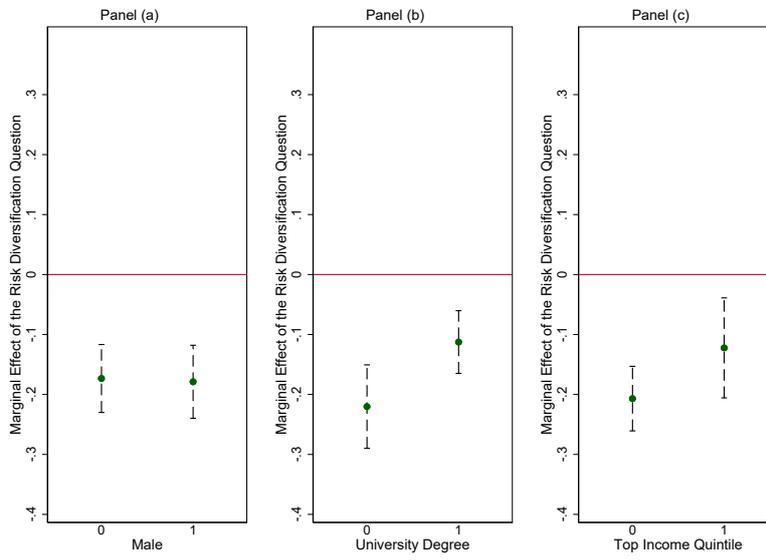
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Financial Strain OLS	Financial Strain OLS	Debt Incurrence OLS	Debt Incurrence OLS	Financial Strain IV-2SLS	Financial Strain IV-2SLS	Debt Incurrence IV-2SLS	Debt Incurrence IV-2SLS
Measures of Financial Literacy								
Risk Diversification Correct	-0.027*** (0.005)		-0.038*** (0.005)		0.058 (0.087)		-0.737*** (0.107)	
Number of Correct Answers		-0.001 (0.003)		0.001 (0.003)		0.017 (0.047)		-0.407*** (0.059)
Constant	0.42*** (0.021)	0.409*** (0.021)	0.484*** (0.021)	0.465*** (0.021)	0.381*** (0.044)	0.383*** (0.070)	0.796*** (0.054)	1.047*** (0.088)
Observations	39994	39994	39994	39994	39994	39994	39994	39994
R-squared	0.038	0.037	0.044	0.042	0.031	0.036	-0.424	-0.496
Sociodemographic Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Kleibergen-Paap rk Wald F Statistic					64.882	66.713	64.882	66.713
Hansen J Statistic					2.562	2.918	2.985	0.156
p-value					0.109	0.088	0.084	0.693

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

2.8 Figures

Figure 2.1: Conditional Effects of Risk Diversification



Note: Marginal effect of 'Risk Knowledge' at values 0 and 1 of the three conditioning variables. The dependent variable in all three panels is 'Informal Credit'. The estimates were calculated by augmenting equation (2.1) with an interaction term between risk and each individual-level characteristic. Solid vertical lines signify 95% confidence intervals. Red horizontal lines signify marginal effect of 0

Appendix 2.A Financial Literacy and Behaviour in Colombia

Whilst evidence of financial literacy levels within Latin American economies remains relatively limited, recent studies have allowed a better understanding of financial capabilities across the region and amongst Colombian consumers. Such studies include the 2013 Financial Capabilities Survey (FCS) implemented by the CAF in 4 Andean countries, including Bolivia, Peru, Colombia, and Ecuador. Following the methodology developed by the OECD International Network on Financial Education (INFE), the survey tested consumers' knowledge, attitudes, and behaviours in relation to a wide array of financial matters. In terms of knowledge, the 2013 FCS evaluated understanding of key financial concepts, including simple and compound interest rates, risk diversification, risk and reward, time value of money, inflation and numerical ability. Amongst its key results, the study revealed low levels of financial sophistication, with less than half of respondents in all 4 countries obtaining high scores in the financial knowledge section – measured by answering correctly 6 out of the 8 questions. Nevertheless, Colombia displayed the highest levels of financial knowledge amongst the sampled countries, with a score of 5.13 (CAF, 2014b).

In terms of financial behaviours, the 2013 FCS allowed the identification of practices that are pivotal for financial wellbeing, including saving, setting long-term financial goals, budgeting, debt accumulation, and paying bills on time, amongst others. Whilst all 4 Andean countries exhibited similar trends in financial attitudes, only 42% of Colombian respondents obtained a high score in the financial attitudes test – measured by answering correctly 6 of the 9 financial practices questions. By contrast, 51% and 43% of individuals in Bolivia and Ecuador achieved said score, respectively (CAF, 2014b). Additionally, and of particular interest to this thesis, a greater proportion of Colombians (62%) appeared to engage in detrimental behaviours, such as incurring debt to make ends meet, relative to individuals from Bolivia (56%), Peru (55%) and Ecuador (53%) (CAF, 2014b).

Furthermore, the recent 2020 OECD International Survey of Adult Financial Literacy has revealed not only the persistence of Colombians' low levels of financial sophistication, but also their striking underperformance when assessed against a more global sample.⁷ Similar to the 2013

⁷The survey covered 26 countries across Asia, Europe, and Latin America, including: Austria, Bulgaria,

FCS, the survey followed the OECD-INFE toolkit, and thus, measured key financial knowledge components – e.g. understanding of interest rates compounding, risk diversification, inflation, and time value of money, amongst others. Whilst across the full sample, 52.5% of individuals achieved the minimum target score of 5 or more correct questions, Colombia ranked last amongst the 26 surveyed countries, with only 28.8% of respondents achieving said score in the financial knowledge component. In addition, the low levels of financial education were reflected in the financial behaviour component, with Colombian respondents obtaining a score of 4.8 (the fourth lowest score), in relation the sample average of 5.3 (OECD, 2020).

Overall, whilst evidence on financial literacy in Latin America is relatively scarce, existing studies suggest that financial capability in the region has remained persistently low over time. On the one hand, studies such as the 2013 FCS indicate that Andean consumers, and indeed, Colombian consumers, lack an adequate understanding of basic financial concepts (e.g. interest rate compounding, inflation, and risk diversification), which may hinder their ability to achieve individual financial wellbeing. On the other hand, international studies such as the 2020 OECD survey have shown Colombia's acute financial literacy deficiencies, relative to rest of the world. These results indicate the need not only to develop efficient financial education programmes, but also to carry out studies which allow a deeper understanding of the detrimental consequences of low financial sophistication on economic behaviour and wellbeing.

Colombia, Croatia, Czech Republic, Estonia, Georgia, Germany, Hong Kong (China), Hungary, Indonesia, Italy, Korea, Malaysia, Moldova, Montenegro, Peru, Poland, Portugal, North Macedonia, Romania, Russia, Slovenia, France, Malta, and Thailand.

Appendix 2.B Financial Education in Colombia

The recent focus on financial literacy has been accompanied by a renewed interest on the role of financial education in improving consumers' financial sophistication, and thus, financial outcomes. In particular, both developed and developing economies have seen a rapid increase in the number of financial education policies in the last few years. For example, whilst the first financial education initiatives in the United States can be traced back to the 1950s and 1960s, at least 90 programs have been created in the past 20 years (Hastings et al., 2013; Álvarez-Franco et al., 2017). Similar efforts have also been seen across Latin American economies. These include Brazil and El Salvador, which introduced a national strategy for financial education in 2010 and 2008, respectively, as well as Chile and Mexico, which initiated the development of a similar policy in the last decade (Garcia et al., 2013). Likewise, Colombian authorities – in conjunction with public and private financial institutions – have sought to develop a series of financial education reforms and interventions in an effort to equip the population with better financial skills and awareness.

Whilst a lack of financial understanding and knowledge is associated to inefficient economic outcomes (e.g. lower savings, over indebtedness, use of informal credit), there is a wide consensus about the efficacy of financial education in helping consumers make well-informed financial decisions, and thus, ensure financial well-being (OECD, 2005). It is under this principle, that Colombia began enacting a series of institutional reforms, which promoted the effective provision of financial education to all consumers. Notably, such efforts were first highlighted by the Financial Reform of 2009 (Law 1328) which outlined the main tenets of Colombia's Consumer Protection Regime and which required financial entities to enhance transparency regarding their financial products (Reddy et al., 2013). Most importantly, the reform also mandated all financial institutions to provide adequate financial education to all consumers across the country (CIEEF, 2017).

Following the Financial Reform of 2009, the Colombian government enacted the Law 1450 of 2011, which embraced financial education as a core tenet of their National Development Plan 2010-2014 and which mandated the Ministry of National Education to incorporate basic financial and economic skills into the national school curricula (CIEEF, 2017). Consequently, the

Ministry – in conjunction with Asobancaria – ⁸ released the “Manual of Pedagogical Orientations in Financial Education” in 2013 and the “Teacher Training Manual” in 2014. In particular, these technical manuals contained the proposal for the design and implementation of financial education programs in schools, given the set of basic economic and financial competencies previously defined by the Ministry of Education (Asobancaria, 2016). These set of manuals were later implemented through a pilot program, which reached 120 schools and benefitted more than 900 teachers across the country (Asobancaria, 2016).

Moreover, the Decree 457 of 2014 resulted in the creation of the National Administrative System for Economic and Financial Education (SANEFF), which serves as a technical framework for the coordination of both public and private financial education initiatives with the purpose of achieving an adequate level of financial education for all the population (CIEEF, 2017). Likewise, the decree led to the Intersectoral Commission for Economic and Financial Education, which oversees the functioning of SANEFF. Amongst its key functions, the CIEEF is in charge of proposing the guidelines and methodologies for the adoption of a National Strategy for Economic and Financial Education (ENEFF), as well as of recommending the appropriate coordination mechanisms between the public and the private sector, which guarantee the effective implementation and execution of such national strategy (CIEEF, 2017).

The enactment of these laws and, in particular, the Financial Reform of 2009, fostered the creation of a series of financial education programs across the country. According to a survey conducted by Colombia’s Central Bank, 113 financial organisations had established 138 initiatives by 2016 (Cárdenas et al., 2017). In terms of target audience, these initiatives focus mostly on individuals over the age of 18 and school-aged children with each receiving 91 and 71 programs, respectively. These two groups are followed by the general population with 46 financial education programs, and women with 32 in total. Moreover, each of these programs have a set key of objectives, which can be classified according to the specific demographic qualities that they target. For example, the programs aimed at school-aged children have, as their main goals, the improvement of knowledge on financial matters and the development of basic financial capabilities. Likewise, the programs directed towards the adult population are mainly focused on improving levels of financial knowledge, as well as improving the management of personal

⁸Asobancaria is the National Association of Banking and Financial Institutions and serves a representative union of Colombia’s financial sector.

finances. Equally, amongst the initiatives aimed at women, the most common objective is management of personal finances and financial decision-making, followed by the improvement of saving behaviour (Cárdenas et al., 2017).

With regards to the specific financial themes and concepts that financial education programs focus on, 86 institutions develop initiatives centred on attitudes and perceptions toward savings and indebtedness, whilst 74 focus on the correct use of financial products and the importance of budgeting (Cárdenas et al., 2017). Other thematic approaches include attitudes towards consumption, use of credit and insurance, basic numeric abilities and retirement planning. Moreover, it is worth mentioning that face-to-face training, such as seminars and workshops, represent the most common approach adopted by educational programmes in Colombia, with 92% of financial institutions in the country reporting the use of this mechanism. This is followed by the provision of brochures and books, as well as by the use of financial education websites (Cárdenas et al., 2017). However, despite the development of multiple financial programs, the country lacks effective evaluation programs that assess the effectiveness of policies geared towards financial education. Consequently, whilst such policies intend to promote financial sophistication amongst consumers, they may be failing to achieve their ultimate outcome. Indeed, a simple examination of the IEFIC survey indicated no substantial increases in financial literacy levels throughout the period of analysis.

Overall, Colombia has undergone a major regulatory reform process aimed at fostering and guaranteeing financial education across the country. Notably, since the enactment of the 2009 Financial Reform, public and private financial institutions have developed a series of educational initiatives with the goal of improving consumers' financial literacy and economic outcomes. Whilst the particular objectives of these programs vary with the institution, most focus on improving individuals' general financial knowledge as well as their attitudes towards saving, over-indebtedness, and budgeting. Likewise, Colombian authorities have sought to strengthen financial literacy amongst children by incorporating financial skillsets into the national school curriculum. Together these series of initiatives signal the adoption of financial education as a key driver of the country's socioeconomic development.

Appendix 2.C Financial Behaviour and Literacy Questions in the IEFIC survey

Financial Behaviour Questions

1. In the last month, the household's expenses, relative to its income, have been:
 - a) Greater
 - b) Lower
 - c) Equal

2. In the months when household expenses have exceeded income, what have you done to cover this difference?
 - a) Accumulate Debt
 - b) Sell assets
 - c) Use savings
 - d) Ask relatives for help
 - e) Other

3. Have you obtained loans from loan sharks or "agiotistas"?
 - a) Yes
 - b) No
 - c) Do not know
 - d) Refuse to answer

4. Have you obtained loans from the local neighbourhood stores?
 - a) Yes
 - b) No
 - c) Do not know
 - d) Refuse to answer

Financial Literacy Questions

1. Suponga que Ud. Tiene \$100.000 en una cuenta de ahorros, y la tasa de interés que gana por estos ahorros es de un 2% por año. Si mantiene el dinero por 5 años en la cuenta, ¿cuánto tendrá al término de estos 5 años?
 - a) **Más de \$102.000**
 - b) Exactamente \$102.000
 - c) Menos de \$102.000
 - d) No sabe, no informa

2. Suponga que Ud. tiene \$100.000 en una cuenta de ahorros, la que paga un interés de un 1% anual. Ud. sabe también que la tasa de inflación es de un 2% anual. Después de un año, Ud. Podrá comprar:
 - a) Más de \$100.000
 - b) Exactamente \$100.000
 - c) **Menos de \$100.000**
 - d) No sabe, no informa.

3. La siguiente frase es verdadera o falsa: “Comprar una acción de una empresa es menos riesgoso que comprar con el mismo dinero varias acciones de distintas empresas”
 - a) Verdadero
 - b) **Falso**
 - c) No sabe, no informa

Chapter 3

Armed Conflict and Individual-Level Social Preferences: Evidence from Colombia

3.1 Introduction

From the weakening of the economy, to the erosion of civil liberties and the destruction of physical and human capital, civil conflicts pose a great threat to the political, social and economic stability of countries. The combination of adverse effects on pivotal elements for long-term economic development explains why warfare is often described as “development in reverse” (Collier et al., 2003). Whilst the consequences of war on infrastructure, human capital, and economic resources have been well-documented (Abadie and Gardeazabal, 2003; Collier, 1999; Collier et al., 2003, 2008), more is beginning to be understood about its consequences on the fabrics of society. On the one hand, war-related violence may severely erode trust levels, thereby disrupting social cohesion and weakening individuals’ collective action capacity (Posen, 1993). On the other hand, conflicts may result in greater cooperation, the strengthening of communities’ social ties and a better mobilisation of collective action, all of which emerge as a form of survival mechanism in the face of continuous violence and threats (Lyons et al., 1998; Pennebaker and Harber, 1993). Consequently, understanding these divergences in the effects of violence is key for the formulation of efficient post-conflict policies that elicit a strong recovery and that foster the emergence of new social dynamics that can change a nation’s socio-political structures.

Using data from the Colombian Longitudinal Study (ELCA), the first large-scale panel study in the country, this chapter examines the impact of armed conflict exposure on individual-level social preferences. In particular, we focus on outcomes that are paramount for the social and economic wellbeing of violence-afflicted communities. These include political polarisation – defined as an individual’s tendency to always vote for the same political party – and attitudes towards the use of violence, vigilante justice, and *mano dura* or “iron-fist” policies.¹ Notably, evidence indicates that polarisation may impede the effective provision of public goods (Alesina et al., 1999; Easterly and Levine, 1997), whilst also hindering the post-conflict economic recovery of violence-afflicted communities (Rohner et al., 2013). Likewise, lower group cohesiveness may undermine individuals’ collective action capacity and result in further violence and underdevelopment traps (Collier et al., 2003; Walter, 2004). Meanwhile, severe, punitive tactics, such as vigilantism and iron-fist policies imply an erosion of civil liberties and democratic institutions which may, in turn, perpetuate violence (Visconti, 2020). As such, understanding the impact of victimisation on the aforementioned outcomes remains key for understanding the socio-economic trajectories of afflicted communities.

To isolate the causal impact of civil conflict on individual-level social preferences, the chapter relies on a Difference-in-Differences (DiD) estimation method that exploits variation in the geographical and temporal distribution of conflict-related violence during the period 2013-2016. Additionally, across all specifications, we include municipality- and individual-level controls and fixed effects to further control for confounding factors that may bias the estimates.

The baseline findings indicate that municipality-level violence exposure is a significant determinant of individual-level social preferences and attitudes. In particular, respondents living in areas highly exposed to homicides, kidnappings, terrorist attacks, and forced displacement exhibit a significant fall in their favourable attitudes towards the use of violence, relative to lower exposure municipalities. Likewise, relative to low-exposure areas, municipalities with a high exposure to threats and forced displacement experience a significant fall in the likelihood of supporting iron-fist policies. Interestingly, however, a high exposure to threats is also associated with a significant increase in the likelihood of political polarisation. Thus, whilst exposure to

¹Iron-fist policies are characterised by repressive, militarised crime control measures that undermine procedural rights whilst incentivising informal police abuse (Holland, 2013). Examples of these policies include unlawful detentions, extrajudicial killings, and arbitrary punishments.

the conflict reduces support for violence and for policies that perpetuate conflict and violence itself, it also increases individual-level political polarisation.

The estimation results have important political and economic implications. First, lower preferences for the use of violence signifies the possibility of a strong post-conflict recovery which may be further encouraged by effective conflict resolution policies. Furthermore, the potential for an effective and peaceful resolution to the conflict may be further strengthened insofar as victimisation lowers support for the implementation of authoritarian policies that erode civil liberties and perpetuate violence. Nonetheless, an increase in political polarisation may also result in the disruption of communities' social cohesion and collective action capacity, thus potentially exacerbating violence, whilst also hindering the economic development of violence-afflicted communities.

The chapter contributes to the existing literature in three ways. First, it expands our understanding of the social legacies of violence by focusing on a set of outcomes that remain largely unexplored in the civil conflict literature. In particular, rather than focusing on outcomes related to trust, cooperation or altruism, we focus on attitudes towards the use of violence, vigilantism and iron-first policies, as well as political polarisation. Indeed, understanding how victimisation impacts preferences for such outcomes is of particular relevance in the Colombian context, where violence continues to be pervasive and vigilante groups have morphed into key paramilitary actors. Similarly, understanding whether violence exposure can alter preferences for "iron-fist" measures is critical given the involvement of past governments in justice policies linked to the erosion of human rights and civil liberties.² Likewise, whilst the impact of political polarisation on violence onset has been well documented, far less is known about the impact of civil conflict on the former.

Second, even though an increasing number of papers have sought to analyse the social consequences of civil conflict, most studies rely exclusively on post-conflict data, thus limiting our understanding of victimisation effects under different settings. Thus, the chapter addresses this gap by analysing victimisation effects in a context of active conflict and following the announce-

²During 2006-2009, the Colombian Army was involved in the so-called "False Positives" scandal for carrying out the extra-legal and unlawful killings of at least 6000 civilians. According to official reports, the killings were ultimately incentivised by the government's "iron-fist" strategies which prioritised and rewarded body counts above other metrics of success.

ment of the peace deal between the Colombian government and the Revolutionary Armed Forces of Colombia (FARC) — the country’s oldest rebel group. Third, and lastly, whilst most studies rely on repeated cross-sectional surveys, the chapter follows recent developments in the related literature – see, e.g. De Luca and Verpoorten (2015a,b) – and employs a DiD estimation strategy to get as close as possible to a causal interpretation of the relationship between victimisation and social outcomes.

The remainder of the chapter is structured as follows. Section 3.2 provides a historical overview of Colombia’s civil conflict. Section 3.3 presents the theoretical framework and reviews the literature on the social legacies of civil conflict. Section 3.4 describes the data and introduces the empirical model used throughout the analysis. Section 3.5 provides a discussion of the estimation results for individual-level social preferences. Section 3.6 discusses a set of robustness tests to assess the validity of the results. Finally, Section 3.7 presents some concluding remarks.

3.2 Overview of Colombia’s Armed Conflict

Throughout its history, Colombia has undergone three major periods of violence. These include: the 1000 Days War during 1899-1902; the political conflict known as *La Violencia* during 1948-1958; and, finally, the current conflict between the Colombian government, left-wing armed groups, such as FARC and National Liberation Army (ELN), and right-wing paramilitaries, such as the United Self-Defence Forces of Colombia (AUC) (Trejos, 2013).

The origins of the ongoing armed conflict can be traced back to the period known as *La Violencia*. Whilst the violence in this period was rooted in continuous years of political grievances and acute social polarisation, the assassination of the Liberal leader, Jorge Eliecer Gaitán, in 1948 was the ultimate catalyst of the following 10-year civil war between Conservative and Liberal supporters (Sierra, 2017). Although most of the armed groups involved in this conflict demobilised after the bipartisan coalition achieved in 1958, several armed forces remained active in rural areas of the country. Soon after, these groups evolved into left-wing rebel groups, particularly FARC in 1964 and ELN in 1965 (Sierra, 2017).

Although FARC and ELN lacked sufficient strength during their initial years of existence, these

groups gained important territorial and political control during the 1980s (Sierra, 2017). As Echandía (2000) notes, this newly gained control was maintained through the use of coercive and violent methods, such as massacres, intimidation of political leaders, and attacks on civilian populations, amongst others. Additionally, during this period of the conflict, FARC became increasingly involved in the emerging business of coca cultivation. Specifically, the group went from opposing its production in the 1970s, to imposing the so-called *Gramaje* taxes on coca farmers, production laboratories, and cargo planes in 1982 (Trejos, 2013). Notably, by the early 1990s, FARC was increasingly monitoring and controlling the activity of drug cartels across the country (Trejos, 2013). Unsurprisingly, such a control over the illegal drug market provided FARC with significant economic power. Although the true figures are unknown, estimates indicate that the group received roughly \$267 million annually from drug trafficking activities alone (McDermott, 2017).

At the same time, the rising levels of violence contributed to the creation of *grupos de autodefensa* – ‘self-defence’ groups across the country. As highlighted by Acemoglu et al. (2013), these groups were ultimately the consequence of the Law 48 of 1968 and the 1994 program, CONVIVIR, which allowed the creation of armed civilian watch groups in response to the growing violence from guerrilla forces. Unfortunately, the successive growth of these civilian groups occurred in tandem with the rising importance of drug cartels who, as mentioned earlier, were being monitored and policed by rebel groups like FARC. Thus, in order to preserve and guarantee their increasing wealth, drug cartels formed their own self-defence groups. However, the 1997 Constitutional Court’s decision to ban the use of weapons by CONVIVIR groups ultimately led to their transformation into right-wing paramilitary groups – most of which later coalesced into the AUC (Acemoglu et al., 2013).

The coexistence of left and right-wing armed group forces, in conjunction with a weakening of the Colombian state and the increasing role of drug trafficking in the war, led to the most violent phase of the conflict between 1996 and 2005 (Grupo de Memoria Histórica, 2013). During this period, the war turned into a vicious battle over land, territory and local power and expanded from secluded zones to economically-active and resource-rich areas (Gáfaró et al., 2014; Grupo de Memoria Histórica, 2013). This led rebel armed groups, particularly FARC, to experience their greatest military and territorial expansion in the history of the conflict, expanding from 5,800

members in 1991 to a total of 28,000 combatants in 2002 across 622 municipalities – roughly 60% of all municipalities in the country (Grupo de Memoria Histórica, 2013).

Unsurprisingly, violence against local communities also escalated sharply, with an increase in the levels of intimidation, aggression, murder and forced displacement of the civilian population. According to official estimates, more than 2 million individuals were forcefully displaced during this period of the conflict, whilst a person was kidnapped every 8 hours and a civilian or an army soldier fell in a landmine daily (Grupo de Memoria Histórica, 2013). This escalation of violence can be observed in Figure 3.1 which depicts the evolution of the country’s armed conflict since 1995. Specifically, the number of homicides, kidnappings and forcefully displaced individuals rose significantly in 1996 before reaching their highest level in 2002.

Interestingly, however, threats and terrorist attacks appear to be the exceptions in Figure 3.1, with both events peaking a decade after the aforementioned variables.³ While various factors could explain such a change in violence patterns, it is possible that the peace negotiations initiated in 2012 by the government and FARC contributed to this late increase in conflict intensity. In particular, while the negotiations and the subsequent ceasefires led to a decrease in the number of violent acts committed by FARC, peace was only partial as other rebel groups – such as ELN and FARC dissidents – remained active across the country. Thus, as Kreiman and Masullo (2020) note, these incomplete peace talks likely contributed to increased violence by other armed actors, particularly across communities that showed support for the peace deal, and thus, that appeared as sympathetic to FARC. Providing further support for the impact of the bilateral peace negotiations on violence levels, Prem et al. (2022) find that areas formerly dominated by FARC were increasingly targeted by armed actors excluded from the negotiations, with the aim of gaining control of these regions.

The long-lasting nature of the conflict has translated into acute human costs. In particular, combined estimates by the Unique Register of Victims (RUV) and the Historical Memory Group (GMH) suggest that during 1985-2013, roughly 200,000 people lost their lives, a further 52,000 were abducted or kidnapped, and approximately 4,700,000 individuals were forcefully displaced across the country (Grupo de Memoria Histórica, 2013). At the same time, these human costs

³Despite the late peak in terrorist attacks and threats, the evidence presented in section 3.5 suggests no differences in the effects of our conflict variables on individual-level social preferences.

have been accompanied by large welfare losses. Ibáñez and Vélez (2008) find that displacement has costed rural households 37% of their lifetime aggregate consumption, whilst Rodríguez and Sánchez (2012) show that violence has lowered education levels in high-conflict areas by roughly half a year. Likewise, Camacho and Rodríguez (2012) find that conflict-related violence has increased the likelihood of firm exit, thus worsening unemployment and poverty levels in afflicted municipalities.

Although a historic agreement was reached by FARC and the Colombian state in 2016, peace has yet to be achieved. On the one hand, in 2019, former FARC members withdrew from the peace deal and announced their decision to join rebel forces again. On the other hand, peace negotiations with the ELN have remained elusive until now, while several other criminal groups continue to threaten the livelihood and wellbeing of Colombians across the country. Similarly, the illegal drug trade continues to play a critical role in the conflict, with armed groups still fighting over the control of coca-growing areas and the cocaine production market.

Overall, we believe that the unique nature of Colombia's armed conflict makes the country an ideal case study. Notably, with 58 years of active violence, it remains one of the longest ongoing conflicts in today's world and one of the key determinants of the social, economic and political reality of the country. Unfortunately, as mentioned earlier, the consequences of violence have mostly been reflected in severe welfare losses which pose an additional threat not only to the livelihood of millions of Colombians, but also to the stability and development of the country. Furthermore, the coexistence of various ideological rebel groups and their specific geostrategic considerations (e.g. coca production) have caused violence to be experienced in differentiated ways both across the country and over time. In turn, such characteristic of the conflict ensures enough variation in the distribution of the conflict, and thus, allow us to capture the impact of violence on social preferences.

3.3 Literature Review

For years, understanding the key determinants of individual-level preferences has been at the heart of social science disciplines. Whilst standard economic theory traditionally assumed preferences to be exogenously determined and fixed, increasing evidence from behavioural and ex-

perimental economics indicate that preferences are malleable and often shaped by factors, such as cultural transmission (Akerlof and Kranton, 2000; Alesina, Giuliano and Nunn, 2013) peer relationships (Kremer and Levy, 2008; Herbst and Mas, 2015), historical events (Nunn and Wantchekon, 2011), and media exposure (Jensen and Oster, 2009; La Ferrara et al., 2012). In line with these studies, a growing body of research suggests that victimisation experiences may be key shapers of individual-level social preferences, such as trust, altruism, and political behaviour, amongst others (Cassar et al., 2013; Voors et al., 2012; Bellows and Miguel, 2006; Blattman, 2009).

As reported by Cardenas and Carpenter (2008), these individual-level preferences are associated with key developmental indicators, including market development, economic growth rates, public goods provision, and poverty. Consequently, analysing how violence exposure may alter individuals' intrinsic preferences remains pivotal for understanding the social, economic and political trajectories of violence-afflicted communities. Equally, examining the channels through which such impacts arise remains key for the design of post-conflict policies that guarantee an effective and enduring end to violence. In what follows, we start by discussing the key theoretical frameworks that explain how conflict-related violence may impact individual-level preferences and attitudes. Then, we proceed to review the existing empirical literature on the effects of violence exposure.

3.3.1 Theories on Victimisation and Individual-Level Preferences

Whilst the social legacies of violence continue to be a growing area of research in the field of economics, there exists a well-established literature both in evolutionary science and psychology that provides insights into how victimisation may alter individuals' intrinsic attitudes and preferences. According to the evolutionary theory, intergroup competition may have favoured the emergence of adaptive altruistic and social preferences that promote the success of one's own group, relative to opposing out-groups (Boyd et al., 2003; Henrich, 2004; Choi and Bowles, 2007; Bowles, 2008, 2009). To explain this shift in preferences, two key theoretical variants have emerged in the evolutionary literature, namely a purely genetic version and a culture-gene strand.

According to the purely genetic variant, intense forms of intergroup competition – i.e. war – can cause a direct shift in social preferences, such as trust, altruism and cooperation. However,

given our species' innate drive to guarantee intergroup success, such pro-sociality is directed exclusively towards in-group members and at the expense of excluding those deemed as outsiders or antagonists (Choi and Bowles, 2007; Bowles, 2008, 2009).

Similarly, the culture-gene coevolutionary version posits that between-group conflict shifts in-group social preferences, but it does so by first fostering the emergence of social norms and institutions that supports one's own group success relative to others (Henrich and Boyd, 2001; Henrich, 2004). To guarantee such intergroup dominance, evolutionary adaptation is believed to simultaneously create psychological responses that increase adherence to these norms and institutions in favour of socially delineated in-groups (Bauer et al., 2016). Thus, insofar as these social norms foster altruistic and cooperative behaviour and are internalised as individual motivations, intergroup competition could promote in-group prosocial preferences (Bauer et al., 2016). However, the parochial nature of such prosocial preferences could result in both a polarisation and exclusion process that are indicative of severe social withdrawal, rather than of socially vibrant and cohesive communities (Calvo et al., 2020).

Similar to the evolutionary theory, research in psychology suggests that exposure to violence may lead to changes in social preferences. However, rather than shifting preferences towards or against a particular group, such pro-sociality changes may occur in more general terms. For example, conflict-related trauma has been shown to result in post-traumatic stress disorder, thus making war victims prone to depression, anguish and isolation, whilst also leaving them with negative feelings about those around them (Ehlers and Clark, 2000; Galovski and Lyons, 2004). Consequently, such effects may result in weakened social ties and community cooperation, and thus, in political and social instability in war-torn communities. Similarly, the resulting feelings of fear, resentment and hatred often experienced by victims may lead to increased preferences for retribution and further violence against their perpetrators (Petersen, 2002; Bayer et al., 2007). By contrast, evidence from case studies show that conflict experiences may also result in "post-traumatic growth" (Tedeschi and Calhoun, 1996, 2004; Powell et al., 2003). In particular, conflict victims may exhibit greater spirituality and appreciation of life, as well as undergo positive changes in their political views and their valuing of social ties.

Overall, existing theories from the fields of evolutionary science and psychology suggest that

violence exposure results in various behavioural changes which, in turn, elicit key shifts in individuals' social preferences. However, despite a similarity in their predictions, a key distinction between these two theoretical frameworks must be highlighted. In particular, whilst evolutionary theory is predominantly rooted in inter-group conflict, and thus, in inter-group social attitudes, theories from psychology account for a broader exposure of violence that may lead to more general changes in individual-level social preferences. Given the particular context of Colombia, where the conflict is rooted in ideological differences, rather than racial or ethnic divisions, it is less clear whether social changes would be parochially motivated. Instead, we expect changes in individual-level preferences to occur in broader terms as suggested by the post-traumatic growth theory or as evidenced by post-traumatic stress disorder.

3.3.2 The Effect of Victimisation on Political Attitudes and Preferences

Early evidence on the social legacies of violence appears to support the “post-traumatic growth” theory. For example, Carmil and Breznitz (1991) show that Holocaust survivors are more religious and have more moderate political positions than other Israelis, whilst Punāmaki et al. (1997) show that Palestinians who survived traumatic events are more politically active. Nevertheless, whilst indicative of victimisation effects, such early analyses rely on exceedingly small samples, thus limiting the veracity of any inferences made from them. Fortunately, the recent interest in this area of research has been accompanied by a greater availability of micro-level data that has allowed the implementation of more advanced econometric studies.

Some of the earliest victimisation analyses can be traced back to Bellows and Miguel (2006, 2009). Using post-conflict data, the authors examine the legacies of Sierra Leone's civil war on political participation and social capital 3 to 5 years after the war. Their results indicate that individuals whose households faced violence directly are more likely to be active members of social and political groups, as well as more likely to have voted in post-war elections. Likewise, violence-afflicted areas display higher voter registration levels, higher community-meetings attendance, and greater community-group memberships per-household than other chiefdoms. This is supported by Cassar et al. (2013) who find that exposure to the Tajikistan civil war increased both community-group participation and community-meetings attendance almost a decade after the cessation of violence.

Blattman (2009) exploits a unique feature of the Ugandan conflict to examine the effect of violence on political participation amongst male ex-combatants. Specifically, reports from the war indicate that rebel recruitment patterns created quasi-exogenous variation in abduction, thus allowing for the isolation of violence effects. The results suggest that violence is positively and significantly associated with post-war political participation, particularly voting and community leadership. In line with these findings, Gáfaró et al. (2014) show that community-level exposure to Colombia's conflict significantly increases individual-level local collective action, particularly leadership roles in community organisations and attendance at political meetings. However, rather than reflecting greater social and civic engagement, the increase in participation appears to stem from armed groups' forceful control over communities and their local institutions.

Focusing on crime, rather than conflict-related experiences, Bateson (2012) uses micro-level data to examine the effect of past victimisation on individuals' political participation and policy preferences. The results indicate that, relative to their peers, crime victims exhibit greater political engagement and participation, defined by expressed political interest, participation in protests, and attendance to political, town and community-group meetings. Moreover, and of greater relevance to the present chapter, the evidence also indicates that crime victims exhibit a greater support for vigilante groups, authoritarian policies, and repressive policing strategies, relative to non-victims.

Using data from Brazil, Visconti (2020) analyse the effect of crime exposure on individuals' preferences for strong-arm policies, such as illegal detentions, state repression and arbitrary punishments. The results suggest that, relative to non-victims, individuals exposed to crime are more likely to support iron-fist policies which weaken civil rights and the rule of law. Moreover, echoing the effects found by Bateson (2012), crime exposure appears to make respondents less likely to view democracy as the best form of government, whilst more willing to accept repressive and authoritarian practices. According to Visconti (2020), such negative impact of victimisation on the perceived legitimacy of the political and judiciary system may, in turn, explain victims' increased support for strong-arm policies.

The impact of victimisation on support for severe, punitive justice policies appears to be robust across different settings and measures of violence exposure. Using data from Guatemala, Krause

(2014) finds that both victims of violent crimes and individuals who live in areas with a high gang presence exhibit greater support for extra-legal forms of policing, relative to their peers. Interestingly, the results suggest that even vicarious forms of violence-exposure, e.g. through news media coverage, significantly increases individuals' likelihood to support political candidates who centre their presidential campaigns on punitive and authoritarian policing tactics. Likewise, in Mexico, García-Ponce et al. (2018) find that exposure to violence, particularly from drug-gangs, increases individuals' support for vigilante justice and harsh punitive policing tactics, both of which erode the rule of law and weaken democratic institutions. Moreover, the support for severe punishments appears to increase with both the severity of the violent act, as well as with the innocence of the victim.

Overall, a growing body of evidence indicates that violence exposure is a key determinant of individual-level social preferences. On the one hand, victimisation experiences appear to promote attitudes that could imply a strong post-conflict recovery, including greater political participation and social engagement. On the other hand, exposure to violent events may also result in social attitudes that erode the rule of law and perpetuate conflict, including a greater support for vigilante justice and iron-fist policies.

Whilst these studies are indicative of the social legacies of violence, important gaps remain in the literature. First, analyses on attitudes towards vigilante groups and iron-fist policies focus predominantly on one dimension of violence, particularly crime. Consequently, this study contributes to the literature by examining whether conflict-related violence induces similar effects on individual-level policy preferences. Notably, even though conflict- and crime-related violence may share certain similarities (e.g. the use of force against an individual), experiences of crime tend to be one-off occurrences. By contrast, armed conflicts are often characterised by their long duration and the frequency of violence which imply a cumulative exposure to violent events through time. Therefore, such differences in the intensity and frequency of exposure may imply victimisation effects that differ from those found by the crime-related literature. Second, whilst studies have analysed the impact of violence on both policy preferences and political participation, less is known about its impact on political polarisation, which is one of the outcome variables explored in this chapter.

3.3.3 The Effect of Victimization on Attitudes towards Violence and other Social Outcomes

Whilst early analyses on violence exposure focused predominantly on political preferences, more recent studies have shifted their focus to individual-level preferences for conciliation and violence use. Focusing on the Colombian conflict, Tellez (2019) examines the impact of violence on individuals' attitudes towards peace and reconciliation. Notably, the findings suggest that individuals who live in highly violent areas in Colombia are more likely to support a peaceful resolution to the conflict and more inclined to grant concessions to combatants, relative to respondents in low-conflict areas. This is supported by Meernik (2019) who shows that individuals from highly afflicted communities in Colombia are more likely to seek peace and hold pro-reconciliatory beliefs, relative to their peers.

Similar evidence is also found outside the Colombian context. Using data from the conflict in Darfur, Hazlett (2020) examines the impact of violence on individuals' pro-peace and pro-violence attitudes. The results indicate that respondents who experienced violence directly are more likely to support peace, whilst also less likely to support the use of violence against their enemies. Similarly, in the North Caucasus region of Russia, Bakke et al. (2009) find that individuals who live in close proximity to violent areas are more likely to hold pro-reconciliatory attitudes, relative to respondents living in more peaceful zones.

Turning away from the impact of violence on preferences for peace, Gutierrez and Gallegos (2016) examine the impact of Peru's conflict on spousal violence. Their findings suggest that early exposure to violent events significantly increases the likelihood of physical violence between spousal partners, with the effect intensifying amongst individuals exposed to the highest levels of conflict intensity. Interestingly, the results appear to be driven by a normalisation of violence, with individuals exposed to a higher conflict intensity being more likely to justify the use of violence against women. Focusing on the Rwandan genocide, La Mattina (2017) examines the impact of past violence exposure on individuals' aggressive behaviour, particularly spousal violence. The results suggest that women who married after the genocide are roughly 5.07 percentage points more likely to experience physical violence from their spouse, relative to women who married before. Moreover, as expected, the effects intensify for women living in areas with

a high genocide intensity.

Exploiting the uneven geographic distribution of violence in Colombia, Noe and Rieckmann (2013) find that exposure to high district-level incidence of combat to increase the probability of women reporting physical violence by their partners. Notably, similar to Gutierrez and Gallegos (2016), the authors suggest the effects may be driven by key behavioural changes which result in a greater acceptance of violence amongst those exposed to the conflict. Consequently, the present chapter contributes to this line of research by examining the impact of conflict-related violence on preferences towards the use of violence in general, rather than towards spouses exclusively.

Other key studies have found an impact of conflict-related violence exposure on trust (Cassar et al., 2013), altruism, risk preferences and impatience (Voors et al., 2012), in-group egalitarianism (Cecchi et al., 2016; Bauer et al., 2014), public-good contributions (Gilligan et al., 2014; Hopfensitz and Miquel-Florensa, 2013), family comfort and lack of conflict (Annan et al., 2011), and trustworthiness and cooperation (Bauer et al., 2018; Gneezy and Fessler, 2012; Becchetti et al., 2014).

3.3.4 Estimating the Causal Effect of Violence on Social Attitudes and Preferences

Whilst the growing literature on the social legacies of violence indicates the existence of key victimisation effects, these analyses face various econometric issues that pose significant challenges for the identification of causal effects. First, omitted variables may drive the observed relationship between violence exposure and social outcomes. For example, if individuals who display greater levels of cooperation and leadership are more likely to participate in collective action, whilst simultaneously more likely to experience violence, then failing to account for such traits would bias the victimisation estimates upwards. Second, reverse causality may also bias conflict analyses. As noted by Calvo et al. (2020), rebel forces could systematically target areas that exhibit greater levels of social capital and collective action to amplify both the reach of their attacks and their disruption of socially cohesive communities. Alternatively, they could attack less unified areas as means to ignite resentment and divisions that could, in turn, strengthen their dominance over such communities. Third, and lastly, selection bias could also limit one's

ability to identify causal victimisation effects if the war systematically changes the composition of sampled communities, for example, by inducing the less socially motivated individuals to migrate and not return.

To bypass the aforementioned issues, a handful of papers have relied on the 3-step approach implemented by Bellows and Miguel (2009) in their analysis of the Sierra Leone civil war. First, to account for potential confounders, these papers control for an extensive set of pre-war household characteristics, including community-group leadership and participation and wealth. Second, given that different areas may experience more intense violence due to unobservable factors, these analyses include local fixed effects – mainly at the village level – to isolate the variation in violence exposure within these local areas. Consequently, the identification strategy relies on the assumption that within-village violence exposure is random, conditional on household and individual characteristics. Third, as a robustness test, these papers estimate the effects of violence on subsamples for which victimisation was unlikely to be systematic. For instance, this includes respondents living in villages where combatants were less likely to have an extensive knowledge of the community, and thus, where inhabitants were less likely to be systematically targeted.

Whilst a significant number of analyses rely on these strategies, recent papers have implemented various econometric techniques which seek to tackle the causality nexus more directly. This includes instrumental variable approaches, DiD models, as well as matching techniques.

Using an IV estimation strategy, Voors et al. (2012) examine the effect of civil conflict on altruism, and risk and time preferences four years after Burundi's conflict. To circumvent potential sources of endogeneity, they use two geographical variables as instruments for conflict exposure. In particular, given that the conflict was most intense near the country's capital, they use distance to Bujumbura and geographical remoteness – as proxied by altitude. Their IV-2SLS results indicate conflict-exposure leads to greater prosocial behaviour and time and risk preferences. In particular, their estimated coefficients indicate community-level victimisation leads to a 0.49, 0.26, and 0.27 increase in altruistic preferences, risky behaviour and discount rates, respectively.

Gilligan et al. (2014) analyse the effect of district-level violence on social cohesion 3 years after the cessation of the Nepalese civil war. To identify the causal effects of conflict-related violence, their paper matches areas with above-median fatality levels to those with no intense violence and controls for various potential confounders, e.g. ethnic and caste composition, employment, population size, and socioeconomic development, amongst others. Their results indicate that community-level victimisation leads to greater prosocial behaviour. In particular, exposure to fatal wartime violence increases public-good contributions and trust-based transactions by 16 and 7 percentage points, respectively. Moreover, whilst no effect of conflict exposure was found on risk preferences, violence-afflicted communities appear to exhibit greater voter turnout rates and community-group activity than matched non-violence areas.

De Juan and Pierskalla (2016) use an IV approach to assess the effects of civil war on trust in Nepal. Unlike most other studies that analyse victimisation effects years after the cessation of war, their paper employs data collected immediately after a ceasefire and focuses on a specific dimension of trust, namely trust in the national government. To capture exogenous variation in violence exposure, they use the minimum distance from the respondents' district to the closest districts in which Nepal's civil war initially started. In particular, distance acts as a proxy for the length of time local areas were exposed to violence, thus predicting the total number of killings in the region. Moreover, they also use the respondents' district's level of elevation as an instrument, as areas at lower levels were more accessible to troops, and thus, more likely to experience a higher casualty count. Their findings suggest that civil war related violence leads to a negative and significant decrease in political trust, even after controlling for individual-level covariates and district fixed-effects. These results differ from the positive inter-personal trust effects found by Gilligan et al. (2014) 3 years after the cessation of war in Nepal, and thus, highlight the conditionality of victimisation effects on both the time frame and social behaviour dimension being analysed.

Rohner et al. (2013) examine the effect of civil conflict on interpersonal trust and ethnic identity 3 years after the 2002-2005 outburst of violence in Uganda. To account for potential endogeneity, they rely on an IV estimation strategy that exploits a key political shock. Namely, the United States' declaration of the Lord's Resistance Army (LRA) as a terrorist organisation and the subsequent withdrawal of the Sudanese government's support for the armed group. Whilst

having no direct impact on trust levels, these events led to a military crackdown on the LRA which intensified violence, particularly in areas near Sudanese territory. Their IV-2SLS results indicate that district-level victimisation induces a significant fall in trust towards other Ugandans, whilst increasing ethnic identity. Interestingly, both trust in known people and relatives are unaffected, thus providing support for the evolutionary theory's hypothesis that violence undermines social attitudes towards out-group members.

Calvo et al. (2020) examine the effect of Mali's armed conflict on social capital, particularly membership of community associations. To isolate the causal impact of local-level violence on social capital, they employ both a DiD model and an IV estimation strategy. Given variations in the weather have often led to increased violence, mainly in areas with pre-existing tensions, they use an interaction between precipitation and local historical tensions to instrument their victimisation measure. Their results indicate that local-level exposure to violent events significantly increases participation in kinship-based associations and this effect is stronger in polarised communities. Thus, rather than reflecting increased social participation, the war appears to have resulted in the exacerbation of community boundaries which threaten to worsen social and ethnic divisions further. This is confirmed by their analysis on trust, which suggests that individuals in violence-afflicted areas exhibit greater distrust towards those with different political opinions and those with a different nationality.

Focusing on local collective action, De Luca and Verpoorten (2015a) estimate the effect of conflict-related violence on civic and political participation in Uganda. Their paper relies on data collected not only during and after the peak of the civil conflict, but also prior to the escalation of violence. Consequently, their estimation strategy relies on a DiD model in which the treatment variable measures the number of district-level conflict event days. As such, their analysis estimates individual-level differences in political participation across areas with different levels of violence exposure through time. Their analysis suggests that, relative to low-violence intensity areas, high-violence-afflicted districts exhibited greater political discussions during the conflict and this effect remained in the post-violence period, including 2 and 6 years after the war. Likewise, violence exposure led to greater community group attendance, but the effect emerged only after the war ended. Moreover, whilst no differential effect of violence was found on voter turnout during the period of conflict, their results suggest that violence-afflicted areas

experienced a significant decline in participation in post-conflict elections, relative to other areas.

Whilst the DiD estimation models, combined with the inclusion of several individual and district-level controls, seek to uncover the causal effect of violence exposure on political participation, De Luca and Verpoorten (2015a) probe the robustness of their estimates by using distance to Sudan as an instrument for their treatment variable. Given the LRA were allowed to operate on Sudanese territory, the conflict became particularly intense in areas near the border, making distance a good predictor of conflict intensity. The IV-2SLS analysis confirms the initial DiD evidence. That is, relative to low-intensity areas, high-violence-afflicted districts experienced a significant increase in social and political engagement both during and after the conflict. Interestingly, however, the negative effect on post-electoral participation is no longer significant after instrumenting for violence.

To further uncover the social effects of war in Uganda, De Luca and Verpoorten (2015b) estimate the effect of violence on trust and associational membership. Similar to their previous analysis, they employ a DiD estimation method and analyse the logged number of violent events at the district-level. Their results indicate that victimisation lowered both inter-personal trust and associational membership in high-intensity violence areas when the conflict was still ongoing. In particular, doubling the number of LRA battle events caused a 0.03 and 0.08 decrease in interpersonal trust and community group participation, respectively. Most importantly, analyses of the post-war data highlight the importance of time effects. Particularly, 5 years after the cessation of war, individuals in high-violence-afflicted districts exhibited no differential trends in generalised trust, whilst their participation in civil organisations was higher than in low-violence districts.

Overall, the empirical evidence highlights key causal effects of violence on social preferences and attitudes. Notably, individuals exposed to violence appear to exhibit greater socio-political behaviour, than their less affected counterparts. This includes greater participation in civic organisations, higher community-group meetings attendance, and greater political participation, amongst others. Importantly, however, some of these studies also reveal the parochial nature of these social motivations. Thus, rather than reflecting social cohesion and vibrancy, such effects may mask important divisions which may threaten the social stability of violence-afflicted com-

munities.

To contribute to this line of research, we examine the impact of Colombia's ongoing conflict on individual-level social preferences. However, unlike most of the previously discussed analyses which rely on an IV strategy, our empirical approach is largely motivated by the DiD analyses of De Luca and Verpoorten (2015a,b) on Uganda. Indeed, such an estimation technique would allow us to exploit a key characteristic of the Colombian conflict, namely its uneven geographic distribution of violence. As explained by Salas-Salazar (2016), specific geostrategic considerations, such as coca production have shaped the interplay between the various rebel groups and the Colombian army and, in turn, caused violence to be distributed in a differentiated way. Thus, while the conflict has had detrimental consequences at the national-level, particular departments, such as Antioquia, Meta, Caquetá, and Norte de Santander continue to face disproportionate levels of conflict-related violence, relative to the rest of the country. Consequently, our estimation strategy exploits such variation and compares the change in individual-level social preferences between high-violence municipalities (treatment group) and low-violence municipalities (control group).

Additionally, as explained in the methodology section, a DiD strategy would allow us to mitigate the risk of potential unobserved heterogeneity between the treatment and control groups which could, in turn, bias our estimates. However, given the lack of pre-conflict data on individual-level social preferences, we are unable to completely rule out violations of the common trend assumption which DiD estimates rest upon. Instead, we carry out various robustness tests – such as sample restrictions and endogeneity checks – to mitigate concerns that our estimates are driven by unobserved factors related to the characteristics of our treatment and control groups. A more detailed discussion of our empirical strategy and its limitations is presented in the following section.

3.4 Data and Methodology

3.4.1 Data

This chapter employs two sources of data to examine the plausibly causal impact of civil conflict on social preferences and attitudes. Individual-level data were obtained from the first large-

scale panel study in the country, the ELCA, of the University of Los Andes. During 2010, 2013, and 2016, the survey followed about 10,800 households across both urban and rural areas of the country, with the purpose of identifying socioeconomic changes faced by individuals and households over the years. The survey employs a probabilistic, stratified, multi-stage, clustered sampling framework, with municipalities as the primary sampling units.⁴ The rural sample is representative of small agricultural producers from 4 microregions, including the Middle-Atlantic, Central-East, Cundi-Boyacense, and the coffee-growing regions and cover 8 out of the 32 departments in the country. Meanwhile, the urban sample is representative at the national level of social strata 1-4 in 5 geographical regions,⁵ including Bogotá, the Atlantic, Oriental, Central, and Pacific regions and cover a total of 20 departments.⁶ Moreover, although the highest strata (5-6) are excluded from ELCA, the data remains representative of the population as the majority of it is distributed across the lower-middle strata, particularly levels 1-3. Notably, while recent estimations by the National Department of Statistics (DANE) indicate that poverty levels have declined over the years, their results suggest that 80% of Colombians continued to be distributed across the lower 3 strata by 2018 (Portafolio, 2018b).

For the baseline wave, households were interviewed during the first semester of 2010. The same households were then re-interviewed in 2013 and 2016. Across the 3 waves, ELCA compiles detailed information of a core group of individuals, including the head of the household, their spouse and children who were under the age of 10 when the baseline survey took place. Information on the sociodemographic characteristics of other household members is also collected. Additionally, the core group of respondents are tracked in the follow-up surveys if the original household splits or migrates to a municipality located no more than 90 minutes away from any other municipality sampled by ELCA (Tibavisco and Castaño, 2017). Such tracking of migratory movements has increased the geographical scope of ELCA. In particular, whilst the 2010 baseline wave covered 80 municipalities, the 2016 survey covered 235 municipalities to follow the

⁴Colombia is politically and administratively divided into 33 divisions, including 32 departments and the capital district, Bogotá. The departments, which are highest administrative-level units, are principally composed by municipalities of which there are currently 1123. Other special divisions include provinces and indigenous territories.

⁵Colombia's stratification system classifies residential areas into 6 distinct strata (estratos), with level 1 capturing the lowest income areas and 6 the richest zones. The system is applied according to housing characteristics and it is used to subsidise the public utilities and services of households in the poorest strata (1, 2, and 3) through the contributions of households in the richest strata (5, and 6).

⁶The combined urban and rural samples cover 23 out of the 32 departments in Colombia. These include La Guajira, Magdalena, Cesar, Casanare, Arauca, Bolívar, Atlántico, Huila, Córdoba, Sucre, Santander, Norte de Santander, Meta, Cundinamarca, Boyacá, Antioquia, Caldas, Quindío, Risaralda, Valle del Cauca, Cauca, Nariño, and Tolima

same respondents from the baseline wave.⁷

Amongst its key variables, ELCA contains detailed socioeconomic information for individuals, such as employment, education, income and consumption, and land ownership. The survey also compiles detailed information at the household-level, including experiences of adverse shocks and access to financial services and social benefits programs. Moreover, the 2013 and 2016 follow-up surveys contain a politics module designed to capture various key socio-political outcomes, including political ideology, electoral behaviour, social capital and cultural values and norms. The politics module was administered to a single member of the household, namely the head of the household or their spouse, with random assignment whenever both members were available. Consequently, the analysis is restricted to heads of households and spouses who completed the politics module in the 2013 and 2016 waves. The sample was further restricted to individuals who did not migrate in between waves, reason for this is explained in the methodology section below. This results in an unbalanced panel of 15187 observations distributed across 186 municipalities and consisting of 7938 and 7249 respondents in the 2013 and 2016 waves, respectively.

To understand the effect of violence on social attitudes and preferences, this chapter relies on four particular questions from the politics module which capture key outcomes, including preferences for the use of violence, attitudes towards vigilante justice and iron-fist policies, and individual-level political polarisation. These questions are worded as follows:

1. Now I am going to read you some statements and ask you to tell me if you totally agree, agree, disagree, or totally disagree:
 - a. Sometimes the use of violence is justified. (**Use of Violence**)
 - b. In order to capture criminals, it is advisable that authorities break the law sometimes. (**Iron-fist Policies**)
 - c. When the state does not punish criminals, it is acceptable for people to do justice on their own. (**Vigilante Justice**)
2. Would you say you...? (**Political Polarisation**)
 - a. Always vote for the same political party

⁷The overall attrition rate was 6.0% and 4.8% for the 2010-2013 and 2013-2016 periods, respectively.

- b. Vote for the same political party in most elections
- c. Vote for different political parties in different elections
- d. Always vote blank

The outcomes of interest were all coded as binary variables. The use of violence is a binary variable that is equal to 1 if an individual *totally agrees* or *agrees* that the use of violence is sometimes justified and takes the value 0 if the respondent indicates they *disagree* or *totally disagree* with the use of violence. Moreover, the variable iron-fist policies takes value 1 for individuals who *totally agree* or *agree* with the statement that state authorities should be allowed to break the law in order to capture criminals and is equal to 0 for individuals who *disagree* or *totally disagree* with the same statement. Likewise, vigilante justice is a dummy that takes the value of 1 if a respondent *totally agrees* or *agrees* that citizens should make justice on their own whenever the state fails to punish criminals and takes the value of 0 if an individual *disagrees* or *totally disagrees* with such statement. Lastly, the variable on political polarisation is equal to 1 if the individual reports *always voting for the same political party* and takes value 0 if the respondent reports *voting for the same party in most elections or voting for different parties in different elections*.

It is important to note that “always vote blank” responses were omitted from the baseline analysis. Notably, while the tendency for an individual to always vote for the same political party could help us capture some facets of polarisation, e.g. the propensity to dislike or distrust those from other parties - blank votes could potentially capture other factors like voter apathy or general disenchantment that do not necessarily translate into a polarised society. Nevertheless, we test the sensitivity of our results to the inclusion of these individuals in our sample of analysis. These estimates are reported in the robustness section.

Table 3.1 reports the responses to the social preferences questions in the 2013 and 2016 waves. 20% of individuals totally agree or agree with the use of violence in the 2013 round, whilst roughly 23% totally agree or agree with the same statement in the 2016 wave. Moreover, approximately 29% and 32% of respondents show support for vigilante justice in the 2013 and 2016 waves, respectively. Similarly, in 2013, 34% of the sample holds favourable attitudes towards iron-fist policies, whilst 33% totally agree or agree with such repressive policies in 2016. Finally,

roughly 31% of respondents report always voting for the same political party in the 2013 wave, whilst only 25% of the 2016 sample reports such polarised voting patterns.

Table 3.2 provides summary statistics for the set of household and individual-level controls included throughout the analysis. Roughly 41% and 39% of respondents are male in the 2013 and 2016 waves, respectively. Moreover, across both waves, roughly 69% of individuals are employed, approximately 9% report being single, and 4% have higher education. Furthermore, the average age is 46 in the 2013 wave and 49 in the 2016 round. Likewise, there is a high level of religiosity in the sample, with nearly 97% and 96% of households reporting being religious in the 2013 and 2016 waves, respectively.⁸ Meanwhile, across both waves, roughly 53% of individuals live in urban areas, whilst the average household size across is 4.

The individual-level data from ELCA were complemented with municipality-level data obtained from the Centre for Economic Development Studies (CEDE). By consolidating information from various Colombian organisations and governmental entities, CEDE has compiled a unique panel dataset which contains an extensive array of municipality-level measures, including fiscal, demographic and civil conflict variables for the period 1993-2019. Given this chapter relies on the last two available waves of ELCA, the analysis employs municipality-level variables measured over the period 2013-2016 and which are time-invariant – i.e. they have one value over the period of analysis. In terms of municipality-level characteristics, the analysis controls for population size, municipality-level GDP, the total number educational institutions, and indices of electric and sewage coverage. Panel A of Table 3.3 shows the summary statistics for the full set of municipality-level characteristics used throughout the analysis.

In terms of our explanatory variables, we employ 5 measures of conflict-related exposure collected by CEDE using data from the RUV.⁹ These include homicides, kidnappings, terrorist attacks, and threats.¹⁰ Similar to the existent literature, we use the total number of each violent event at the municipality-level. The summary statistics of these variables are reported in Panel B of Table 3.3. Across the period 2013-2016, the average municipality-level occurrence

⁸The measure on religion is captured by a binary variable which is equal to 1 for households who acknowledge to profess a particular religion – e.g. Catholicism, Protestantism, Mormonism, etc. – and 0 otherwise.

⁹The RUV is a database compiled by the Unit for Victims, with the purpose of maintaining a record of the population victimised in the armed conflict.

¹⁰The RUV defines homicides as the violent deprivation of life caused by the armed conflict.

of homicides and kidnappings were 50 and 1.60, respectively. Moreover, an average of 2321 individuals were forcefully displaced from the municipalities sampled in the ELCA. Lastly, on average, these areas experienced 697 threats and 36 terrorist attacks during 2013-2016.

To understand how our conflict-exposure variables are distributed in the sample, Figure 3.2 depicts the histogram of each violent event used in the analysis. Rather than being normally distributed, our key independent variables appear to be skewed right, with a high occurrence of zeros. Moreover, with the exception of kidnappings, all our violence measures exhibit important outliers; that is, municipalities which experience extreme levels of conflict-related violence, relative to the rest of the sample. To account for the distribution of the data depicted in Figure 3.2, we categorise each continuous violence measure into quintiles and define the treatment groups as individuals living in municipalities in the top quintile of each violence measure.¹¹

Finally, to provide a visual representation of how the conflict is geographically distributed across our sample, Figures 3.3–3.7 map the municipalities included in the study and the total number of violent events (in nominal values) that they were exposed to during 2013-2016.¹² In terms of geographic coverage, the sample covers 186 municipalities located across the Caribbean, the Andean, the Pacific and the Orinoco regions. Moreover, and in line with reports by the National Centre for Historical Memory (CNMH), the incidence of violence appears to be densely distributed across municipalities in the northern, western, and central departments of the country, such as Antioquia, Huila, Nariño, and Valle del Cauca. Interestingly, although the levels of exposure tend to change with respect to the violence measure under consideration, the highest levels of conflict-exposure are usually observed across the same regions. Moreover, from these affected departments, 21 municipalities fall in the top quintile of all conflict-exposure measures we consider.¹³ This relationship is further supported by the strong, positive correlation between our violence exposure measures shown in Table 3.4.

¹¹We also experimented with the top decile of each exposure measure and obtained robust effects on preferences for the use of violence and political polarisation. However, unlike the main estimates we obtained in section 5, we found a positive differential effect both terrorist attacks and homicides on preferences for vigilantism, as well as a positive differential effect of threats on preferences for iron-fist policies.

¹²Municipalities in the top quintile of each violence measure are highlighted in dark red.

¹³These municipalities include Apartadó, Bogotá, Cajibío, Cali, Chaparral, Cúcuta, Ibagué, Ipiales, Jamundí, Medellín, Montelíbano, Neiva, Ocaña, Palmira, Pasto, Popayán, Riohacha, Turbo, Valledupar, Villavicencio, and Vistahermosa

3.4.2 Methodology

To explore the effect of Colombia’s ongoing conflict on social preferences and attitudes, this chapter relies on a DiD model that exploits variation in the intensity of violence across municipalities over time. Given the key outcomes of interest are available only in the last two waves of ELCA, the treatment variable captures variation in the occurrence of violent events at the municipality-level from 2013 to 2016. In particular, the treatment group is composed of individuals living in municipalities where high intensity violence took place, defined by areas in the top quintile of each respective violence measure. Meanwhile, the control group includes respondents in areas of low conflict exposure in the same time period, i.e. municipalities in the bottom 4 quintiles. As such, the DiD model compares the change in social preferences and attitudes during 2013-2016 across municipalities with low violence exposure and areas with high violence exposure. Given the DiD estimation strategy compares the differences in social preferences between individuals living in high and low-intensity municipalities during 2013-2016, the sample was ultimately restricted to respondents who did not migrate in between these waves. Following De Luca and Verpoorten (2015a), we employ a DiD specification that takes the following form:

$$Y_{itm} = \alpha_1 year_{2016} + \alpha_2 (V_{2013-2016,m} * year_{2016}) + X'_{i,t,m} \gamma + (D'_m * year_{2016}) \delta + \mu_i + \epsilon_{i,t,m} \quad (3.1)$$

where i denotes individuals, m municipalities, and t survey years – i.e. 2013 and 2016. The variable y_{itm} is a binary variable that captures the different outcomes of interest, including attitudes towards the use of violence, vigilante justice and iron-fist policies, as well as individual-level political polarisation; $year_{2016}$ is a dummy equal to 1 for respondents in the 2016 survey, and $V_{2013-2016,m}$ is a binary measure that captures high values of municipality-level violence exposure over the period 2013-2016, as captured by the top quintile of each event. As mentioned earlier, we focus on 5 measures of conflict-related violence, including homicides, kidnappings, terrorist attacks, threats, and forced displacement. Consequently, the main parameter of interest is α_2 , which is given by the interaction between the latter two variables. The vector $X'_{i,t,m}$ denotes a set of individual-level controls for which there is variation across the two waves, including age, employment, marital status, household income and household size; γ is the vector of associated

parameters. D'_m is a vector that captures municipality-level characteristics, including population size, GDP, number of schools, and indices of electrical and sewage coverage; δ denotes the associated parameters. μ_i represents an individual-specific fixed effect which is included to control for time-invariant differences between respondents which may, in turn, affect social preferences and attitudes. Finally, $\epsilon_{i,t,m}$ is the standard error which has been clustered at the municipality level.

A key feature of the model given by equation (3.1) is that it allows us to mitigate the risk of potential unobserved heterogeneity between the treatment group, i.e. individuals living in municipalities exposed to high levels of violence, and the control group, i.e. respondents living in low-violence intensity areas between 2013 and 2016. Moreover, unlike a simple fixed-effects estimator, the DiD model additionally removes any common period effects which affect both the treatment and control group in a similar manner.

However, the ultimate validity of the DiD estimator relies upon the common-trend assumption. Under this assumption, differences in social preferences and attitudes between high and low-violence intensity municipalities should follow a parallel trend if the civil conflict were not observed. As such, testing for pre-existing trends ensures that the estimates are not exclusively driven by unobserved, heterogeneous trends in omitted factors which may be more prevalent in high-exposure areas, and thus, which may cause a faster change in social preferences that is then falsely attributed to violence exposure.

Unfortunately, testing this assumption is particularly difficult not only because the ELCA was implemented during periods of active rebel group activity, but also because Colombia's long history of armed conflict limits the availability of pre-conflict data, particularly on individual-level socio-political attitudes. Similarly, the outcomes of interest are available in two waves only, thus implying a lack of sufficient data to adequately test for parallel trends. Whilst the impossibility to rule out violations of the common trend assumption may mask important differences between the treatment and control groups, our empirical model controls for all the key factors commonly employed in the literature. Likewise, in the robustness section, we ensure that the treated and controlled groups are relatively balanced with respect to all observed characteristics. Consequently, we proceed to estimate equation (3.1) in the following

section.

3.5 Results

3.5.1 Individual-Specific Fixed Effects

Table 3.5 shows the baseline results which are estimated using a Linear Probability Model (LPM). Across each column, we exploit the panel nature of our data by including an individual-specific fixed effect that accounts for potential time invariant characteristics which may impact social preferences. Furthermore, we also control for a set of individual-level characteristics for which there is variation across the last two rounds of ELCA. These include age, employment and marital status, household income, and household size. Likewise, we include various municipality-level controls which are commonly employed in the literature, including population size, municipality-level GDP, number of schools, and indices of electric and sewage coverage. Finally, across each table, the treatment group is defined by the top quintile of the respective violence measure under consideration, i.e. homicides, kidnappings, threats, terrorist attacks and forced displacement.

The results in Table 3.5 suggest a negative and significant effect of municipality-level violence on favourable attitudes towards the use of violence. Notably, relative to individuals living in low-exposure areas, respondents living in municipalities with a high exposure to homicide and kidnappings are 5 and 7 percentage points less likely to support the use of violence, respectively, and these effects are significant at the 5% level. Similarly, compared to low-exposure municipalities, respondents living in areas exposed to high levels of forced displacement and terrorist attacks are roughly 4 and 6 percentage points less likely to hold favourable attitudes towards the use of violence, respectively.

Substantiating the lower support for violence amongst victimised individuals, our results indicate that high exposure to the conflict also lowers preferences for policies that rely on the use of violence itself. Specifically, relative to respondents in low exposure regions, individuals in areas highly exposed to forced displacement and threats are 6 and 7 percentage points less likely to support iron-fist policies, respectively. This result differs to the evidence from violent-crime studies which suggests that crime victims are more likely to support authoritarian and repressive

state security measures (Bateson, 2012; Visconti, 2020). Furthermore, we find we find no significant effect of any of our municipality-level violence measures on favourable attitudes towards vigilantism.

Focusing on political polarisation, only exposure to municipality-level threats appears to influence individuals' voting patterns. As shown in column 4 of Table 3.5, respondents in these areas are 8 percentage points less likely to exhibit political polarisation, relative to low-exposure municipalities. Interestingly, such results echo the findings by Acemoglu et al. (2013) and Gallego (2018) who show that rebel forces rely on the use of force and threats to influence political behaviour across municipalities in the country.

These effects have important implications for the socio-political stability of violence-afflicted communities. On the one hand, lower support for the use of violence indicates the possibility of a strong and enduring resolution to the conflict, with no spillover of violence into victims' private lives. At the same time, the likelihood of achieving both an enduring and peaceful resolution to the conflict may be further strengthened insofar as individuals oppose national security policies that rely on the direct use of oppressive and authoritarian tactics, and thus, which fuel the country's cycle of violence. On the other hand, an increase in political polarisation may imply the erosion of social cohesion across violence-afflicted communities, and thus, perpetuate conflict whilst disrupting societies' socioeconomic development.

3.5.2 Municipality-Fixed Effects

To further assess the role of civil conflict exposure on individual-level social preferences, we re-estimated equation (3.1) using a municipality-specific fixed effect, rather than an individual-specific effect. Consequently, across Table 3.6, our estimation strategy account for time-invariant characteristics – e.g cultural traits and geographic features – which may affect individual-level social preferences, whilst also being correlated with exposure to conflict-related violence. Moreover, similar to our baseline analysis, we continue to control for both individual- and municipality-level characteristics across all specifications.

The results are in line with the analysis in the previous subsection. As shown in Table 3.6, individuals living in municipalities with a high exposure to homicides and kidnappings are 5 and

7 percentage points more likely to support the use of violence, relative to respondents in other areas, and these effects are still significant at the 5% level. Similarly, respondents in municipalities heavily exposed to terrorist attacks and forced displacement 5 percentage points less likely to have favourable attitudes towards the use of violence, compared to their peers, respectively.

Furthermore, similar to the individual FEs analysis in subsection 3.5.1, we continue to find a negative impact of conflict exposure on preferences for policies that incite violence. In particular, respondents in municipalities heavily exposed to forced displacement are roughly 6 percentage points less likely to support iron-fist policies, relative to individuals in low exposure areas. Interestingly, unlike our baseline analysis, we also find a negative impact of terrorist attacks on preferences for repressive state security measures. Specifically, individuals living in areas with a high exposure to these events are roughly 5 percentage points less likely to support iron-fist policies, compared to their peers in low exposure municipalities.

Finally, in line with the previous subsection, we find that individuals living in municipalities heavily exposed to threats are 8 percentage points more likely to exhibit signs of political polarisation, relative to low exposure areas, and this effect is significant at the 1% level. Likewise, those living in municipalities with a high exposure to forced displacement are 6 percentage points more likely to be politically polarised, and this effect is significant at the 10% level.

3.6 Robustness Tests

We conduct a series of robustness tests to further assess the validity of our obtained estimates. First, to improve the balance of our treatment and control groups, we exclude from the analysis respondents living in rural areas who differ significantly from the rest of the sample. Second, we use different estimation strategies, particularly conditional logit models to account for the categorical nature of the dependent variables. Third, we test the robustness of the results by using alternative codifications of the outcomes of interest, as well as of our treatment variables. Fourth, we perform endogeneity tests to mitigate concerns that our results are exclusively driven by unobserved, heterogeneous effects related to the characteristics of municipalities in the sample.

Overall, we find ample support for the impact of conflict-related exposure on attitudes towards the use of violence, with the effect remaining negative and significant across all the robustness tests. Moreover, whilst the effect on preferences for iron-fist policies disappears when employing both its alternative definition and that of the treatment variables, its effect remains negative and significant across the additional robustness checks. By contrast, the positive impact of violence on individual-level political polarisation appears to be the least robust effect, with the coefficient becoming negative or insignificant across some model specifications. Finally, the results of the endogeneity tests suggest that our baseline findings are not exclusively driven by omitted factors that are unrelated to the conflict itself. We discuss these results further in the following subsections.

3.6.1 Excluding Rural Areas from the Sample

Whilst our analysis highlights the potential role of municipality-level conflict exposure in shaping individual-level social preferences, potential systematic differences between our treatment and control groups may compromise the validity of the results. In particular, significant imbalances in their baseline covariates may imply that the estimates obtained in section 3.5 are driven by observable characteristics, rather than by the treatment itself.

To explore this potential bias, Tables 3.7–3.11 report the baseline balancing tests for each treatment variable used throughout the analysis. Across all tables, there are significant imbalances across three key demographic characteristics, including education, marital status, and rurality. First, treated groups display greater levels of both technical and higher education than the control groups, whilst also having a significantly lower proportion of individuals with only primary education or no education at all. Second, across all violence measures, there are significant differences in the proportion of control and treated individuals who report being married and divorced. Additionally, across our measure of kidnappings, a higher proportion of treated respondents report being single than individuals in the control group. Finally, a significantly higher proportion of treated individuals report living in urban areas than the control group, with differences ranging from 50% to 70%.

Evidently, the balancing tests indicate that the control and treatment groups are not comparable *ex ante*. Consequently, differences in social preferences between the treatment and the control

group may be the result of differences in observables, rather than conflict-exposure itself. To tackle such potential bias, we exclude from our analysis respondents living in rural areas who exhibit different characteristics to the rest of the sample, particularly in terms of education and marital status. Tables 3.12–3.16 report the new balancing tests. Across all tables, balance in the covariates improve significantly, relative to the full sample tests. Moreover, whilst some statistically significant differences remain between the control and the treatment groups, the size of these differences are greatly reduced.

Given our newly balanced sub-sample, we re-run equation (3.1) to test whether municipality-level conflict exposure continues to be a significant determinant of social preferences. The results of this analysis are reported in Table 3.17. Notably, across most violence measures, the size and direction of the effects remain similar to our baseline results in section 3.5.1. For example, focusing on the effects of exposure to homicides and terrorist attacks, the new sub-sample estimates indicate that individuals in exposed municipalities are 4 and 5 percentage points less likely to support the use of violence, respectively. Likewise, individuals highly exposed to kidnappings and forced displacement are roughly 6 and 5 percentage points less likely to favour the use of violence, respectively. Such coefficients imply only a marginal difference from the main estimates obtained in subsection 3.5.1, thus highlighting the robustness of the main findings.

We also continue to find a negative effect of municipality-level violence exposure on preferences for policies that rely on violence itself. Specifically, individuals living in municipalities with a high exposure to terrorist attacks are roughly 6 percentage points less likely to support iron-fist policies, relative to their peers. However, unlike the full sample estimates, we find a negative and significant effect of exposure to homicides and terrorist attacks on political polarisation. In particular individuals in exposed municipalities are roughly 6 and 7 percentage points less likely to exhibit signs of polarisation, respectively. Interestingly, Finally, in contrast to the baseline estimates, we no longer find a significant effect of exposure to threats on either the probability of supporting iron-fist policies or political polarisation.

3.6.2 Victimization Effects using Conditional Logit Models

Given that the outcomes of interest are coded as binary variables, we re-estimate equation (3.1) using conditional logit models. Whilst the magnitude of these coefficients is not strictly com-

parable to the LPM estimates, we gauge the robustness of our baseline estimates by comparing both the sign and significance of the effects obtained across both econometric frameworks. The estimated coefficients from this analysis are reported in Table 3.18. Overall, we find ample support for our baseline estimates in subsection 3.5.1. Specifically, with the exception of threats exposure, we find a negative and significant impact of all our violence measures on the likelihood of supporting the use of violence. Likewise, we continue to find a positive differential effect of high municipality-level exposure to threats on the probability of political polarisation, as well as a negative and significant effect of both threats and forced displacement on the likelihood of supporting iron-fist policies. Finally, unlike our baseline estimates, we also find a negative and significant differential effect of exposure to terrorist attacks on the probability of favouring iron-fist policies.

3.6.3 Using Alternative Codification of the Outcomes of Interest

Next, we assess the robustness of the results by using alternative codifications of the outcomes of interest. First, given that preferences for violence use, vigilantism, and iron-fist policies may be interrelated, we combine these variables into a single metric. Specifically, this new binary measure captures whether a respondent agrees with at least 2 of these social preferences statements. Second, rather than relying on their broad definition, we employ a narrower classification of favourable attitudes towards the use of violence, vigilantism and iron-fist policies. In particular, these variables are now equal to 1 if the respondent indicates *totally agreeing* with each respective outcome and 0 if they *agree*, *disagree* or *totally disagree* with it. Similarly, we use a broader definition for political polarisation, whereby the variable is equal to 1 if an individual indicates *always voting for the same party* or *voting for the same party in most elections*, and 0 if they indicate *voting for different parties*. Finally, we also include in the analysis individuals who report always voting blank to the political polarisation question.

As mentioned above, it is possible that our social preferences measures are interrelated. For example, those who favour the use of violence may be more likely to favour policies which rely on violence itself, such as vigilantism and iron-fist strategies. To test for this potential relationship, we run equation (2.1) on a dummy variable that is equal to 1 if a respondent reports agreeing with at least 2 of the aforementioned outcomes. Table 3.19 reports the results

to this analysis. Interestingly, we find no significant differential effect of conflict exposure on the probability that an individual supports more than 1 of these violence-related outcomes.

Table 3.20 shows the analysis using the broad definition of violence use, iron-fist policies, and vigilantism. Similar to our baseline estimates, we continue to find a negative and significant impact of municipality-level conflict exposure on the likelihood of supporting the use of violence. In particular, individuals living in areas with a high exposure to homicides and forced displacement are roughly 2 percentage points less likely to support our narrow definition of violence use, than their counterparts in low-exposure areas. Likewise, respondents living in areas with high levels of kidnappings and terrorist attacks are roughly 2 and 3 percentage points less likely to support the narrow definition of the use of violence, respectively, and these effects are significant at the 1% level.

Focusing on our broad definition of political polarisation, Table 3.20 indicates that individuals living in municipalities highly exposed to threats are 7.2 percentage points more likely to exhibit signs of polarisation, relative to respondents in other areas, and this is significant at the 10% level. Interestingly, however, we also find a negative and significant effect of exposure to terrorist attacks on our broad definition of political polarisation. In particular, individuals in heavily exposed municipalities are 8 percentage points less likely to exhibit polarisation, than respondents in low-exposure areas. Finally, unlike subsection 3.5.1, we find no significant effect of either threats or forced displacement on individual-level support for iron-fist policies.

Finally, as mentioned in section 3.4.1 individuals who report always voting blank in elections are excluded from our baseline analysis. This is because blank votes could potentially capture other factors like voter apathy or general disenchantment, rather than polarisation itself. Nonetheless, in Table 3.21 we re-estimate our model by including these individuals in our base category.¹⁴ Interestingly, the results remain unchanged from our baseline analysis. In particular, we continue to find a positive and statistically significant effect of high exposure to threats on the likelihood of exhibiting political polarisation. Similarly, we continue to find no significant impact of our other violence measures on this particular outcome.

¹⁴As such, the measure on political polarisation is equal to 1 if a respondent reports always voting for the same political party, or 0 if they report voting for the same party in most elections, voting for different parties in all elections, or always voting blank.

3.6.4 Using Alternative Codification of the Treatment Variables

We also re-estimate equation (3.1) using an alternative definition for our treatment groups. Specifically, rather than focusing exclusively on the top quintile of violence, we define the treatment groups as individuals living in municipalities in the top 2 quintiles of each conflict measure. The results of this analysis are shown in Table 3.22. Interestingly, we no longer find any significant effect of homicides, terrorist attacks, kidnappings or forced displacement on the likelihood of supporting violence, thus suggesting victimisation effects may be driven by the highest levels of exposure to the conflict. However, unlike the baseline estimates, the results indicate a negative and significant effect of threats on support for violence. In particular, individuals living in municipalities in the top 2 quintiles of threats are 4 percentage points less likely to favour the use of violence, relative to their counterparts in low-exposure areas. Furthermore, whilst we find no significant impact of threats on political polarisation, the results indicate that individuals in municipalities in the top 2 quintiles of homicides are roughly 7.3 more likely to exhibit signs of political polarisation, than respondents in other areas. Finally, we no longer find a significant differential effect of either forced displacement or threats on the likelihood of supporting iron-fist policies.

3.6.5 Endogeneity Tests

As mentioned earlier, the unavailability of pre-conflict data on individual-level social preferences, as well as the lack of sufficient waves in the ELCA limit our ability to test for the parallel trend assumption. Whilst we employ various methods to ensure that the results are not exclusively driven by unobserved differences between our treatment and control groups, it is possible that unobserved and heterogeneous trends in omitted variables are more prevalent in high-exposure areas, thus causing a faster growth in certain attitudes that are then falsely attributed to violence exposure.

To mitigate these concerns, we test the impact of our exposure variables on various outcomes available in the ELCA that should not be affected by the conflict. In particular, we focus on whether the respondent reports contributing to a pension scheme, whether they voluntarily buy healthcare packages or life insurance, as well as whether the household owns home insurance. Whilst we do not expect these outcomes to be directly affected by violence, evidence suggests

that they are influenced by regional characteristics, such as development, culture, and traditions – see, e.g. Hershey et al., 2010; Aggarwal and Goodell, 2013; Chui and Kwok, 2008; Beck and Webb, 2003 – which we are unable to account for. Therefore, we expect the results to be significant only if our exposure variables are, in fact, capturing omitted effects related to the characteristics of municipalities in the sample.

Table 3.23 shows the results to the endogeneity tests which were run by substituting the new outcomes in equation (3.1). Thus, as before, we continue to rely on our DiD estimator and include all relevant individual- and municipality-level controls in the analysis. As expected, the estimated coefficients are statistically insignificant across all specifications, thus mitigating concerns that our main effects are being exclusively driven by unobserved municipality characteristics that are unrelated to the conflict itself.

3.7 Conclusions

This chapter examines the impact of Colombia’s ongoing civil conflict on individual-level social attitudes and preferences during the period 2013-2016. In particular, we focus on outcomes that are crucial for the socio-economic wellbeing and stability of violence-afflicted communities, including political polarisation and attitudes towards the use of violence, vigilante justice, and iron-fist policies. To do so, we focus on five key violent events measured at the municipality-level, including homicides, kidnappings, threats, terrorist attacks, and forced displacement rates.

Our DiD analysis indicates that conflict-related violence has a key role in shaping individual-level social preferences and attitudes. Specifically, individuals living in municipalities exposed to the highest levels of homicides and terrorist attacks are roughly 5 percentage points less likely to hold favourable attitudes towards the use of violence, relative to respondents in less affected areas. Likewise, respondents exposed to high levels of municipality-level kidnappings and forced displacement are 7 and 5 percentage points less likely to favour the use of violence, respectively. Furthermore, our results suggest that high exposure to the conflict also lowers preferences for state security policies that rely on violence itself. In particular, exposure to threats and forced displacement lower the probability of supporting iron-fist policies by roughly 6 and 7 percentage points, respectively. Interestingly, however, individuals living in municipal-

ities with a high exposure to threats are also 8.1 percentage points more likely to exhibit signs of political polarisation. Finally, we find no significant differential effect of violence exposure on the likelihood of supporting vigilante groups. A possible explanation for this is the country's past experiences with armed civilian self-defence groups. As mentioned earlier in the chapter, the intensity of violence, in conjunction with the increasing clashes between rebel groups and drug cartels, ultimately facilitated the emergence of vigilante groups which later morphed into right-wing paramilitary groups. As a result, it is possible that individuals in Colombia recognise the dangers of vigilantism and its critical role in perpetuating violence.¹⁵

It is important to highlight that the analysis has various limitations. Most importantly, whilst we aim to control for various confounding factors, as well as to limit systematic imbalances between our treatment and control groups, we are unable to completely rule out potential violations of the common trend assumption. Thus, whilst the estimates suggest that violence is a key driver of individual-level attitudes in Colombia, such effects may be driven by pre-existing differences in social preferences between both groups, rather than the treatment itself.

Furthermore, whilst we are able to account for the impact of victimisation experiences at the municipality-level, a lack of data prevents us from examining whether and how victimisation effects may differ amongst individuals who have experienced the conflict first-hand. Lastly, given that we restrict our sample to individuals who did not migrate in-between waves, our findings may suffer from selection bias insofar as migration is correlated with our outcomes of interest. For example, if individuals with lower degrees of political polarisation or greater support for iron-fist policies migrated during our period of analysis, then our victimisation effects may be the result of changes in the composition of the population sampled, rather than violence exposure itself. To address these limitations, future work could incorporate additional techniques which allow us to better isolate the causal impact of violence exposure on individuals-level social preferences, including IVs or matching techniques.

The results have important social, political, and economic implications. In line with the evidence from the 'post-traumatic growth' theory, the negative impact of conflict-exposure on attitudes

¹⁵Whilst this may be a possible mechanism at play, it is important to highlight that we found a positive differential effect of threats on support for iron-fist policies when focusing on the top decile of exposure. Thus, individuals living in outlier areas, i.e. those exposed to the most extreme levels of violence in the country, may still consider vigilante groups as a viable option to guarantee justice.

towards the use of violence suggests that victimisation may foster the emergence of new social dynamics which can facilitate an enduring resolution to violence. Furthermore, as victimisation lowers support for the implementation of authoritarian policies that erode civil liberties and perpetuate violence, we could observe a resolution to the conflict that is both long-lasting and peaceful. However, an increase in political polarisation across afflicted municipalities may result in the disruption of communities' social cohesion and collective action capacity, whilst also hindering the economic development of such areas.

Overall, the evidence suggests that victimisation constitutes an important determinant of individual-level social attitudes and preferences. Notably, contrary to the popular notion that violence begets violence, individuals exposed to the highest levels of conflict intensity exhibit a greater aversion towards violent behaviour, as well as lower support for repressive security policies that fuel violence itself. Unfortunately, whilst such effects highlight the potential for a strong post-conflict social recovery, increased levels of political polarisation may disrupt communities' social cohesion and incite violence, thus limiting the possibility of ending Colombia's 58-year-old civil conflict.

3.8 Tables

Table 3.1: Summary Statistics of Outcomes of Interest

	2013 Wave		2016 Wave	
	Obs.	Mean	Obs.	Mean
<i>Use of Violence</i>				
1. Totally agree	180	0.03	134	0.02
2. Agree	1379	0.17	1563	0.21
3. Disagree	4546	0.57	4353	0.6
4. Totally disagree	1833	0.23	1199	0.16
<i>Vigilante Justice</i>				
1. Totally agree	410	0.05	378	0.05
2. Agree	1917	0.24	1971	0.27
3. Disagree	4218	0.53	3805	0.52
4. Totally disagree	1393	0.18	1095	0.15
<i>Iron-Fist Policies</i>				
1. Totally agree	425	0.05	347	0.05
2. Agree	2280	0.29	2059	0.28
3. Disagree	4004	0.5	3885	0.54
4. Totally disagree	1229	0.15	958	0.13
<i>Political Polarisation</i>				
1. Always vote for the same political party	2304	0.31	1738	0.25
2. Vote for the same political party in most elections	619	0.08	541	0.08
3. Vote for different political parties in different elections	4451	0.59	4517	0.65
4. Always vote blank	142	0.02	174	0.02

Table 3.2: Summary Statistics of Individual- and Household-Level Control Variables

	2013 Wave				2016 Wave			
	Mean	St Dev	Min	Max	Mean	St Dev	Min	Max
Male	0.41	0.49	0	1.00	0.39	0.49	0	1.00
Age	46.49	12.55	19	97.00	49.09	12.20	19	100.00
<i>Education Level:</i>								
1. None	0.08	0.27	0	1.00	0.07	0.26	0	1.00
2. Primary Education	0.47	0.50	0	1.00	0.47	0.50	0	1.00
3. Secondary Education	0.35	0.48	0	1.00	0.35	0.48	0	1.00
4. Technical Training	0.06	0.23	0	1.00	0.06	0.24	0	1.00
5. University	0.04	0.20	0	1.00	0.04	0.20	0	1.00
<i>Marital Status:</i>								
1. Married/Common Law Relationship	0.70	0.46	0	1.00	0.69	0.46	0	1.00
2. Divorced/Separated	0.14	0.35	0	1.00	0.15	0.36	0	1.00
3. Widowed	0.06	0.24	0	1.00	0.07	0.25	0	1.00
4. Single	0.09	0.28	0	1.00	0.09	0.28	0	1.00
Employed	0.69	0.46	0	1.00	0.68	0.47	0	1.00
HH Income Tercile 1	0.34	0.47	0	1.00	0.33	0.47	0	1.00
HH Income Tercile 2	0.33	0.47	0	1.00	0.34	0.47	0	1.00
HH Income Tercile 3	0.33	0.47	0	1.00	0.33	0.47	0	1.00
Religion	0.97	0.18	0	1.00	0.96	0.20	0	1.00
Household Size	4.29	2.00	1	39.00	4.04	1.95	1	47.00
Urban	0.52	0.50	0	1.00	0.53	0.50	0	1.00
	N = 7938				N = 7249			

Table 3.3: Summary Statistics of Municipality-Level Variables

	Mean	St. Dev.	Min	Max
<i>Panel A: Municipality-Level Controls</i>				
Avg. Population Size 2013-2016	944291.48	2152448.31	2683.25	7827499
Avg. GPD (\$COP) 2013-2016	19073.83	48722.70	30.40	178619.16
Avg. Sewerage Coverage Index 2013-2016	54.80	26.82	0	100
Avg. Number of Schools Index 2013-2016	412.67	749.97	9	2696.75
Avg. Electrical Coverage Index 2013-2016	97.55	4.21	60.26	100
<i>Panel B: Municipality-Level Violence Events</i>				
Homicides 2013-2016	50.16	108.53	0	426
Kidnappings 2013-2016	1.60	2.49	0	8
Forced Displacement 2013-2016	2321.33	5244.77	0	29817
Threats 2013-2016	697.30	1688.34	0	9805
Terrorist Attacks 2013-2016	36.27	102.84	0	929

Table 3.4: Correlation Matrix of Conflict-Related Exposure Measures

	Homicides	Kidnappings	Threats	Forced Displacement	Terrorist Attacks
Homicides	1.000				
Kidnappings	0.758	1.000			
Threats	0.000	0.609	1.000		
Forced Displacement	0.726	0.000	0.910	1.000	
Terrorist Attacks	0.000	0.000	0.000	0.744	1.000
	0.747	0.649	0.709	0.000	
	0.000	0.000	0.000	0.000	
	0.956	0.770	0.709	0.744	1.000
	0.000	0.000	0.000	0.000	

Table 3.5: Regressions Results for Top Quintile of Violence Measures using Individual-Level FEs

	(1)	(2)	(3)	(4)
	Violence Use	Vigilante Justice	Iron-Fist Policies	Political Polarisation
Top Homicides x 2016 Dummy	-0.054** (0.023)	0.013 (0.032)	-0.042 (0.033)	-0.016 (0.036)
2016 Dummy	-0.206 (0.280)	-0.349 (0.281)	-0.157 (0.347)	0.026 (0.309)
R-squared	0.658	0.699	0.680	0.713
Top Kidnappings x 2016 Dummy	-0.070** (0.028)	0.030 (0.028)	-0.008 (0.033)	-0.017 (0.040)
2016 Dummy	-0.126 (0.296)	-0.386 (0.274)	-0.156 (0.358)	0.044 (0.329)
R-squared	0.658	0.699	0.680	0.713
Top Forced Displacement x 2016 Dummy	-0.048* (0.027)	0.009 (0.032)	-0.062** (0.030)	0.060 (0.042)
2016 Dummy	-0.078 (0.245)	-0.371 (0.290)	0.013 (0.298)	-0.155 (0.339)
R-squared	0.658	0.699	0.680	0.713
Top Threats x 2016 Dummy	-0.035 (0.027)	0.026 (0.028)	-0.067** (0.029)	0.081** (0.037)
2016 Dummy	-0.150 (0.250)	-0.398 (0.284)	-0.034 (0.278)	-0.145 (0.294)
R-squared	0.658	0.699	0.680	0.714
Top Terrorist Attacks x 2016 Dummy	-0.061*** (0.023)	0.004 (0.034)	-0.051 (0.033)	-0.025 (0.039)
2016 Dummy	-0.205 (0.284)	-0.347 (0.285)	-0.155 (0.352)	0.028 (0.306)
R-squared	0.658	0.699	0.680	0.713
Individual-level Controls	Yes	Yes	Yes	Yes
Municipality-level Controls	Yes	Yes	Yes	Yes
Individual FEs	Yes	Yes	Yes	Yes
Municipality FEs				
Observations	15188	15188	15188	14170

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level.

Table 3.6: Regressions Results for Top Quintile of Violence Measures using Municipality FEs

	(1)	(2)	(3)	(4)
	Violence Use	Vigilante Justice	Iron-Fist Policies	Political Polarisation
Top Homicides x 2016 Dummy	-0.048** (0.024)	0.007 (0.029)	-0.042 (0.028)	-0.008 (0.033)
2016 Dummy	-0.163 (0.226)	-0.310 (0.269)	0.013 (0.289)	0.051 (0.273)
R-squared	0.021	0.031	0.023	0.107
Top Kidnappings x 2016 Dummy	-0.068** (0.027)	0.029 (0.026)	-0.022 (0.028)	-0.009 (0.033)
2016 Dummy	-0.078 (0.244)	-0.352 (0.262)	0.030 (0.302)	0.061 (0.290)
R-squared	0.021	0.031	0.023	0.107
Top Forced Displacement x 2016 Dummy	-0.045* (0.025)	0.006 (0.026)	-0.062** (0.026)	0.062* (0.037)
2016 Dummy	-0.047 (0.216)	-0.325 (0.283)	0.180 (0.233)	-0.137 (0.272)
R-squared	0.021	0.031	0.023	0.108
Top Threats x 2016 Dummy	-0.028 (0.024)	0.023 (0.024)	-0.066*** (0.025)	0.082*** (0.031)
2016 Dummy	-0.127 (0.213)	-0.350 (0.275)	0.123 (0.207)	-0.111 (0.222)
R-squared	0.020	0.031	0.023	0.109
Top Terrorist Attacks x 2016 Dummy	-0.050** (0.025)	-0.003 (0.031)	-0.051* (0.028)	-0.019 (0.035)
2016 Dummy	-0.160 (0.230)	-0.306 (0.274)	0.018 (0.296)	0.056 (0.271)
R-squared	0.021	0.031	0.023	0.107
Individual-level Controls	Yes	Yes	Yes	Yes
Municipality-level Controls	Yes	Yes	Yes	Yes
Individual FEs				
Municipality FEs	Yes	Yes	Yes	Yes
Observations	15188	15188	15188	14170

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level.

Table 3.7: Baseline Balancing Test for Top Homicides

	Mean Control	Mean Treated	Diff.	P(T > t)
Male	0.444	0.344	-0.104	0.000***
Age	46.941	45.701	-1.240	0.000***
Education Level:				
1. None	0.101	0.035	-0.066	0.000***
2. Primary	0.579	0.287	-0.292	0.000***
3. Secondary	0.270	0.498	0.228	0.000***
4. Technical	0.029	0.106	0.076	0.000***
5. University	0.020	0.074	0.054	0.000***
Marital Status:				
1. Married/ Cohabiting	0.736	0.650	-0.086	0.000***
2. Divorced/Separated	0.118	0.192	0.074	0.000***
3. Widowed	0.060	0.066	0.006	0.280
4. Single	0.086	0.092	0.006	0.391
Employed	0.687	0.690	0.004	0.727
HH Income Tercile 1	0.364	0.304	-0.059	0.000***
HH Income Tercile 2	0.327	0.330	0.003	0.797
HH Income Tercile 3	0.310	0.366	0.057	0.000*
Religion	0.966	0.969	0.002	0.554
Household Size	4.400	4.098	-0.302	0.000***
Urban	0.248	0.987	0.739	0.000***
Observations	5039	2909		

Table 3.8: Baseline Balancing Test for Top Kidnappings

	Mean Control	Mean Treated	Diff.	P(T > t)
Male	0.437	0.321	-0.116	0.000***
Age	46.891	45.385	-1.506	0.000***
Education Level:				
1. None	0.093	0.035	-0.057	0.000***
2. Primary	0.543	0.281	-0.262	0.000***
3. Secondary	0.298	0.505	0.207	0.000***
4. Technical	0.040	0.105	0.065	0.000***
5. University	0.028	0.074	0.047	0.000***
Marital Status:				
1. Married/ Cohabiting	0.732	0.632	-0.100	0.000***
2. Divorced/Separated	0.123	0.203	0.080	0.000***
3. Widowed	0.061	0.067	0.006	0.323
4. Single	0.084	0.098	0.014	0.051*
Employed	0.685	0.696	0.011	0.348
HH Income Tercile 1	0.366	0.275	-0.091	0.000***
HH Income Tercile 2	0.324	0.338	0.014	0.244
HH Income Tercile 3	0.310	0.387	0.077	0.000***
Religion	0.967	0.968	0.001	0.772
Household Size	4.396	3.997	-0.400	0.000***
Urban	0.343	0.996	0.654	0.000***
Observations	5815	2133		

Table 3.9: Baseline Balancing Test for Top Forced Displacement

	Mean Control	Mean Treated	Diff.	P(T > t)
Male	0.437	0.367	-0.070	0.000***
Age	46.735	46.173	-0.562	0.048**
Education Level:				
1. None	0.099	0.050	-0.049	0.000***
2. Primary	0.565	0.355	-0.210	0.000***
3 Secondary	0.283	0.443	0.160	0.000***
4. Technical	0.032	0.089	0.057	0.000***
5. University	0.022	0.063	0.042	0.000***
Marital Status:				
1. Married/ Cohabiting	0.733	0.669	-0.063	0.000***
2. Divorced/Separated	0.118	0.179	0.061	0.000***
3. Widowed	0.062	0.062	0.000	0.998
4. Single	0.087	0.090	0.003	0.651
Employed	0.686	0.690	0.004	0.715
HH Income Tercile 1	0.332	0.354	0.022	0.039**
HH Income Tercile 2	0.327	0.329	0.003	0.805
HH Income Tercile 3	0.341	0.317	-0.025	0.02**
Religion	0.963	0.973	0.010	0.015**
Household Size	4.335	4.231	-0.105	0.021**
Urban	0.281	0.818	0.537	0.000***
Observations	4441	3507		

Table 3.10: Baseline Balancing Test for Top Threats

	Mean Control	Mean Treated	Diff.	P(T > t)
Male	0.441	0.364	-0.077	0.000***
Age	46.668	46.270	-0.399	0.159
Education Level:				
1. None	0.100	0.049	-0.051	0.000***
2. Primary	0.568	0.357	-0.211	0.000***
3. Secondary	0.280	0.442	0.162	0.000***
4. Technical	0.031	0.088	0.057	0.000***
5. University	0.021	0.063	0.043	0.000***
Marital Status:				
1. Married/ Cohabiting	0.733	0.671	-0.062	0.000***
2. Divorced/Separated	0.121	0.174	0.054	0.000***
3. Widowed	0.062	0.062	0.000	0.967
4. Single	0.084	0.093	0.009	0.164
Employed	0.689	0.686	-0.003	0.782
HH Income Tercile 1	0.349	0.333	-0.016	0.124
HH Income Tercile 2	0.323	0.334	0.011	0.291
HH Income Tercile 3	0.328	0.333	0.005	0.619
Religion	0.962	0.973	0.011	0.006***
Household Size	4.344	4.224	0.120	0.008***
Urban	0.266	0.821	0.555	0.000***
Observations	4337	3611		

Table 3.11: Baseline Balancing Test for Top Terrorist Attacks

	Mean Control	Mean Treated	Diff.	P(T > t)
Male	0.442	0.339	-0.103	0.000***
Age	46.913	45.688	-1.225	0.000***
Education Level:				
1. None	0.100	0.034	-0.066	0.000***
2. Primary	0.571	0.288	-0.283	0.000***
3. Secondary	0.278	0.495	0.217	0.000***
4. Technical	0.030	0.107	0.077	0.000***
5. University	0.021	0.076	0.055	0.000***
Marital Status:				
1. Married/ Cohabiting	0.736	0.647	-0.089	0.000***
2. Divorced/Separated	0.118	0.196	0.078	0.000***
3. Widowed	0.061	0.064	0.004	0.529
4. Single	0.086	0.093	0.007	0.296
Employed	0.687	0.690	0.004	0.730
HH Income Tercile 1	0.358	0.311	-0.047	0.000***
HH Income Tercile 2	0.330	0.325	-0.005	0.653
HH Income Tercile 3	0.312	0.364	0.052	0.000***
Religion	0.966	0.969	0.003	0.540
Household Size	4.390	4.100	-0.290	0.000***
Urban	0.269	0.987	0.719	0.000***
Observations	5188	2760		

Table 3.12: Baseline Balancing Test for Top Homicides Excluding Rural Areas

	Mean Control	Mean Treated	Diff.	P(T > t)
Male	0.381	0.337	-0.044	0.006***
Age	44.562	45.694	1.132	0.006***
Education Level:				
1. None	0.067	0.034	-0.033	0.000***
2. Primary	0.343	0.283	-0.060	0.001***
3. Secondary	0.446	0.501	0.055	0.001***
4. Technical	0.083	0.107	0.023	0.021**
5. University	0.060	0.075	0.015	0.0877*
Marital Status:				
1. Married/Cohabiting	0.642	0.647	0.005	0.748
2. Divorced/Separated	0.196	0.194	-0.003	0.847
3. Widowed	0.058	0.067	0.008	0.332
4. Single	0.130	0.093	-0.011	0.285
Employed	0.753	0.690	-0.063	0.000***
HH Income Tercile 1	0.450	0.303	-0.146	0.000***
HH Income Tercile 2	0.296	0.331	0.035	0.023**
HH Income Tercile 3	0.254	0.366	0.111	0.000***
Religion	0.974	0.968	-0.006	0.293
Household Size	4.244	4.097	-0.146	0.029**
Observations	1248	2870		

Table 3.13: Baseline Balancing Test for Top Kidnappings Excluding Rural Areas

	Mean Control	Mean Treated	Diff.	P(T > t)
Male	0.383	0.320	-0.063	0.000***
Age	45.314	45.385	0.071	0.853
Education Level:				
1. None	0.054	0.035	-0.019	0.002***
2. Primary	0.324	0.280	-0.044	0.002***
3. Secondary	0.462	0.506	0.044	0.005***
4. Technical	0.093	0.105	0.012	0.196
5. University	0.067	0.074	0.007	0.370
Marital Status:				
1. Married/ Cohabiting	0.660	0.632	-0.029	0.054*
2. Divorced/Separated	0.185	0.203	0.018	0.142
3. Widowed	0.061	0.067	0.006	0.463
4. Single	0.093	0.098	0.005	0.584
Employed	0.724	0.695	-0.029	0.040**
HH Income Tercile 1	0.426	0.273	-0.153	0.000****
HH Income Tercile 2	0.302	0.339	0.037	0.010**
HH Income Tercile 3	0.272	0.388	0.116	0.000***
Religion	0.972	0.968	-0.004	0.407
Household Size	4.291	4.001	-0.290	0.000***
Observations	1993	2125		

Table 3.14: Baseline Balancing Test for Top Forced Displacement Excluding Rural Areas

Variable	Mean Control	Mean Treated	Diff.	P(T > t)
Male	0.373	0.341	-0.033	0.044**
Age	44.730	45.621	0.891	0.032**
Education Level:				
1. None	0.066	0.035	-0.031	0.000***
2. Primary	0.354	0.278	-0.075	0.000***
3. Secondary	0.440	0.504	0.064	0.000***
4. Technical	0.081	0.108	0.027	0.008***
5. University	0.060	0.075	0.015	0.086*
Marital Status:				
1. Married/ Cohabiting	0.641	0.647	0.006	0.714
2. Divorced/Separated	0.195	0.194	-0.001	0.928
3. Widowed	0.062	0.065	0.004	0.671
4. Single	0.102	0.093	-0.008	0.408
Employed	0.734	0.699	-0.035	0.025**
HH Income Tercile 1	0.404	0.323	-0.082	0.000***
HH Income Tercile 2	0.307	0.327	0.019	0.226
HH Income Tercile 3	0.288	0.351	0.062	0.001***
Religion	0.976	0.968	-0.008	0.146
Household Size	4.170	4.129	-0.040	0.546
Observations	1249	2869		

Table 3.15: Balancing Test for Top Threats Excluding Rural Areas

Variable	Mean Control	Mean Treated	Diff.	P(T > t)
Male	0.386	0.337	-0.049	0.003***
Age	44.320	45.751	1.431	0.008***
Education Level:				
1. None	0.069	0.034	-0.035	0.000***
2. Primary	0.350	0.283	-0.067	0.000***
3. Secondary	0.441	0.502	0.061	0.004***
4. Technical	0.082	0.106	0.024	0.022**
5. University	0.058	0.075	0.017	0.054*
Marital Status:				
1. Married/ Cohabiting	0.636	0.649	0.014	0.416
2. Divorced/Separated	0.211	0.188	-0.023	0.101
3. Widowed	0.062	0.065	0.004	0.679
4. Single	0.092	0.097	0.006	0.588
Employed	0.749	0.694	-0.055	0.000***
HH Income Tercile 1	0.473	0.299	-0.174	0.000***
HH Income Tercile 2	0.289	0.333	0.044	0.006***
HH Income Tercile 3	0.239	0.368	0.129	0.000***
Religion	0.239	0.368	0.129	0.000***
Household Size	4.176	4.128	-0.048	0.485
Observations	1153	2965		

Table 3.16: Balancing Test for Top Terrorist Attacks Excluding Rural Areas

	Mean Control	Mean Treated	Diff.	P(T > t)
Male	0.379	0.336	-0.043	0.006***
Age	44.708	45.679	0.971	0.016**
Education Level:				
1. None	0.065	0.034	-0.031	0.000***
2. Primary	0.335	0.284	-0.051	0.000***
3. Secondary	0.458	0.498	0.040	0.015**
4. Technical	0.083	0.108	0.026	0.009***
5. University	0.060	0.076	0.016	0.052*
Marital Status:				
1. Married/ Cohabiting	0.648	0.644	-0.004	0.789
2. Divorced/Separated	0.189	0.197	0.009	0.508
3. Widowed	0.062	0.065	0.002	0.757
4. Single	0.101	0.094	-0.007	0.475
Employed	0.745	0.691	-0.054	0.000***
HH Income Tercile 1	0.422	0.309	-0.113	0.000***
HH Income Tercile 2	0.308	0.327	0.019	0.207
HH Income Tercile 3	0.270	0.363	0.093	0.000***
Religion	0.973	0.968	-0.005	0.373
Household Size	4.221	4.101	-0.120	0.065*
Observations	1393	2725		

Table 3.17: Regression Results for Top Quintile of Violence Measures Excluding Rural Areas

	(1)	(2)	(3)	(4)
	Violence Use	Vigilante Justice	Iron-Fist Policies	Political Polarisation
Top Homicides x 2016 Dummy	-0.043* (0.025)	0.021 (0.034)	-0.038 (0.029)	-0.056* (0.032)
2016 Dummy	-0.381** (0.175)	0.045 (0.342)	-0.026 (0.185)	-0.122 (0.232)
R-squared	0.014	0.009	0.006	0.017
Top Kidnappings x 2016 Dummy	-0.061** (0.026)	0.039 (0.030)	0.004 (0.032)	-0.027 (0.039)
2016 Dummy	-0.260 (0.160)	-0.043 (0.356)	-0.100 (0.200)	-0.132 (0.248)
R-squared	0.015	0.009	0.005	0.015
Top Forced Displacement x 2016 Dummy	-0.051** (0.025)	0.014 (0.035)	-0.022 (0.030)	-0.035 (0.035)
2016 Dummy	-0.381** (0.179)	0.060 (0.340)	-0.057 (0.180)	-0.164 (0.231)
R-squared	0.015	0.009	0.005	0.016
Top Threats x 2016 Dummy	-0.030 (0.026)	0.053 (0.033)	-0.032 (0.029)	0.007 (0.033)
2016 Dummy	-0.461** (0.189)	0.099 (0.283)	-0.099 (0.174)	-0.214 (0.211)
R-squared	0.014	0.010	0.006	0.015
Top Terrorist Attacks x 2016 Dummy	-0.051** (0.025)	0.001 (0.035)	-0.056* (0.029)	-0.065* (0.034)
2016 Dummy	-0.360** (0.174)	0.076 (0.346)	0.013 (0.186)	-0.097 (0.232)
R-squared	0.015	0.009	0.006	0.018
Individual-level Controls	Yes	Yes	Yes	Yes
Municipality-level Controls	Yes	Yes	Yes	Yes
Individual FEs	Yes	Yes	Yes	Yes
Municipality FEs				
Observations	7928	7928	7928	7128

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level.

Table 3.18: Regression Results for Top Quintile of Violence Measures Using Conditional Logit Models

	(1)	(2)	(3)	(4)
	Violence Use	Vigilante Justice	Iron-fist Policies	Political Polarisation
Top Homicides x 2016 Dummy	-0.426*** (0.159)	0.072 (0.208)	-0.260 (0.184)	-0.260 (0.265)
2016 Dummy	-1.671 (2.004)	-2.204 (1.593)	-1.040 (2.135)	0.648 (1.986)
Pseudo R-squared	0.022	0.012	0.008	0.043
Top Kidnappings x 2016 Dummy	-0.511*** (0.185)	0.205 (0.196)	-0.070 (0.193)	-0.221 (0.308)
2016 Dummy	-1.099 (2.077)	-2.458 (1.555)	-0.937 (2.190)	0.896 (2.103)
Pseudo R-squared	0.022	0.013	0.007	0.043
Top Forced Displacement x 2016 Dummy	-0.364*** (0.181)	0.038 (0.191)	-0.354*** (0.174)	0.333 (0.286)
2016 Dummy	-0.610 (1.633)	-2.291 (1.672)	0.082 (1.860)	-0.455 (2.295)
Pseudo R-squared	0.022	0.012	0.009	0.045
Top Threats x 2016 Dummy	-0.272 (0.183)	0.148 (0.171)	-0.386*** (0.166)	0.485*** (0.245)
2016 Dummy	-1.048 (1.717)	-2.471 (1.623)	-0.255 (1.703)	-0.597 (2.005)
Pseudo R-squared	0.020	0.013	0.010	0.047
Top Terrorist Attacks x 2016 Dummy	-0.481*** (0.161)	0.026 (0.229)	-0.328* (0.186)	-0.356 (0.283)
2016 Dummy	-1.662 (2.042)	-2.183 (1.615)	-1.037 (2.181)	0.605 (1.956)
Pseudo R-squared	0.022	0.012	0.008	0.044
Individual-level Controls	Yes	Yes	Yes	Yes
Municipality-level controls	Yes	Yes	Yes	Yes
Individual FEs	Yes	Yes	Yes	Yes
Municipality FEs				
Observations	3532	3918	4358	3382

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level.

Table 3.19: Regression Results on Preferences for 2 or more Violence-Related Outcomes

	(1) Preferences for 2 or more violence-related outcomes
Top Homicides x 2016 Dummy	-0.031 (0.029)
2016 Dummy	-0.246 (0.319)
R-squared	0.686
Top Kidnappings x 2016 Dummy	-0.009 (0.028)
2016 Dummy	-0.241 (0.321)
R-squared	0.686
Top Forced Displacement x 2016 Dummy	-0.044 (0.028)
2016 Dummy	-0.127 (0.267)
R-squared	0.687
Top Threats x 2016 Dummy	-0.036 (0.027)
2016 Dummy	-0.182 (0.263)
R-squared	0.686
Top Terrorist Attacks x 2016 Dummy	-0.039 (0.030)
2016 Dummy	-0.245 (0.323)
R-squared	0.686
Individual FEs	Yes
Individual-level Controls	Yes
Municipality-level Controls	Yes
Municipality FEs	No
Observations	15188

Notes: The outcome of interest is a binary variable capturing whether a respondent exhibits preferences for 2 or more violence-related outcomes, including violence use, vigilantism, and iron-fist policies.

Table 3.20: Regression Results for the Top Quintile of Violence Measures using Alternative Codification of the Outcomes of Interest

	(1)	(2)	(3)	(4)
	Violence Use	Vigilante Justice	Iron-Fist Policies	Political Polarisation
Top Homicides x 2016 Dummy	-0.020** (0.008)	0.014 (0.015)	0.001 (0.014)	-0.062 (0.041)
2016 Dummy	-0.046 (0.093)	-0.063 (0.166)	0.011 (0.125)	0.254 (0.374)
R-squared	0.627	0.631	0.606	0.715
Top Kidnappings x 2016 Dummy	-0.024*** (0.009)	0.010 (0.017)	0.006 (0.014)	-0.019 (0.051)
2016 Dummy	-0.019 (0.095)	-0.073 (0.172)	0.004 (0.126)	0.262 (0.411)
R-squared	0.627	0.631	0.606	0.715
Top Forced Displacement x 2016 Dummy	-0.016* (0.009)	0.006 (0.014)	0.002 (0.010)	0.044 (0.045)
2016 Dummy	-0.005 (0.070)	-0.076 (0.191)	0.007 (0.123)	0.105 (0.386)
R-squared	0.070	0.631	0.606	0.715
Top Threats x 2016 Dummy	-0.016 (0.010)	0.015 (0.013)	-0.002 (0.011)	0.072* (0.041)
2016 Dummy	-0.019 (0.066)	-0.090 (0.176)	0.015 (0.124)	0.089 (0.349)
R-squared	0.627	0.631	0.606	0.716
Top Terrorist Attacks x 2016 Dummy	-0.026*** (0.008)	0.010 (0.015)	-0.006 (0.013)	-0.078* (0.044)
2016 Dummy	-0.044 (0.098)	-0.062 (0.168)	0.013 (0.125)	0.256 (0.365)
R-squared	0.627	0.631	0.606	0.716
Individual-level Controls	Yes	Yes	Yes	Yes
Municipality-level Controls	Yes	Yes	Yes	Yes
Individual FEs	Yes	Yes	Yes	Yes
Municipality FEs				
Observations	15188	15188	15188	14170

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level.

Table 3.21: Regression Results of Political Polarisation including “Always Vote Blank” in the Base Category

	(1) Political Polarisation
Top Homicides x 2016 Dummy	-0.011 (0.034)
2016 Dummy	0.035 (0.303)
R-squared	0.709
Top Kidnappings x 2016 Dummy	-0.013 (0.038)
2016 Dummy	0.050 (0.321)
R-squared	0.709
Top Forced Displacement x 2016 Dummy	0.060 (0.040)
2016 Dummy	-0.145 (0.329)
R-squared	0.710
Top Threats x 2016 Dummy	0.077** (0.035)
2016 Dummy	-0.124 (0.288)
R-squared	0.710
Top Terrorist Attacks x 2016 Dummy	-0.019 (0.037)
2016 Dummy	0.037 (0.301)
R-squared	0.709
Individual FEs	Yes
Individual-level Controls	Yes
Municipality-level Controls	Yes
Municipality FEs	No
Observations	14486

Table 3.22: Regression Results for the Top 2 Quintiles of Violence Measures

	(1)	(2)	(3)	(4)
	Violence Use	Vigilante Justice	Iron-Fist Policies	Political Polarisation
Top 2 Homicides Quintile x 2016 Dummy	0.015 (0.026)	0.015 (0.030)	-0.028 (0.027)	0.073** (0.035)
2016 Dummy	-0.222 (0.280)	-0.350 (0.279)	-0.159 (0.346)	0.000 (0.348)
R-squared	0.007	0.005	0.004	0.021
Top 2 Kidnappings Quintile x 2016 Dummy	-0.009 (0.025)	0.048 (0.030)	0.002 (0.027)	0.030 (0.036)
2016 Dummy	-0.220 (0.279)	-0.336 (0.251)	-0.166 (0.331)	0.028 (0.322)
R-squared	0.007	0.006	0.003	0.019
Top 2 Forced Displacement Quintile x 2016 Dummy	-0.030 (0.026)	0.005 (0.024)	-0.011 (0.027)	0.027 (0.034)
2016 Dummy	-0.155 (0.264)	-0.356 (0.294)	-0.143 (0.328)	-0.036 (0.286)
R-squared	0.008	0.005	0.003	0.019
Top 2 Threats Quintile x 2016 Dummy	-0.044* (0.025)	0.001 (0.025)	-0.027 (0.027)	0.042 (0.034)
2016 Dummy	-0.090 (0.251)	-0.351 (0.277)	-0.088 (0.309)	-0.106 (0.286)
R-squared	0.008	0.005	0.004	0.020
Top 2 Terrorist Attacks Quintile x 2016 Dummy	0.009 (0.024)	0.013 (0.029)	-0.029 (0.027)	0.048 (0.037)
2016 Dummy	-0.217 (0.276)	-0.345 (0.280)	-0.169 (0.342)	0.022 (0.328)
R-squared	0.007	0.005	0.004	0.020
Individual-level Controls	Yes	Yes	Yes	Yes
Municipality-level Controls	Yes	Yes	Yes	Yes
Individual FEs	Yes	Yes	Yes	Yes
Municipality FEs				
Observations	15188	15188	15188	14170

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level.

Table 3.23: Regression Results of Endogeneity Tests

	(1)	(2)	(3)
	Pension Contribution	Healthcare/Life Insurance	House Insurance
Top Homicides Quintile x 2016 Dummy	-0.000 (0.015)	-0.012 (0.011)	-0.017 (0.025)
2016 Dummy	-0.040 (0.090)	-0.033 (0.064)	-0.214 (0.347)
R-squared	0.028	0.006	0.018
Top Kidnappings Quintile x 2016 Dummy	0.007 (0.018)	0.001 (0.015)	0.044 (0.035)
2016 Dummy	-0.049 (0.092)	-0.037 (0.068)	-0.276 (0.336)
R-squared	0.028	0.006	0.018
Top Forced Displacement Quintile x 2016 Dummy	0.003 (0.013)	0.002 (0.009)	0.013 (0.046)
2016 Dummy	-0.048 (0.105)	-0.043 (0.082)	-0.179 (0.274)
R-squared	0.028	0.006	0.018
Top Threats Quintile x 2016 Dummy	-0.004 (0.012)	0.003 (0.009)	-0.018 (0.047)
2016 Dummy	-0.032 (0.095)	-0.041 (0.079)	-0.183 (0.276)
R-squared	0.028	0.006	0.018
Top Terrorist Attacks Quintile x 2016 Dummy	0.000 (0.015)	-0.015 (0.012)	-0.024 (0.027)
2016 Dummy	-0.040 (0.089)	-0.033 (0.064)	-0.213 (0.352)
R-squared	0.028	0.007	0.018
Individual-level Controls	Yes	Yes	Yes
Municipality-level Controls	Yes	Yes	Yes
Individual FEs	Yes	Yes	Yes
Municipality FEs			
Observations	15133	15133	15188

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level.

3.9 Figures

Figure 3.1: Incidence of Violence during 1995-2016

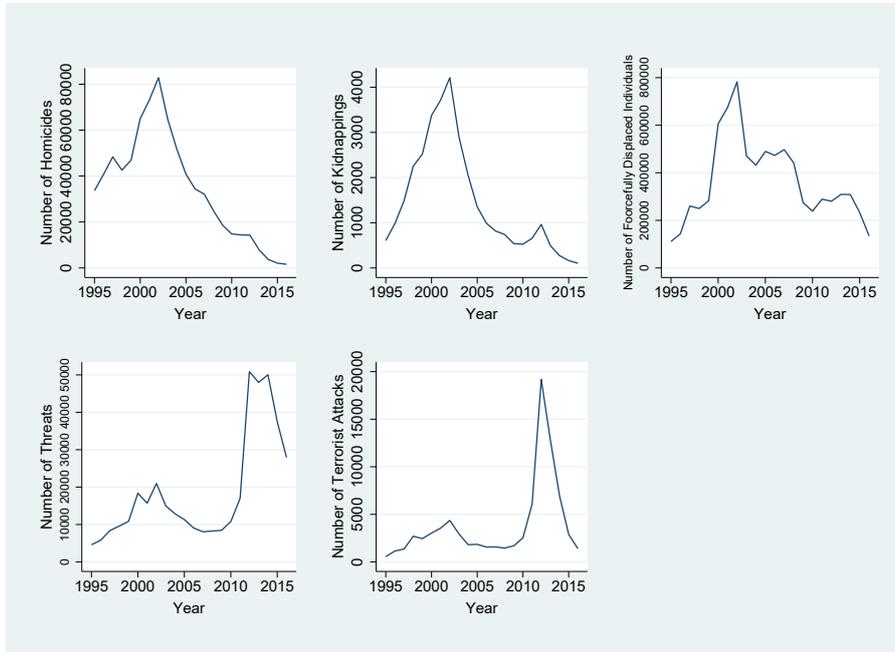


Figure 3.2: Municipality-Level Violence during 2013-2016

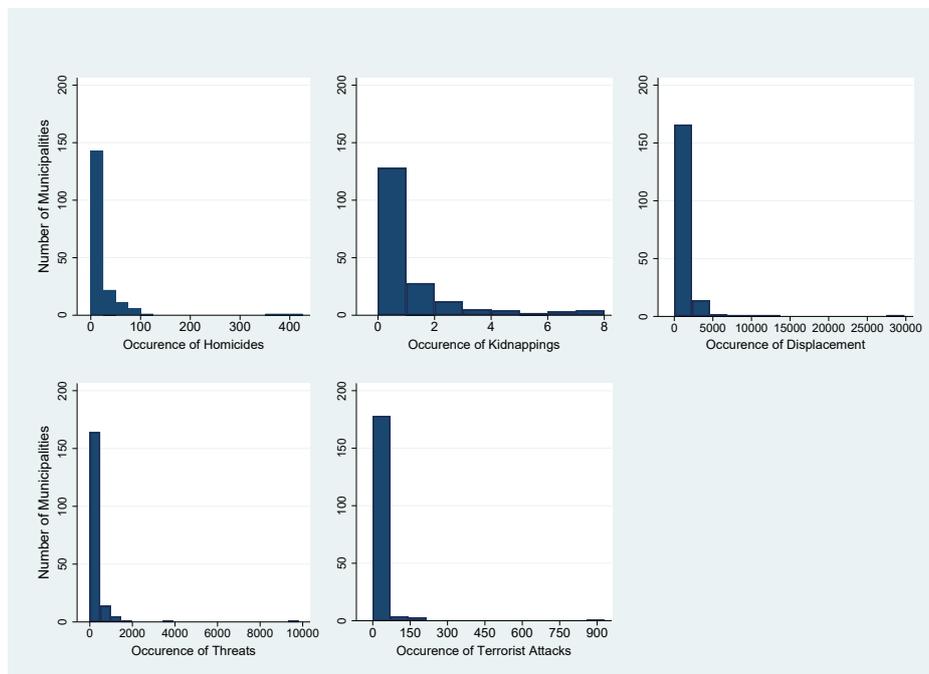


Figure 3.3: Distribution of Homicides across Sampled Municipalities during 2013-2016

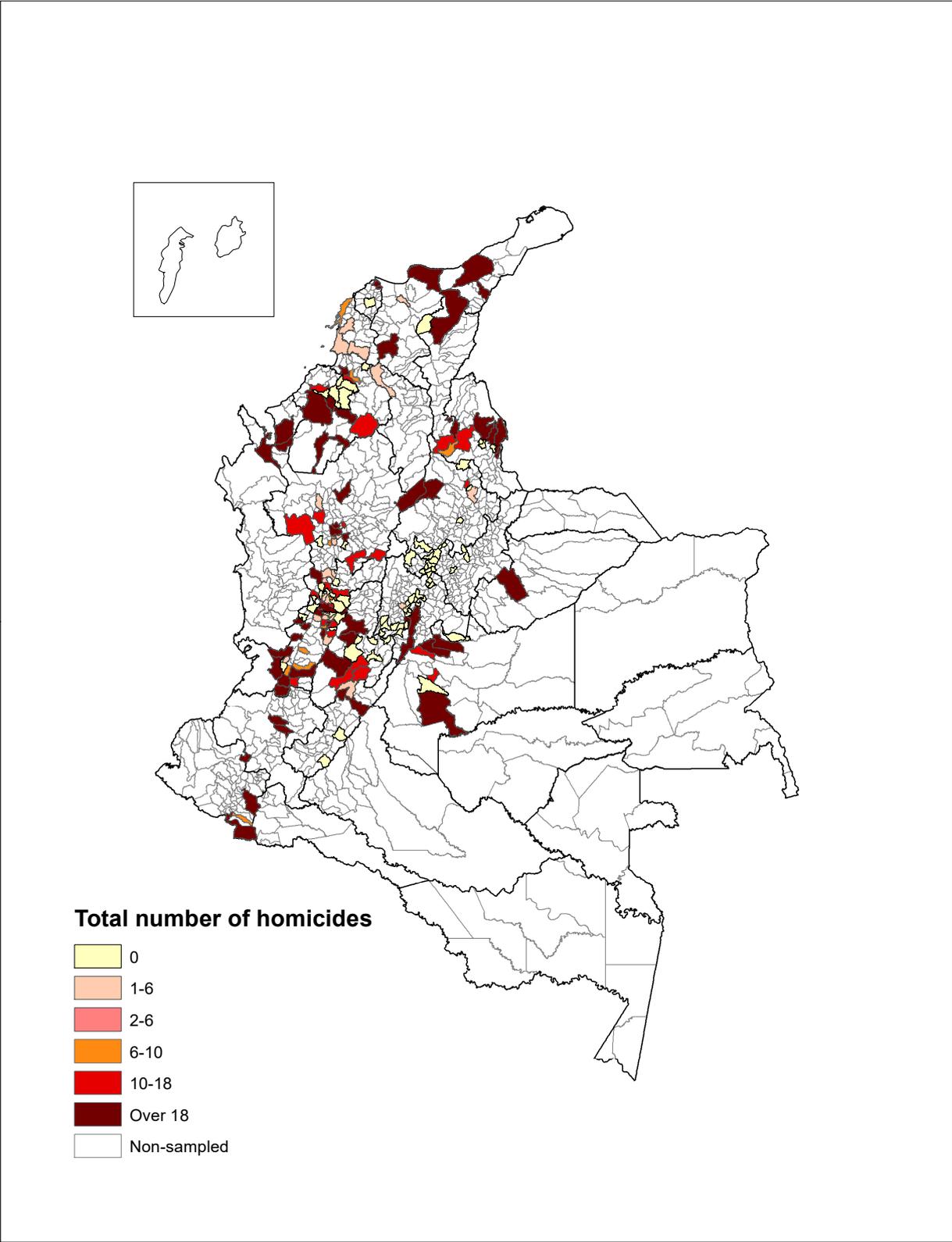


Figure 3.4: Distribution of Kidnappings across Sampled Municipalities during 2013-2016

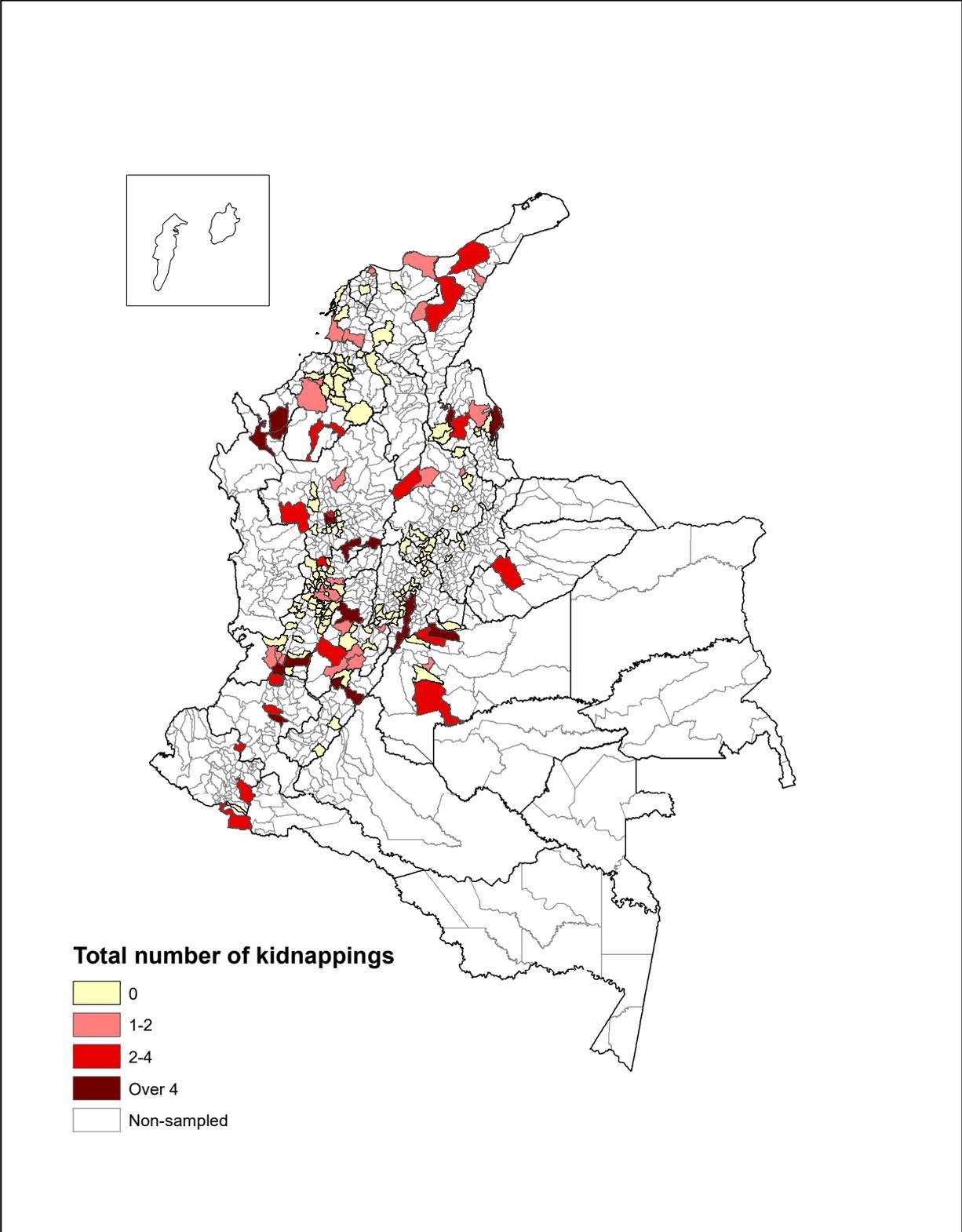


Figure 3.5: Distribution of Forced Displacement across Sampled Municipalities during 2013-2016

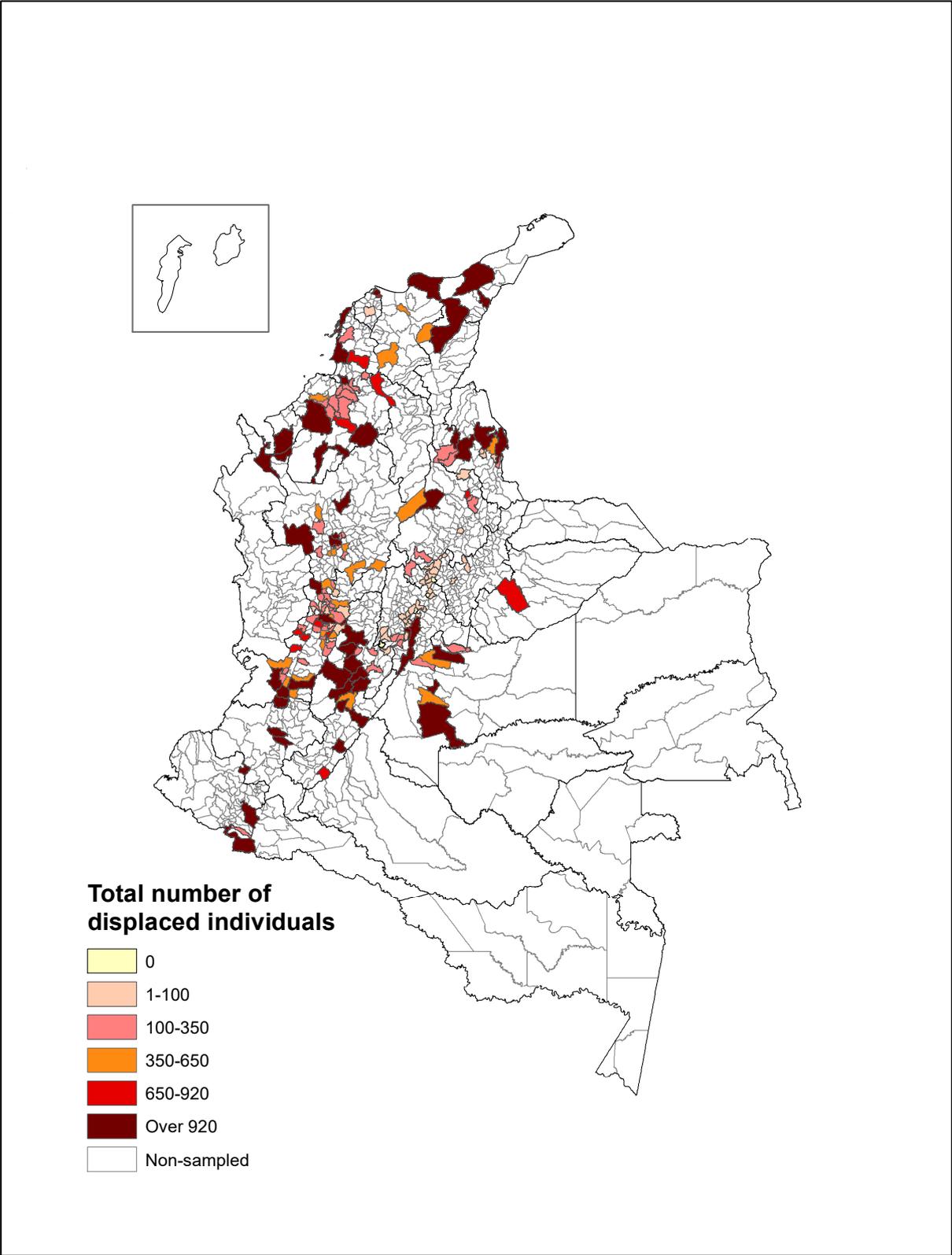


Figure 3.6: Distribution of Threats across Sampled Municipalities during 2013-2016

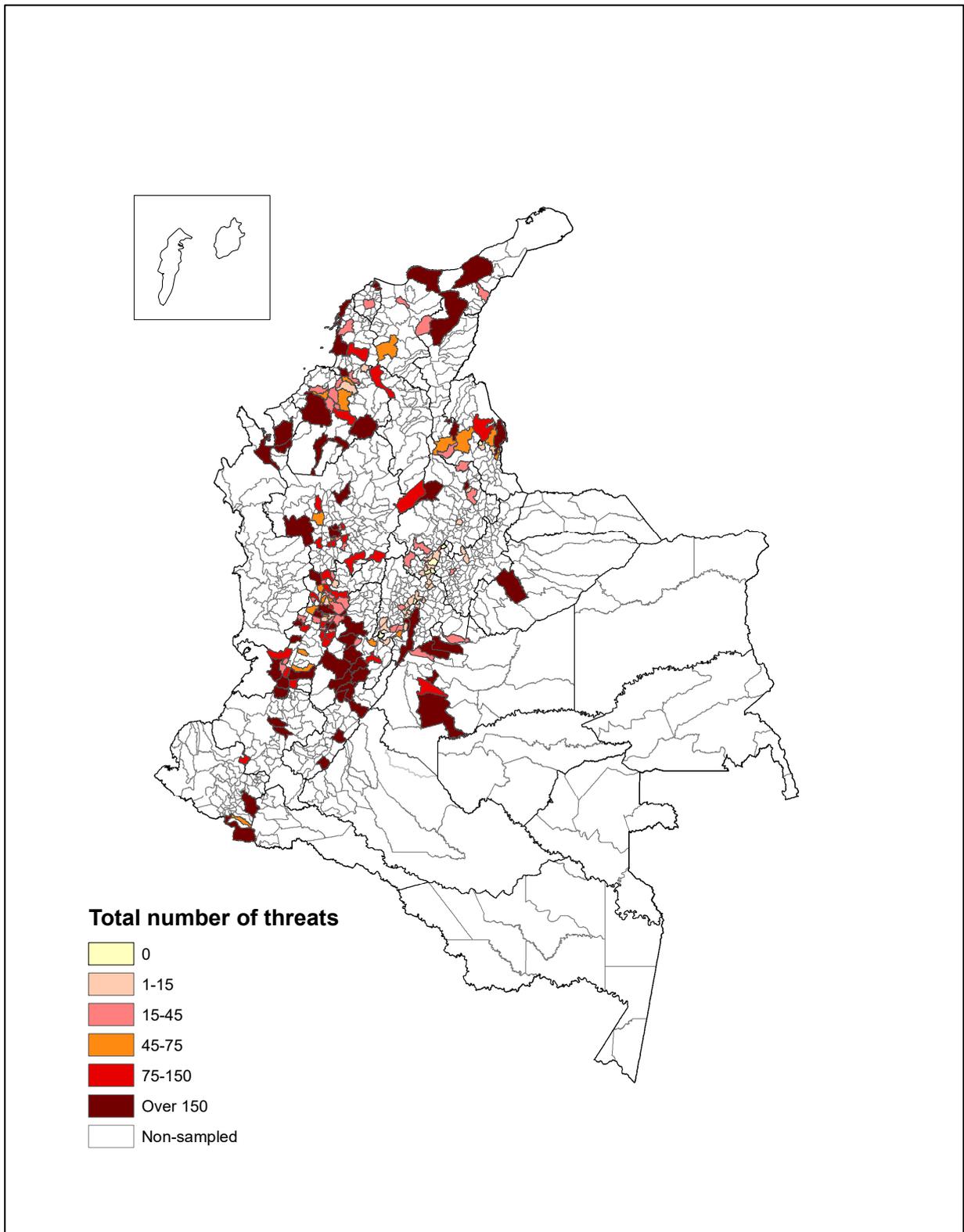
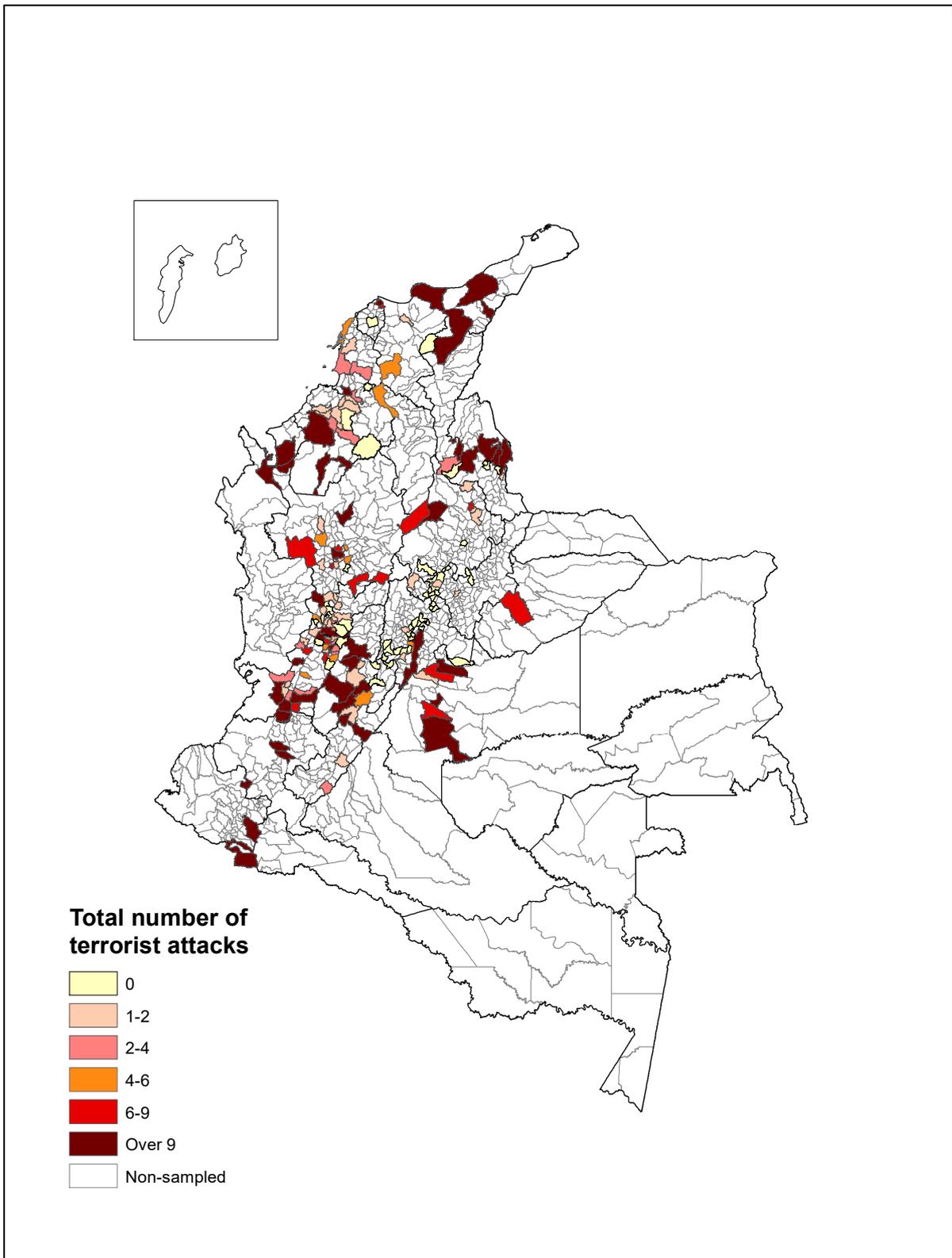


Figure 3.7: Distribution of Terrorist Attacks across Sampled Municipalities during 2013-2016



Chapter 4

The Social Legacies of Political Violence: Understanding the Impact of Colombia's Conflict on Youths' Behaviour

4.1 Introduction

The endemic nature of internal warfare, in conjunction with its long-lasting and widespread legacies, remains one of the key threats to stability and socioeconomic development in today's world. Notably, whilst macro-level studies have found support for standard neoclassical growth theories that predict rapid post-war economic recovery (Davis and Weinstein, 2002; Brakman et al., 2004; Miguel and Roland, 2011), such analyses ignore the acute and long-lasting effects of violence that often remain deeply entrenched in society. By contrast, micro-level research has shown that individuals, particularly children and adolescents, are highly susceptible to the consequences of violence. Specifically, a large body of evidence has reported a negative impact of violent conflict on child nutritional status (Akresh et al., 2012; Kim, 2019; Bundervoet et al., 2009), child labour (Rodríguez and Sánchez, 2012), and human capital formation (Akresh and de Walque, 2018; Chamarbagwala and Morán, 2011; León, 2012). More recently, however, there has been a growing interest in the potential impact of violence exposure on youth's behavioural outcomes, such as aggression and substance use.

Using panel data from Colombia, a country stricken by more than 50 years of internal conflict, we analyse the impact of municipality-level violence exposure on early alcohol exposure amongst 9- to 16-year-old children and adolescents. Early alcohol use poses detrimental challenges to the short-term development of children. As suggested by developmental research, adolescence is characterised by critical stages of neuromaturation – i.e. development of the central nervous system – thus making youths’ brains particularly vulnerable to the harmful effects of alcohol (Castellanos-Ryan et al., 2013). Consequently, early exposure may impact various cognitive and behavioural outcomes, such as memory, inhibition control and sensitivity to reward (Lees et al., 2020). Providing supporting evidence, various studies have linked youth alcohol use to poor academic performance (Renna, 2007), delinquency (Ellickson et al., 2003), increased risk of substance use and risky sexual behaviour (MacArthur et al., 2012).

Additionally, given the impact of alcohol on adolescents’ brain development, early use has been associated with an increased risk of neurocognitive, behavioural, and social problems that can carry over into adulthood. Indeed, a large body of literature has documented the role of early life alcohol use in determining later-life outcomes, such as cognitive deterioration (Hanson et al., 2011), alcohol dependence (Grant and Dawson, 1997), poor mental health (McGue and Iacono, 2005), increased risk of early disability pension (Sidorchuk et al., 2012), and reduced earnings and employment (Mullahy and Sindelar, 1993, 1996). Consequently, understanding the effects of violence exposure on early alcohol exposure remains paramount for ensuring children’s healthy development in the short-term and promoting both the formation of human capital and recovery of afflicted communities in the long-term.

To uncover the impact of conflict-related violence on youth’s early alcohol use, we exploit the panel nature of our data by employing a child fixed effects model. This allows us to control for potential time invariant characteristics – e.g. genetic factors associated with alcohol use of exposed and non-exposed children that may influence our outcome of interest.¹ Additionally, given that certain regional factors (e.g. development) may influence both violence levels and youth alcohol use, we include time-varying municipality-level characteristics to control for other potential confounders which may, in turn, threaten the identification of our parameter of interest.

¹Evidence from twin studies suggest that genetic influences account for roughly 40-60% of the risk associated with alcohol use disorders – see, e.g., Prescott and Kendler (1999).

The analysis indicates that violence exposure plays a significant role in shaping risk behaviour amongst youth in Colombia. Interestingly, whilst our initial results indicate that early alcohol exposure is not affected by municipality-level violence, heterogeneous effects analyses reveal that victimisation effects may be conditional on adolescents' age. Specifically, we find that changes in exposure to municipality-level violence significantly increase the likelihood of early alcohol exposure amongst older adolescents, particularly those aged 13-16. These results are in line with evidence from developmental research which indicates that adolescence is a critical stage for the emergence of risk behaviours (Steinberg, 2008, 2010). Furthermore, subsample analyses reveal minimal differences across gender, with conflict-related violence significantly increasing the probability of early alcohol use amongst older female and male adolescents.

While the main focus of the chapter is on early alcohol exposure, we also look at the impact of conflict more broadly on other externalising behaviours among the same cohort of youths. Specifically, we find that changes in exposure to threats and forced displacement increase youth's likelihood of enjoying peer fights by 5 and 6 percentage points, respectively. Similarly, changes in exposure to threats appear to increase the probability of retributive behaviour by 5 percentage points. Lastly, we also find a positive and significant effect of high municipality-level violence exposure on index scores that summarise adolescents' responses to the alcohol use and externalising behaviour questions.

These results have key implications. In particular, the positive impact of conflict-related violence on early alcohol exposure could severely impact youth's developmental trajectories, thus resulting in detrimental effects, such as cognitive impairment, school dropout, and poor academic performance. At the same time, such short-term effects may lead to long-lasting consequences that could worsen individuals' long-term wellbeing, thus eventually resulting in the emergence of inequalities between exposed and non-exposed communities. As such, these effects highlight the need for programmes that focus on the prevention of early alcohol use across conflict-ridden municipalities. Moreover, the conditional effects that were found throughout the analysis indicate that older teenagers, particularly those aged 13-16 would reap the greatest benefits of such alcohol prevention programmes.

The chapter contributes to the literature in two important ways. First, whilst the empirical

evidence on the effects of violence on child outcomes, such as health and human capital has grown over the past years, far less is known about its potential impact on risky behaviour, specifically early alcohol exposure. As mentioned earlier, understanding such a relationship is critical not only due to children's particular susceptibility to the damaging effects of alcohol, but also because its early onset can lead to long-term consequences that may become difficult to reverse in adulthood. Furthermore, analysing how violence may impact youth's behaviour is a highly relevant task in Colombia, a country that ranks fifth in child suffering induced by civil conflict, whilst also having the fourth highest child homicide rate (Save the Children, 2017).

Second, whilst studies from the field of psychology have sought to assess the relationship between violence exposure and early alcohol use, these analyses often rely on small cross-sectional samples and lack sufficient control variables, thus limiting our understanding of the true impact of victimisation. Therefore, the chapter addresses this gap by employing a child fixed effects model and an extensive set of municipality-level controls to get closer to the causal effect of violence exposure on the probability of early alcohol use. Likewise, by carrying conditional effects and subsample analyses, it also sheds light on the differential effects of violence exposure across both age and gender groups.

The remainder of the chapter is structured as follows. Section 4.2 reviews the empirical literature on the effects of violence exposure on youth outcomes. Section 4.3 describes the data and presents the empirical strategy used in the analysis. Section 4.4 provides a discussion of the estimated effects, whilst Section 4.5 estimates a set of robustness checks to test the strength of the results. Finally, Section 4.6 provides concluding remarks.

2

4.2 Literature Review

Research indicates that exposure to environmental stressors, such as physical or verbal abuse, overcrowding, poverty, and community violence are detrimental to positive child development (Coley et al., 2013; Evans et al., 1998; Evans, 2021; Lynch and Cicchetti, 1998; Linares et al., 2001). In particular, children exposed to such negative environmental influences have been shown to exhibit greater signs of anxiety, stress, irritability, and cognitive impairment, relative

to their unexposed peers (Contreras et al., 2019; Doan and Evans, 2020; Evans, 2006; Ackerman and Brown, 2010). Likewise, amongst adolescents, environmental stressors have been associated with poor mental health, behavioural issues, delinquency, and substance use (Beyers et al., 2003; Reiss, 2013; Letourneau et al., 2013). Additionally, and of greater relevance to this chapter, a growing body of evidence suggests that by triggering a set of stress responses and disrupting traditional safe heavens, violence plays a key role in determining child and youth developmental outcomes (Sharkey et al., 2012; McCoy et al., 2015).

Whilst the effects of violence on children's development and wellbeing may begin to manifest themselves shortly after exposure, research indicates that early-life conditions are a vital determinant of later-life outcomes, such as earnings, human capital, health and employment (Currie and Hyson, 1999; Almond and Currie, 2011; Black et al., 2007; Oreopoulos et al., 2008). Consequently, understanding the consequences of violence on children and adolescents is critical not only for promoting child development in the short-term, but also for supporting the formation of human capital, thus ensuring the long-term wellbeing of exposed individuals. In what follows, we review the existing empirical literature on the effects of violence exposure on child and youth outcomes.

4.2.1 Effects of Violence Exposure on Behavioural Outcomes

While there has been a recent interest in the impact of violence on child and youth outcomes amongst economists, most of the evidence on the consequences of environmental stressors stems from the field of psychology and developmental research. Notably, a key hypothesis informing such studies posits that violence disrupts various physiological, cognitive, emotional and behavioural processes which lead to subsequent negative child outcomes (Sharkey et al., 2014). In particular, violence exposure is said to activate a sequence of stress responses which, in turn, impairs children's emotional skills by worsening their ability to cope with, assimilate, and react to social and emotional information (Margolin and Gordis, 2000). Thus, the persistent use of the stress-response system in an environment of continuous violence and threats gives rise to biased and inaccurate patterns of social perception and cognition (Dodge, 2006), which ultimately increase the risk of maladaptive coping responses and undesirable behaviours (Buka et al., 2001; Henrich and Shahar, 2013; Fowler et al., 2009).

One such example of undesirable coping responses is participation in risky activities, such as substance use, delinquency and risky sexual behaviour. For example, Schiff et al. (2006) examine the impact of terrorist attacks on alcohol use amongst Israeli adolescents. Their results suggest that living in an area where an attack took place is significantly associated with greater alcohol use amongst young adolescents, even after controlling for demographic characteristics and factors, such as depression and post-traumatic stress disorder (PTSD). According to the authors, such relationship may be the consequence of maladaptive coping mechanisms which rely on alcohol use to manage the trauma of violence.

The relationship between violence and risk behaviours amongst Israeli youth is further supported by Pat-Horenczyk et al. (2007). Focusing on terrorist attacks exposure during the Second Intifada that initiated in 2000, the authors examine victimisation effects on a risky behaviour score including frequency of alcohol use, fighting, drugs use, risky sexual behaviour, and carrying weapons, amongst others. Their results indicate that adolescents who had been personally exposed to the conflict exhibited a significantly greater number of risk behaviours, relative to their unexposed peers. Moreover, differences in risk-taking were also found across distinct groups of respondents, with boys and adolescents who showed PTSD symptoms engaging in more risky behaviours than girls and non-symptomatic youth, respectively.

Similar effects of the impact of violence exposure on risk behaviours are found outside the Israeli context. Okello et al. (2013) examine the impact of Uganda's conflict on various youth risk-taking and anti-social behaviours 4 years after the war ended. In particular, they focus on substance use, risky sexual activity, suicidal behaviours, rule-breaking and aggression. Their evidence suggests that war exposure is associated with taking part in 3 or more of the aforementioned behaviours, with depression symptoms mediating such observed relationship.

Focusing on community violence, rather than conflict-related events, Berenson et al. (2001) examine the impact of victimisation on risk behaviours amongst adolescent girls in the United States. To do so, they distinguish between indirect violence (i.e. witnessing violence) and direct exposure (experiencing violence). Their results suggest that both types of victimisation are significantly associated with substance use and risky sexual activity. For example, relative to their unexposed peers, girls who had witnessed violence were more likely to use alcohol and

drugs before sex, whilst those directly affected were roughly twice as likely to report alcohol and tobacco use in the past 12 months. Moreover, as expected, the effects appeared to intensify amongst adolescents who reported both types of victimisation.

Using cross-country data, Vermeiren et al. (2003) examine the relationship between violence exposure and substance use among 14-17 years-old adolescents in Russia, Belgium, and the United States. Across all 3 countries, youth who have witnessed 1 to 2 violent events exhibit a greater use of alcohol, marijuana, cigarettes, and hard drugs, relative to their unexposed peers. Such effects remain robust after controlling for key sociodemographic characteristics but increase in magnitude with the number of violent events under consideration. Moreover, similar effects are found when considering other types of violent exposure, particularly direct victimisation.

In addition to influencing substance use and risky sexual activity, evidence suggests that violence exposure may also impact other forms of youth externalising behaviours, particularly aggression. Using data from Colombia, Chaux et al. (2012) examine the relationship between violence exposure and levels of reactive aggression – i.e. aggression in response to an actual or perceived provocation – and proactive aggression – i.e. intended aggression used as a means to an end and without previous provocation. Thus, while the former involves an impulsive act of aggression, the latter is characterised by deliberate attacks used to achieve a given goal. Their evidence indicates that children and youth living in neighbourhoods with a high level of political violence or common crime are more likely to exhibit increased levels of both reactive and proactive aggression, relative to peers who live in low-violence afflicted districts of the same city. Moreover, the relationship appears to be explained by cognitive and emotional biases, with children and youth exposed to violence reporting fewer feelings of blame after being aggressive, anticipating greater positive outcomes of hostility, holding more favourable attitudes towards aggression, and judging others as having more hostile motives.

Using panel data over the period 1991-1997, Guerra et al. (2003) examine the relationship between community violence and the development of aggressive behaviour and cognition throughout elementary school amongst children living in Chicago. Similar to Chaux et al. (2012), the results reveal that witnessing community violence increases levels of aggression, as well as thoughts and beliefs supporting such aggression. In particular, prior exposure appears to in-

crease aggression during the early and later years of primary school, whilst increasing both aggressive fantasies and beliefs that justify aggression during the later years of primary school. According to the authors, such a relationship may be explained by the relative instability of emotional and social perceptions often observed during the early years of childhood. Therefore, unlike changes in behaviour which may become evident in the short-term, changes in cognitions may entail a habituation process, and thus, manifest only in the medium- to long-term.

Focusing on Colombia, Harker et al. (2017) examine the impact of municipality-level crime and conflict-related violence on the socioemotional skills of 5th and 9th grade students. According to their results, a 1 standard deviation increase in the homicide rate is associated with a 2.5% and 2.3% increase in the rationalisation of aggressive behaviour amongst primary and secondary students, respectively. The magnitude and direction of these effects remain similar when examining conflict-related violence. Furthermore, increases in both types of violence appear to be associated with a significant decline in empathy levels across both age groups, as well as a significant increase in confrontational reactions to aggravation amongst 5th grade students. Interestingly, moderation analyses indicate that school characteristics (e.g. public vs private, staff number) may have a key role in curbing the negative impacts of municipality-level violence.

Echoing these results, Meléndez-Guevara et al. (2021) find that various types of violence, including armed conflict exposure, witnessing community violence and direct victimisation are directly linked to increased externalising behaviours amongst high school students in Colombia.² Moreover, both conflict exposure and witnessing violence appear to be positively related to increased aggressive thoughts, while also affecting behaviour indirectly through the emergence of such aggressive beliefs. Lastly, similar to the moderating role of schools found by Harker et al. (2017), the analysis suggests that community belongingness mitigates the effect of both conflict exposure and witnessing violence on aggressive cognitions.

In summary, theories from the field of psychology indicate that exposure to negative environmental influences – e.g. violence – trigger a series of stress responses which, in turn, impair the development and socioemotional functioning of children and adolescents. The resulting biased and inaccurate systems of cognition put victimised youth at risk of developing maladaptive cop-

²The measure on externalising behaviours is a latent factor consisting of three different measures, including delinquency, aggression, and drug and alcohol use.

ing strategies and behaviour. In particular, evidence suggests that victimised children may be more likely to exhibit alcohol and cigarette use, heightened aggression, delinquency, and risky sexual activity, relative to their unexposed peers.

Yet, while the studies discussed above help to shed light on the behavioural consequences of violence, they often rely on small cross-sectional samples and lack sufficient set of controls in the analysis. Consequently, we contribute to this line of research by employing a child fixed effects strategy and controlling for various time varying household- and municipality-level characteristics. Nonetheless, it is important to note that whilst the fixed effects strategy mitigates the concerns of confounding time invariant factors, we remain unable to rule out the possibility that unobserved time-varying characteristics may impact both our outcome of interest and violence exposure. This limitation is explained further in the methodology section.

4.2.2 Tackling the Causality Nexus between Violence Exposure and Youth Outcomes

The literature reviewed above sheds lights on the detrimental consequences of violence on youth developmental outcomes and human capital formation. However, a vast majority of these analyses lack an adequate estimation strategy, and thus, fail to establish a causal link between exposure and youth development. This limitation is particularly evident across studies assessing the relationship between violence and risky behaviour, e.g. alcohol use.

Unfortunately, victimisation analyses may suffer from potential sources of endogeneity which threaten the identification of the parameter of interest. Specifically, omitted factors related to families' and communities' characteristics may influence violence exposure and child outcomes simultaneously. For example, as highlighted by Sharkey et al. (2012), unobserved family factors may put certain households at greater risk of living in (or being unable to leave) highly exposed areas and, at the same time, influence youth's developmental outcomes. Moreover, given that youth may also participate in community violence or armed actions, traditional issues of reverse causality could also impact child victimisation analyses. In particular, lower levels of school enrolment or heightened levels of aggression and substance use may affect violence levels, rather than vice-versa.

In an effort to tackle the causality nexus more directly, a set of studies have relied on geocoded and time-stamped violence data to create valid control groups within children's home neighbourhoods or school localities. Pioneering this line of work, Sharkey et al. (2012) examine the effect of community violence on children's self-regulatory behaviour and performance at school. To do so, they exploit variation in the timing of homicides, relative to the timing of class assessments during a randomised controlled trial in Chicago. Moreover, they define exposure as children living within a certain geographic distance of where a homicide occurred in the week prior to the class test.³

In their first set of estimates, the authors employ child fixed effects, and thus, exploit individual variation in violence exposure amongst children and across assessments. The results indicate that exposure to a homicide occurring within 2500 feet of the child's home lowered attention and impulse control scores by 0.33 and 0.35 standard deviation points, respectively. Such effects increase in magnitude when focusing on children living within 1000 feet of where a homicide took place. In their second set of estimates, Sharkey et al. (2012) rely on zone fixed effects, and thus, compare the treatment group to children living within the same geographic radius but who were assessed either before or a month later after the homicide. Their results indicate that, relative to the control group, exposed children experienced a decline in their attention and impulse control, even after controlling for key demographic characteristics.

Following the same empirical approach as Sharkey et al. (2012), McCoy et al. (2015) analyse the effect of violent crime on children's cognitive outcomes and selective attention. According to their zone fixed-effects results, children exposed to a violent crime within a half-mile from their homes and in the week prior to a class assessment exhibited significantly faster but less accurate performance on the cognitive test, relative to children living in the same areas but those who were assessed at different times. No significant differences in selective attention were found across the control and treatment groups. Focusing on Colombia, Molano et al. (2018) explore the impact of homicide exposure on children's emotional and social outcomes. Their results indicate that exposure to at least 1 homicide on the week before an assessment leads to a significant decline in levels of emotional regulation and empathy, relative to children who attend school in the same neighbourhoods but who were assessed at different times.

³As such, identification relies on the implicit assumption that the relative timing of violence and class tests was exogenous among children within the same geographic area.

Turning away from such fixed-effects methodologies, various studies have also implemented specific econometric techniques to bypass potential threats to identification, including Instrumental Variables (IV) and Differences-in-Differences (DiD). For example, Kim (2019) analyse the effect of village-level exposure to violence on child nutritional status in Uganda. To address sources of endogeneity, the author instruments violence intensity using village-level distance to South Sudan's border. Notably, given Sudan's initial support for the Lord's Resistance Army (LRA), the conflict became particularly acute near the border, thus making distance a good instrument for violence. According to the IV estimates, violent events at the village-level lowered Weight-for-Age z-scores (WAZ) and Weight-for-Height z-scores (WHZ) by roughly 3.64 and 5.94 grams, respectively.

Akresh et al. (2012) examine the impact of the Eritrean-Ethiopian conflict on children's health outcomes. Their estimation strategy relies on a DiD model which compares the HAZ scores of children across exposed and non-exposed regions and who were born either before or during the conflict. To further control for potential confounders, the authors allow for the inclusion of region-specific time trends, and region and cohort fixed effects. Their first set of estimates indicate that children living in afflicted regions experienced a 0.45 standard deviation decrease in their HAZ scores, relative to their peers in non-exposed war areas. Furthermore, analyses focusing on the intensity of war suggest that exposure to mean levels of violence – as defined by forced displacement – lowers HAZ scores by roughly 8.6% and 8.7% amongst children born during and before the conflict, respectively.

Using panel data from Timor Leste, Justino et al. (2014) analyse the short- and long-term impact of the 1999 outbreak of violence on education. In particular, they focus on levels of school attendance and primary school completion 2 and 8 years after the conflict, respectively. Moreover, their identification strategy relies on a DiD model which exploits geographical and temporal variation in the incidence of violence. Their analysis indicates that, relative to their unexposed peers, individuals whose household was displaced during the conflict experienced roughly an 8.5 percentage point decrease in the probability of school attendance, with boys experiencing the largest declines in education. Likewise, relative to unexposed children, individuals who belonged to a household that was displaced and whose home was destroyed during

the conflict experienced a 13.3 percentage points decline in school attendance, with girls being amongst the most affected by the simultaneous shocks. Furthermore, exposed boys were roughly 18 percentage points less likely to have completed primary school 8 years after the outbreak of violence, relative to unaffected boys. Interestingly, however, the probability of completing primary school significantly increased amongst exposed girls, relative to their unexposed female peers. According to the authors, such opposing effects may be explained by a trade-off decision between economic security and human capital, with households ultimately removing boys from school and introducing them early to the labour market.

In a similar analysis, Verwimp and Van Bavel (2014) exploit the geographic and temporal variation of Burundi's conflict to assess the impact of violence on schooling outcomes. In particular, their DiD model compares school-aged children living in provinces exposed to long periods of violence with peers of the same age living in low-violence exposure areas. Their results show that, relative to the control group, school-aged children in violence-afflicted provinces experienced a 9-percentage point decline in their probability of finishing primary school. Likewise, each additional year of violence exposure reduces the likelihood of school completion by 5 percentage points. Lastly, additional analyses suggest that violence exposure lowers boys' completion rates at a greater rate than girls, thus reducing the gender gap in education. However, such effect is only significant for girls in non-poor households, with girls from disadvantaged households facing a similar effect to their male peers, and thus, a persistent gender gap in completion rates.

Rodríguez and Sánchez (2012) estimate the impact of conflict-related violence on the human capital of primary and high-school students in Colombia, particularly schooling and child labour. To mitigate concerns of endogeneity and biased estimators, they instrument municipality-level exposure to offensive actions using an interaction between lagged homicide capture rates at the state-level and the respective municipality's population. According to the authors, such measure proxies for the presence and effectiveness of police forces, and thus, should influence the violent activities of rebel armed groups. Moreover, because such law enforcement decisions are taken by the central government, lagged homicide captures should have no direct impact on households' current decisions on school enrolment or child labour, after controlling for a given set of household- and municipality-level characteristics. The IV estimates show that municipality-level violence significantly increases the risk of dropping out from school for children aged 6-17 years,

whilst increasing the likelihood of entering the labour market for children aged 12 and older.

Focusing on the Israeli-Palestinian conflict, Jürges et al. (2022) examine the long-run effects of household-level exposure on children's school grades 7 years after the resolution of the Second Intifada. Given that unobservable factors may impact both family exposure to the conflict and students' school achievement, they instrument household victimisation using the cumulative number of locality-level fatalities over the period of conflict. Consequently, the validity of the instrument relies on the assumption that the number of locality-level victims affects children's outcomes 7 years later only through its impact on household-level exposure. To control for potential confounders which may threaten this assumption, the authors control for an extensive set of locality- and school-level characteristics and province fixed effects. Their IV-2SLS results suggest that one additional event of households' exposure to violence lowered children's primary school grades by roughly 6.5 points. Furthermore, additional analyses indicate that this effect may be explained by a negative impact of household-level exposure to violence on children's non-cognitive skills, particularly increased externalising behaviours and lower levels of conscientiousness.

Overall, the methodologies discussed above confirm the negative causal impact of violence on child and youth development.⁴ In particular, relative to their unexposed peers, victimised children and adolescents exhibit an increased array of detrimental outcomes, including lower school attendance and performance, early entry to the labour market, poor nutritional health, and impaired cognitive and non-cognitive skills. Furthermore, whilst some of the specific mechanisms may differ across studies, such negative developmental consequences are found across different types of victimisation (i.e. direct and indirect), as well across a wide range of institutional settings and conflict-afflicted environments. The robustness of these findings highlights the severe social challenges posed by violence and internal conflicts, and thus, point to the critical need of understanding its extensive impacts on child development and wellbeing.

Yet, despite the increasing knowledge about the effect of violence on youth's health and human capital, far less is known about its causal impact on their risk behaviour and preferences. Consequently, the chapter contributes to this line of research by assessing the effect of Colombia's

⁴It is important to highlight that, while the majority of these studies implement a DiD estimation strategy, a lack of data for three consecutive survey waves limits our ability to estimate such a model.

armed conflict on youth's early alcohol exposure. Notably, the country represents a good case study, with evidence suggesting that children bear disproportionate levels of violence (Save the Children, 2017), whilst also being exposed to concurrent environmental stressors, such as multidimensional poverty (García and Ritterbusch, 2014). Furthermore, early onset of alcohol use may be a key determinant of life-time wellbeing, with analyses linking such behaviour to various short- and long-term negative outcomes, including fewer years of schooling (Cook and Moore, 1993), delinquency (French and Maclean, 2006), alcohol dependence (Grant and Dawson, 1997), poor mental health (McGue and Iacono, 2005), and reduced income and employment (Mullahy and Sindelar, 1993, 1996). Consequently, understanding how violence may impact early alcohol exposure remains paramount for ensuring positive child development, supporting human capital formation, and assisting the long-term recovery of afflicted communities.

4.3 Data and Methodology

4.3.1 Data

The data on youth alcohol consumption are taken from the Colombian Longitudinal Survey (ELCA), the first large-scale panel study in the country conducted by the Centre for Economic Studies (CEDE). During 2010, 2013, and 2016, ELCA followed roughly 4,800 and 6,000 rural and urban households across the country, respectively. The survey's main objective is to identify socioeconomic changes at the individual and household-level, whilst providing insight into individuals' behaviour over time and its effect on wellbeing outcomes. For a detailed description of these data, including sampling framework and coverage of regions and populations, see chapter 3.

Amongst its different modules, ELCA compiles information on the wellbeing and physical and cognitive development of 8693 children who were 0-9 years old when the baseline wave took place in 2010. Notably, across each wave, the survey has been continuously adjusted to capture information that is relevant to each developmental stage – e.g. childhood and adolescence. For example, whilst the 2010 wave compiled information exclusively on early life characteristics, such as physical health and cognitive skills, the 2013 and 2016 waves include variables on social behaviour, life aspirations, and risk behaviour (e.g. alcohol use).

Given that our estimation strategy relies on a child fixed effects model, our analysis focuses

on children aged 9-16 for whom we have information on early alcohol use over the period of analysis.⁵ Furthermore, as explained in the methodology section, we also restrict the sample to children who did not migrate in between waves.⁶ This results in a balanced panel of 3674 observations across 95 municipalities pooled over the two waves.⁷ Additionally, given that ELCA compiles information of the household and its various members, we complement our main data with various household characteristics, including whether the child lives with the parents, and household size and income. Parental employment and education are not included in the analysis as these variables had a relatively high number of missing observations, thus reducing our sample size considerably. Nonetheless, insofar as parental education is likely to remain stable over time it forms a part of the child's fixed effect. Likewise, controlling for household income could help us capture the employment characteristics and financial resources of adolescents' parents.

To assess the impact of conflict-related violence on youth risk behaviour, we focus on a dummy measure of early alcohol exposure which is equal to 1 if the child reports having ever tried alcohol and 0 otherwise. The question is worded as follows:

Have you ever tried an alcoholic beverage, such as beer, chicha, guarapo, wine, aguardiente or liquor?⁸

- a. Yes
- b. No

Table 4.1 provides summary statistics of our main outcome of interest. In particular, we observe high levels of early alcohol exposure across our sample, with roughly 41% of children reporting its use in the 2013 wave. Furthermore, there appears to be a sharp increase in consumption over time, with more than half of our sample reporting having ever tried alcohol by 2016. To further understand how early alcohol use changes over time, Table 4.2 shows the transition matrix of our outcome of interest. Notably, we observe significant variation in alcohol exposure levels across waves, with approximately 43% of initial non-drinkers reporting the use of alcohol

⁵The 2013 sample is comprised of individuals aged 9-13, whilst the 2016 sample is comprised of the same individuals at ages 12-16.

⁶A total of 286 children moved to a different municipality between 2013-2016.

⁷Due to missing observations in our conflict-related variables, the final sample size differs across each regression analysis model.

⁸Chicha and guarapo are traditional fermented drinks, with relatively low percentages of alcohol. Meanwhile, aguardiente is the country's national liqueur, with an average alcohol content of 30%.

in 2016. Interestingly, however, we also observe changes in the opposite direction, with 29% of initial drinkers indicating never having tried alcohol before in the 2016 wave. Evidently, such contradictory patterns of responses suggest some children either misreported or misunderstood the question outlined above. Therefore, in the baseline analysis, we keep these individuals as drinkers in the second wave, i.e. we assume that their first response was the correct one.⁹ The descriptive statistics throughout this section report this revised variable.

The levels of early alcohol exposure found in Table 4.1 are broadly in line with the 2016 National Survey of Psychoactive Substances among the School-Aged Population (Observatorio de Drogas de Colombia, 2016). In particular, the study finds that 69% of 12-18-year-old students across Colombia had consumed alcohol at least once in their lifetimes, with 50% of them reporting being 13 years old at the onset of alcohol use. Unfortunately, evidence indicates that early exposure may be a significant determinant of later-life alcohol abuse. Using a representative study of 12-65-year-old Colombians, Pérez Gómez et al. (2011) find that individuals who started drinking when they were 14 or younger exhibit risky and hazardous drinking patterns that are 2 and 4 times higher than those who were 18 and 21 at onset of alcohol use, respectively. Similarly, those who initiated alcohol consumption at age 14 or younger appear to exhibit significantly higher scores in the Alcohol Use Disorder Identification Test (AUDIT).¹⁰

From a public policy perspective, it is important to understand whether early alcohol exposure is more prevalent across specific groups of children. Consequently, Table 4.3 reports our outcome of interest by sociodemographic groups, including age, gender, household income, and region of residence. As expected, older adolescents exhibit higher levels of early alcohol exposure, with roughly 66% of children aged 13-16 reporting having tried alcohol in the past. Moreover, we observe only minimal differences in alcohol exposure across gender groups, with 56% and 51% of older boys and girls reporting alcohol use, respectively. Additionally, to assess whether there are gender differences in the age at which adolescents try alcohol, Table 4.3 also reports the gender composition within each age group. Although boys tend to exhibit higher levels of early alcohol exposure than girls in either age group, these differences remain minimal, with 67% and

⁹We also test the sensitivity of our estimates by excluding these children from our sample. These results are reported in the robustness section.

¹⁰The relationship between early alcohol exposure and later alcohol abuse is also found outside the Colombian context. For example, in the US, Grant and Dawson (1997) find that individuals who started drinking at age 14 or younger had a 40% prevalence of lifetime alcohol abuse.

64% of 13-16-year-old boys and girls reporting having tried alcohol in the past, respectively.

Focusing on other sociodemographic groups, Table 4.3 indicates that early alcohol exposure increases amongst higher income families, with 54% and 58% of children in the second and third household income terciles reporting having tried alcohol in the past. Finally, the evidence also highlights interesting disparities at the regional level. Specifically, while 60% of youths across both the Andean and Oniroquia regions report early alcohol exposure, only 40% of children across the Caribbean region indicate having had such early exposure.

Turning to our control variables, we include various individual- and household-level characteristics shown to influence youth's risk behaviour, and which may also determine violence exposure, such as gender, age, family structure and socioeconomic status.¹¹ Table 4.4 reports the descriptive statistics of these control variables. Roughly 51% and 49% of our sample are boys and girls, respectively. Moreover, the average age is 11 in the 2013 wave and 14 in the 2016 wave. In terms of household composition, 90% of children lived with their mothers in 2013, whilst 88% continued to do so in 2016. Interestingly, however, the percentage of fathers present in the household is persistently lower across both waves, with only 67% and 63% of them living with their children in 2013 and 2016, respectively. Lastly, across both waves, the average household size is 5.

In addition to the individual-level data from ELCA, we employ a municipality panel compiled by CEDE which contains information related to the demographic, fiscal and civil conflict characteristics of all 1123 municipalities in the country. In terms of municipality-level controls, we include various time-varying characteristics related to the development of these areas that could impact both our outcome of interest and violence exposure. These include population size, number of educational establishments, municipality-level GDP, and indices of aqueduct coverage. The summary statistics of this set of controls are reported in Panel A of Table 4.5.

To understand the impact of conflict-related exposure on early alcohol exposure, we focus on 3 key violence measures. This includes forced displacement, threats and terrorist attacks.¹² Panel

¹¹Whilst gender is dropped from our child fixed effect estimations, we use this variable to conduct subsample analyses. These results are discussed in subsection 4.4.2

¹²The populations and municipalities sampled in chapters 3 and 4 are not identical. Thus, unlike the previous chapter, the municipality-level measures of kidnappings and homicides presented a high number of missing obser-

B of Table 4.5 provides a summary of these variables. Notably, an average of 483 and 208 individuals were forcefully displaced from the municipalities in our sample in 2013 and 2016, respectively. Moreover, whilst these areas experienced roughly 106 threats in 2013, such events appear to have decreased over time, with an average of 67 threats in 2016. Likewise, roughly 16 and 2 terrorist attacks were reported across our sampled municipalities in 2013 and 2016, respectively. Before proceeding further, it is important to note that the latter measure presents a high number of missing observations. As mentioned earlier, our sample covers 95 municipalities across the period of analysis. Yet, as reported in Table 4.5, we lack information on terrorist attacks exposure for roughly 23% and 45% of sampled municipalities in 2013 and 2016, respectively. Evidently, such a lack of information would result in a sizable reduction of our sample size, and thus, in less comparable and potentially less robust effects across specifications.¹³ Consequently, we restrict our main fixed effects analysis to violent events for which we have more complete data, i.e. forced displacement and threats, thus ensuring greater comparability of samples and results across models.¹⁴

As highlighted in chapter 3, a key feature of Colombia's armed conflict lies in its uneven geographic distribution, with certain regions bearing disproportionate levels of the conflict and others facing minimal levels of violence. To understand such differences in exposure and the potential relation between our conflict-related measures, Table 4.6 shows a correlation matrix between our conflict measures, whilst Figure 4.1 depicts the histogram of each violent event. As expected, afflicted regions appear to be at risk of facing multiple violent events, with the variables on threats, terrorist attacks, and forced displacement displaying a positive and significant relationship with one another. Moreover, as shown in Figure 4.1, our conflict measures appear to be skewed right and to exhibit both a high incidence of zeros and outliers, i.e. areas with very high levels of conflict-related exposure, relative to the rest of the sample. To account for the distribution of our data, we follow a similar approach to chapter 3. That is, we categorise the continuous violence measures into deciles and define exposure as the top decile of each violent event.¹⁵

variations that limited our ability to make meaningful inferences from the data. Consequently, in this chapter, we focus on a narrower selection of violence measures for which we have sufficient observations.

¹³Using this measure results in a 44% reduction of our sample size.

¹⁴We present the results of terrorist attacks exposure in the robustness section.

¹⁵In the robustness section, we test the sensitivity of our results to alternative definitions of conflict-related exposure.

Table 4.7 shows the proportion of adolescents living in municipalities in the top decile of violence across the period of analysis. Notably, 21% and 24% of our sample were exposed to the highest levels of threats in 2013 and 2016, respectively. Similarly, the proportion of adolescents experiencing the highest levels of forced displacement increased from 14% in 2013 to 22% in 2016. By contrast, the proportion of young individuals living in municipalities in the top decile of terrorist attacks decreased across waves, with roughly 11% and 6% of our sample experiencing these events in 2013 and 2016, respectively.

Finally, to understand the variation in violence during the period of analysis, Table 4.8 reports the transition matrix of our municipality-level conflict measures across time. Roughly 11% and 8% of sampled municipalities appeared to have transitioned to the top decile of threats and forced displacement levels across waves, respectively. Meanwhile, 19% and 15% of areas heavily exposed to threats and displacement transitioned to the lower deciles of exposure by 2016, respectively. Interestingly, however, the results suggest no transition from low to high levels of terrorist attacks exposure over time, with all municipalities staying in the bottom 9 deciles of attacks across waves. Instead, changes in exposure appear to go in the opposite direction, with 67% of heavily exposed municipalities transitioning to lower levels of this event by 2016. The lack of variation from low to high levels of terrorist attacks exposure, in conjunction with its high number of missing observations, provides further support for restricting our main analysis to threats and forced displacement exposure only.

4.3.2 Methodology

To assess the impact of violence on early alcohol exposure, we exploit the panel nature of our data in a child fixed effects model. Doing so allows us to control for unobserved time invariant characteristics (e.g. genetic influences on risk behaviour, parental education and employment) that may impact our outcome of interest. Likewise, it also allows us to control for observed factors with limited time variation and for which we do not have complete information, such as parents' educational attainment. Moreover, given that fixed effects models only account for time invariant factors, we complement our model by controlling for time-varying demographic and municipality-level characteristics that may impact alcohol use. Lastly, we also restrict our baseline sample to adolescents who did not migrate during the period of analysis. In particular, if individuals living in heavily exposed municipalities relocate to low-conflict areas, we could

ultimately attribute their alcohol use to the wrong exposure levels, and thus, make incorrect inferences about the true relationship between violence and our outcome of interest.¹⁶

Our child fixed effects specification takes the following form:

$$y_{i,t,m} = \alpha_1 + y2016 + \alpha_2 VE_{m,t} + X'_{i,t,m}\gamma + D'_{m,t}\delta + \mu_i + \epsilon_{i,t,m} \quad (4.1)$$

Where i denotes individuals, m municipalities, and t survey years, i.e. 2013 and 2016. The variable $y_{i,t,m}$ is a dummy variable capturing our outcome of interest, i.e. having ever tried alcohol. The variable $VE_{m,t}$ is a dummy equal to 1 if the municipality was in top decile of each violent event under consideration, i.e. forced displacement and threats. As such, α_2 is our parameter of interest. Moreover, $y2016$ is a year dummy that captures any time-related effects that are common across all units. Meanwhile, the vector $X'_{i,t,m}$ represents a set of individual-level controls for which there remains enough variation across the period of analysis, including age, household income, household size, and a dummy on whether the child's parents live in the household; γ is the related parameter vector. The vector $D'_{m,t}$ denotes municipality-level characteristics, including population, GDP, number of schools, and an aqueduct coverage index; δ is the associated parameter vector. Lastly, μ_i denotes our child fixed effects, whilst $\epsilon_{i,t,m}$ is the standard error which has been clustered at the municipality-level.

As mentioned earlier, a key advantage of equation (4.1) is that it allows us to control for both observed and unobserved time invariant factors that may influence our outcome of interest. Thus, conditional on the idiosyncratic error term being uncorrelated with our explanatory variables, a child fixed effects model could provide us with an unbiased estimate of the effect of violence on early alcohol exposure. This is particularly important in victimisation analyses as certain household-level characteristics may put specific types of families at risk of living in highly exposed municipalities, whilst also influencing children's likelihood of substance use.

However, it is evident that a potential source of endogeneity could still threaten our estimations. In particular, whilst we complement the fixed effects estimator by including various time varying household- and municipality-level characteristics that are usually employed in the literature,

¹⁶We also test the sensitivity of our estimates to the inclusion of migrant youth in the sample. These results are reported in the robustness section.

we cannot fully rule out the possibility that other omitted, time varying factors influence both violence and our outcome of interest. In other words, we cannot guarantee that the error term, $\epsilon_{i,t,m}$, is indeed uncorrelated with our conflict-related variables.

Finally, we estimate equation (4.1) using a Linear Probability Model (LPM). Whilst Maximum Likelihood (ML) methods – such as logistic models – are better suited for binary dependent variables, the structure of our data and the composition of our dependent variable make the LPM the most adequate model for our analysis. In particular, given that we only observe variation in early alcohol use for approximately 25% of adolescents, the use of ML methods with fixed effects results in a substantial portion of our baseline sample being dropped from the analysis.¹⁷ Furthermore, although logistic models with fixed effects can provide reliable estimates even when variation in the dependent variable lies around 25%, a low number of observations per group – i.e. below 30 – can significantly bias the coefficients (Timoneda, 2021). By contrast, LPM with fixed effects have been shown to provide similar probability estimates, irrespective of the average group size and sample size (Timoneda, 2021). Given that we observe adolescents only twice during the period of analysis, we ultimately rely on the LPM to minimise concerns of biased estimates. We report the results of this analysis in the following section.

4.4 Results

Tables 4.9 and 4.10 show the baseline results which are estimated using a LPM. Across each column, we gradually include different set of control variables to our regression. Column 1 includes a year dummy and controls for various time-varying child and household-level characteristics. These include, the child's age, household income, household size, and dummies for whether the parents live in the household. Moreover, in column 2, we include various municipality-level controls, such as population size, number of schools, GDP, and an index of sewage coverage.¹⁸ Furthermore, across column 3, we include child fixed effects to control for potential time invariant factors that may influence our outcome of interest, i.e. youth's alcohol use. Additionally, as mentioned in the previous section, our exposure measures are defined by municipalities in

¹⁷A total of 2752 observations are dropped when using logistic models.

¹⁸Including these measures gradually helps us minimise concerns that our municipality-level characteristics are “bad controls”. Notably, whilst the coefficient on forced displacement changes sign in column 2, both violence measures remain insignificant after controlling for municipality-level characteristics.

the top decile of conflict-related events, i.e. threats and forced displacement. Lastly, whilst the final sample size differs depending on the conflict variable used, we maintain a high number of observations in each exposure model, thus ensuring high comparability of samples and effects across our conflict-related variables.

Whilst columns 1-2 indicate that age is significantly related to the early use of alcohol amongst adolescents, these effects remain insignificant after controlling for child fixed effects. Furthermore, whilst mothers' presence in the household lowers the likelihood of early alcohol exposure by roughly 14 percentage points, adolescents who live with their father exhibit a higher probability of early use. However, the latter effect remains insignificant across the child fixed effects specifications. Similarly, although household income appears to increase the likelihood of early alcohol exposure, the effect disappears in column 3. Finally, turning to our key variables of interest, the results indicate no significant effects of changes in either threats or forced displacement exposure on the likelihood of early alcohol use.¹⁹

Although the evidence above contradicts our initial expectations of a positive and significant effect of violence on early alcohol exposure, such estimates ignore the potential heterogeneity of victimisation effects across child-specific characteristics, especially age. Notably, evidence from developmental research highlights the transition from childhood to adolescence as a critical period for the emergence of risk behaviours, including substance use (Casey et al., 2008; Steinberg, 2008). Consequently, by omitting such conditional effects from our analysis, we could fail to recognise not only some of the significant impacts of violence on early alcohol use, but also the groups of children most vulnerable to the conflict. Thus, we proceed to estimate these heterogeneous effects in the following section.

4.4.1 Conditional Effects

As children transition into adolescence, they undergo several simultaneous changes, including pubertal development, increased sense of independence, diminished levels of self-regulation, and new parental and peer relationships (Castellanos-Ryan et al., 2013). Whilst these biological, cognitive and social changes are experienced successfully by most individuals, such developmental stage is also characterised by the emergence of risk-taking decisions and behaviours, such as

¹⁹We obtain similar effects when using a first-difference model

smoking and alcohol use (Castellanos-Ryan et al., 2013).

According to the “dual-system” model established in developmental neuroscience (Casey et al., 2008; Steinberg, 2008), the propensity for risk-taking during adolescence is explained by changes in two separate neurobiological systems. This includes a “socioemotional” system which is associated with reward- and sensation-seeking, and a “cognitive control” system which relates to individuals’ self-regulation and impulse control (Steinberg, 2010). Notably, whilst the socioemotional system located in the limbic and paralimbic areas of the brain tends to develop rapidly during adolescence, the “cognitive control” system localised in the prefrontal and parietal cortices of the brain only starts developing in late adolescence and early adulthood (Steinberg, 2010). Consequently, such temporal imbalance is said to result in a greater propensity to risk-taking, especially during middle adolescence (Steinberg, 2008).

Equally, the neurobiological changes experienced during adolescence often occur in tandem with important changes in individuals’ social settings. For example, as highlighted by Castellanos-Ryan et al. (2013), the transition to high school is characterised by the expansion of peer groups and a more dispersed supervision and monitoring of students. Similarly, outside the school environment, adolescents reduce the time they spend with their families and, instead, engage in more activities with their friends where adult supervision is more limited (Castellanos-Ryan et al., 2013). Unfortunately, such social changes can be conducive to alcohol use amongst young people, with evidence linking peer acceptance to the same neural responses associated with social rewards (Guyer et al., 2012), and youth’s own risk behaviour (Gardner and Steinberg, 2005; Silva et al., 2016).

Evidently, to the extent that risk-taking becomes more prevalent as children get older, we could expect our victimisation effects to become stronger with age. To test for such heterogeneous effects, we augment equation (4.1) with an interaction term between our conflict-related measures and age. However, rather than treating the latter as a continuous variable, we rely on a binary measure that is equal to 1 for respondents between the ages 13-16 and 0 for those aged 9-12. As mentioned earlier, evidence from developmental research suggests that risk-taking peaks during middle adolescence but decreases during late adolescence and early adulthood as the cognitive control system starts to develop. Given that such effects imply a non-linear relationship between

age and risk behaviour, we compress the former measure into a binary variable that captures mid-adolescents for whom risk-taking behaviour may be more prevalent.

Table 4.11 shows the results when each of the interactions is included separately in the early alcohol exposure model. Unsurprisingly, we find evidence for the existence of differential effects of violence across age groups, with all interaction terms entering positively and significantly in their respective models.²⁰ To better understand such heterogeneity, Figure 4.2 shows the marginal effects of our conflict-related measures for age groups 9-12 and 13-16. As expected, panels (a) and (b) indicate that age has a key role in moderating the impact of violence on the likelihood of early alcohol use. In particular, changes in exposure to threats and forced displacement appear to significantly increase the probability of having ever tried alcohol amongst teens in middle adolescence. By contrast, we find no significant effect of changes in municipality-level conflict exposure amongst younger children.

Overall, the conditional effects analysis presented in this section highlights the key role of age in moderating the impact of violence on youth's risk-taking behaviour. In particular, we find that mid-adolescents are highly vulnerable to the negative consequences of municipality-level conflict exposure, with each violent event significantly increasing the likelihood of early alcohol exposure amongst 13-16 years-old adolescents. These effects are in line with the "dual-system" model of developmental neuroscience and the social development literature, both of which emphasize mid-adolescence as a vulnerable period for the emergence of risk behaviours. Consequently, there is a critical need for developing targeted interventions that safeguard the wellbeing of violence-exposed adolescents as they transition from childhood to mid-adolescence.

4.4.2 Subsample Analysis

The results obtained so far indicate that municipality-level conflict exposure significantly increases the likelihood of early alcohol exposure, especially amongst 13-16 years-old adolescents. Given the observed age differences in behavioural responses to violence, it is important to assess whether conflict-related exposure may differ across other key individual-level characteristics, particularly gender. As highlighted by Okello et al. (2013), the evidence on gender differences in youth risk behaviour has been generally mixed. In particular, whilst several studies have found

²⁰As before, we continue to obtain equivalent estimates when using a first-difference model.

males to engage in more risky activities (Pat-Horenczyk et al., 2007; Qouta et al., 2008; Sibai et al., 2009), others have shown girls to exhibit greater levels of risk behaviour than boys (Young, 2010), or similar risk behaviours across gender groups (Chemtob et al., 2011; Franić et al., 2011).

To test for potential gender differences in the effect of violence, we split our sample into male and female adolescents and re-run equation (4.1) separately for each group. The results of this analysis are shown in Table 4.12. Interestingly, we find that conflict-related violence exposure impacts both male and female adolescents. In particular, changes in municipality-level threats increase the probability of early alcohol exposure by approximately 4 percentage points amongst male teenagers. Moreover, as observed in column 2, changes in municipality-level forced displacement lead to a 12-percentage point increase in the likelihood of early alcohol use amongst female adolescents.

Additionally, given the conditional effects observed in section 4.4.1, we test for age differences across each sub-sample. In other words, we augment equation (4.1) with an interaction term between our binary measure of age and violence and re-run the analysis separately for each gender group. Table 4.13 reports the conditional effects estimates. As expected, we find that age has a key role in moderating the impact of violence amongst both male and female adolescents, with the interaction between age and threats entering significantly across both columns. Additionally, we also observe age differences in the impact of forced displacement on males' likelihood of early alcohol exposure.

To understand how the impact of conflict-related exposure varies as age changes, Figures 4.3 and 4.4 show the marginal effects of violence at different age groups for girls and boys, respectively. Interestingly, whilst Table 4.13 reports a significant interaction term between age and threats across the female sample, the marginal effects analysis shown in panel (a) of Figure 4.3 remain insignificant across both age groups. By contrast, panel (b) suggests that changes in forced displacement exposure significantly increase the likelihood of early alcohol exposure amongst girls aged 13-16.

Turning to panel (a) of Figure 4.4, we find that changes in exposure to municipality-level threats have a strong positive effect on the likelihood of early alcohol use amongst boys aged 13-16.

Moreover, as observed in panel (b), changes in exposure to forced displacement appear to decrease the probability of early alcohol exposure amongst boys aged 9-12. However, as they grow older, changes in municipality-level violence exposure increase their probability of trying alcohol early in life. Yet, unlike the evidence in panel (a), the marginal effects of forced displacement exposure amongst older boys are insignificant.

The results presented in this section indicate that changes in municipality-level threats and forced displacement increase the probability of early alcohol exposure amongst female and male adolescents. Moreover, as demonstrated by the conditional effects' analysis, changes in conflict-related violence appear to have significant detrimental consequences amongst older group of teenagers, particularly those aged 13-16. Thus, as highlighted in the previous section, it is vital to develop targeted programmes that safeguard the wellbeing of violence-exposed youth, particularly as they transition from childhood to mid-adolescence.

4.5 Robustness Tests and Further Insights

We perform a series of tests to probe the robustness of the key estimates obtained in section 4.4. Specifically, given the significant role of age in influencing risk behaviour, we assess the sensitivity of our heterogeneous effect models to various tests. First, given that our baseline estimates focus exclusively on non-migrant youth, we re-estimate our models using the full sample of adolescents in our analysis, i.e. both migrant and non-migrant individuals. Similarly, we test the sensitivity of our estimates to the exclusion of children who transitioned from drinkers to never-drinkers across waves. Moreover, we assess the sensitivity of our results to alternative definitions of conflict-related exposure – e.g. living in municipalities in the top 2 deciles of a given violent event. Furthermore, we test the impact of terrorist attacks exposure on early alcohol use and re-estimate equation (4.1) on alternate measures of externalising behaviours. Finally, we combine all the outcomes of interest into two distinct indices: a “general behaviour index” and an “externalising behaviour index”.

4.5.1 Migration

As highlighted in the methodology section, our baseline sample is restricted to adolescents who did not migrate during the period of analysis, i.e. 2013-2016. Consequently, we test the sensitivity of our estimates to the inclusion of migrants in the analysis, which represent another 286 young individuals. The results to these estimations are reported in Table 4.14. Notably, the evidence provides support for the role of age in moderating the effect of violence on early alcohol exposure, with the interaction terms between each conflict measure and our age group dummy entering positively and significantly across columns (1) and (2). To understand these effects better, Figure 4.5 shows the marginal effects of each violence measure at age groups 9-12 and 13-16. While the marginal effects of threats remain marginally insignificant at conventional levels, we continue to find strong, positive effects of this violent event amongst older adolescents. Similarly, we find strong, positive marginal effects of forced displacement on the probability of early alcohol exposure amongst 13-16-year-old adolescents and this effect is significant at the 10% level. Thus, in line with our baseline estimates in section 4.4.1, we continue to find overall support for the conditional effects' hypothesis.

4.5.2 Excluding Adolescents with Inconsistent Alcohol Use Responses and Alternative Definitions of Conflict-Related Exposure

The descriptive analysis provided in subsection 4.3.1 revealed inconsistent responses to the alcohol use question, with 219 children transitioning from drinkers to never-drinkers across waves. Given that the baseline estimates continue to treat these individuals as drinkers in the 2016 wave, this section tests the sensitivity of our estimates to their exclusion from the sample. Table 4.15 reports the results of this analysis. Notably, we continue to find a strong role of age in moderating the impact of changes in municipality-level threats and forced displacement, with both interaction terms entering positively and significantly in their respective models. Furthermore, as observed in Figure 4.6, the marginal effects of conflict-related violence continue to have a strong positive impact amongst 13-16-year old adolescents.

Finally, we also assess the sensitivity of our conditional effects estimates to alternative definitions of conflict-related exposure. In particular, rather than focusing on the top decile of violence, we define exposure as living in municipalities in the top 2 deciles of each of our violence measures,

i.e. threats and forced displacement. The results of these tests are reported in Table 4.16. Notably, we continue to find significant heterogeneous effects of changes in both threats and forced displacement amongst adolescents aged 13-16, thus indicating that our effects are not limited to extreme levels of conflicts but rather can be experienced at lower levels of exposure.

4.5.3 Terrorist Attacks Exposure

As highlighted earlier, we exclude the terrorist attacks measure from our baseline analysis due to its high number of missing observations and lack of variation across time. Thus, in this section, we test the sensitivity of our estimates to this conflict-related variable. Table 4.17 reports the results to this analysis. Notably, the main effects model indicates no significant effects of changes in exposure to terrorist attacks on the probability of trying alcohol early in life. Likewise, we find no evidence of differences in victimisation effects across age groups. Whilst these results may differ from our main conditional effects analysis, the key disadvantages associated with this measure – e.g. lack of variation and reduced sample size – prompts us to remain cautious about the validity and comparability of these effects.

4.5.4 Externalising Behaviour

As discussed in the literature review, most empirical studies on the child consequences of violence focus predominantly on different types of externalising behaviours, such as aggression, rule-breaking, and delinquency. To understand whether these effects are present in the particular context of our study, we rely on 3 different variables available in the ELCA that serve as good proxies for maladaptive behaviours. This includes retributive behaviour and attitudes toward peer fights and taking the low road. These questions are worded as follow:

1. Now I am going to read you some statements and ask you to tell me if you *totally agree*, *agree*, *disagree*, or *totally disagree*:
 - a. Watching peers fighting is fun. (**Enjoy Peer Fights**)
 - b. If something cannot be achieved by fair means, it must be done so by force. (**Taking the Low Road**)
 - c. Those who do me wrong must pay. (**Retributive Behaviour**)

The 3 measures above were coded as binary variables. Specifically, they are all equal to 1 if the

respondent reports totally agreeing or agreeing with the respective statement and 0 otherwise. Moreover, similar to section 4.4, we continue to rely on equation (4.1) to estimate the impact of violence on these behavioural outcomes. The results of this analysis are reported in Table 4.18. Notably, changes in exposure to municipality-level threats increase the likelihood of enjoying peer fights and retributive behaviour by 5 percentage points and these effects remain significant at the 1% and 10% level, respectively. Similarly, changes in exposure to municipality-level forced displacement appears to increase the probability of enjoying peer fights by roughly 6 percentage points. These results are in line with Guerra et al. (2003) and Molano et al. (2018) who show that violence exposure increases children's hostile behaviour, as well as with Chaux et al. (2012) who find that victimisation increases youth's reactive aggression. By contrast, we find no significant effect of either conflict measure on the likelihood of taking the low road.

Given the key role of age in moderating the impact of violence exposure on early alcohol use, we also test for potential heterogeneity in externalising behaviours across different age groups. Thus, as before, we include an interaction term between conflict-related violence and our age dummy in each of the respective models estimated in Table 4.18. Table 4.19 reports the results of this analysis. Notably, across column 1, we find a strong role of age in moderating the impact of both municipality-level threats and forced displacement on youth's likelihood of enjoying peer fights. By contrast, we find no significant heterogenous effects of changes in conflict-related violence exposure on either retributive behaviour or taking the low road.

Finally, to further understand the impact of conflict exposure on adolescents' externalising behaviours, Figures 4.7–4.9 show the marginal effects of each violence measure at age groups 9-12 and 13-16. As expected, we find a positive and significant effect of changes in municipality levels threats and forced displacement on the probability of enjoying peer fights amongst older adolescents. Moreover, whilst Figure 4.8 indicates a positive effect of changes in threats exposure on the probability of retributive behaviour amongst adolescents aged 13-16, this effect is insignificant at the 1% and 5% level. Lastly, as shown in Figure 4.9, we find no significant marginal effect of conflict-related exposure on the likelihood of taking the low-road for neither group of adolescents.

Overall, the results in this section indicate that changes in violence exposure may have significant consequences on youth's externalising outcomes, including their probability of enjoying peer

fights and exhibiting retributive behaviour. Moreover, conditional effects analyses reveal that mid-adolescents are particularly vulnerable to the conflict, with both violent events significantly increasing the likelihood of enjoying peer fights amongst 13-16 years-old adolescents. Thus, similar to our baseline analysis, the results highlight the need to develop programmes that safeguard mid-adolescents from concurrent maladaptive behaviours which may, in turn, threaten their long-term stability and wellbeing.

4.5.5 Behaviour Indices

As mentioned earlier, the outcomes examined so far allow us to capture specific dimensions of youth's maladaptive traits, including externalising and risk behaviour. Thus, there is a high possibility that such conducts may be related to one another. For example, those who enjoy seeing their peers fight may also be more likely to exhibit signs of retributive or unscrupulous behaviour. Similarly, adolescents who report using alcohol may be more prone to aggressive and hostile conduct.

To account for such interrelatedness, we combine our behavioural outcomes into two separate index scores: a "general behaviour" index and an "externalising behaviour" index. The former measure takes values 0-4 and summarises individual-level responses to early alcohol use and all 3 forms of externalising behaviours. Meanwhile, the latter index score takes values 0-3 and combines the measures on enjoy peer fights, taking the low road, and retributive behaviour. Summary statistics for these indices are reported in Table 4.20. Table 4.21 displays the correlation matrix between both indices and each respective behavioural outcome. Interestingly, relative to the correlation between the externalising behaviour outcomes, we observe a low correlation between our alcohol exposure measure and the former indicators. This weak relationship suggests that early alcohol use may capture a distinct dimension of youths' maladaptive traits, thus further motivating our decision to examine this outcome separately in the baseline analysis. Moreover, we also find strong support for the use of composite measures, with a positive and significant correlation between these indices and the various behavioural outcomes.

To assess the impact of conflict-related exposure on the behaviour index scores, we continue to rely on our child fixed effects models described in equation (4.1). The results of these estimations are shown in Table 4.22. Unsurprisingly, the evidence indicates a positive and significant impact

of changes in violence exposure on both indices. Specifically, changes in exposure to threats lead to a 0.16 and 0.13 increase in the general behaviour score and the externalising behaviour score, respectively. Likewise, changes in forced displacement exposure result in a 0.16 increase in the general behaviour index score, as well as a 0.11 increase in the externalising behaviour score.

Overall, the evidence in this section suggests that changes in conflict exposure significantly increase the number of detrimental behaviours that adolescents engage in. In particular, we find that changes in violence levels lead to a 0.16 increase in the general behaviour index score and a 0.11-0.13 increase in the externalising index score. Unfortunately, such an increased risk of multiple maladaptive behaviours may result in significant short-term consequences that, unless addressed both rapidly and effectively, could result in enduring effects that carry over into adulthood.

4.6 Conclusion

By combining individual-level panel data with reports on municipality-level violence exposure during 2013-2016, this chapter assesses the effect of Colombia's armed conflict on youth's risk behaviour. In particular, we exploit a child fixed effects model to examine the impact of threats and forced displacement on the probability of adolescents having ever tried alcohol. Interestingly, whilst the initial estimates suggest no significant impact of changes in violence exposure on youth's early exposure to alcohol, conditional effects analyses reveal that victimisation effects are dependent on individuals' age. Specifically, we find that changes in municipality-level exposure increase the probability of early alcohol use amongst 13-16-year old adolescents. These results are in line with evidence from developmental research which indicates that mid-adolescence is a critical period for the emergence of risk behaviours.

Additionally, subsample analyses uncovered minimal differences in the impact of violence across gender. Specifically, we find that changes in threats and forced displacement increase the likelihood of early alcohol exposure amongst both male and female youth, particularly those in mid-adolescence. Furthermore, we also find a significant effect of changes in municipality-level violence exposure on youth's externalising behaviour. Specifically, changes in exposure to threats and forced displacement increase youth's likelihood of enjoying peer fights by 5 and 6 percent-

age points, respectively. Similarly, changes in municipality-level threats appear to increase the likelihood of retributive behaviour by 5 percentage points. Lastly, we also find a positive and significant effect of high municipality-level violence exposure on index scores that summarise adolescents' responses to the alcohol use and externalising behaviours questions.

It is worth highlighting that our analysis has some limitations. Importantly, whilst we complement our child fixed effects estimator with various municipality- and household-level controls, we are unable to rule out the possibility that other time-dynamic unobserved variables impact both our outcome of interest and violence exposure. Consequently, even though we find a positive impact of conflict-related violence on early alcohol exposure, it is possible that such relationship may be partly driven by other confounding factors that we are unable to account for. Thus, future research could implement other methodologies, such as instrumental variables, to further isolate the causal impact of violence on youth's outcomes. Furthermore, similar to chapter 3, our analysis is limited to the effects of indirect victimisation measured at the municipality-level. Whilst evidence suggests that youth can be negatively affected when hearing about violent events in nearby areas (Fowler et al., 2009), it is likely that direct victimisation entails more severe consequences than vicarious exposure. As such, our results may represent a lower bound estimate of the true effect of the conflict on youth's behaviour.

The analysis has important implications. Notably, the increased probability of early alcohol use following violence exposure could significantly impair youth's wellbeing and developmental outcomes, such as cognitive skills and academic performance. Unfortunately, unless these short-term consequences are addressed both rapidly and effectively, they could result in enduring effects that may become difficult to tackle in adulthood, thus negatively affecting individuals' wellbeing in the long run. Moreover, given the link found in the literature between early onset of alcohol use and later-life outcomes, such as alcohol dependence, poor health, and reduced earnings and employment, our results could imply an obstacle to the socio-economic development of conflict-afflicted communities. Consequently, our analysis underscores the need for developing programmes focused on preventing early alcohol use across victimised communities, particularly youth transitioning to mid-adolescence.

For over 58 years, Colombia's armed conflict has resulted in a myriad of socio-economic conse-

quences, such as the chronic displacement of households, the destruction and loss of assets, and reductions in human capital levels. The analysis in this chapter highlights yet another social legacy of the country's enduring conflict: adolescents' increased risk of maladaptive behaviours. Unfortunately, given the short- and long-term consequences associated with these outcomes, such behavioural effects represent not only a barrier to youth's positive development, but also a key challenge for the country's long-term recovery.

4.7 Tables

Table 4.1: Summary Statistics of Early Alcohol Exposure

Early Alcohol Exposure	(1) 2013 Wave				(2) 2016 Wave			
	Mean	St. Dev.	Min	Max	Mean	St. Dev.	Min	Max
No	0.59	0.49	0	1.00	0.46	0.50	0	1.00
Yes	0.41	0.49	0	1.00	0.54	0.50	0	1.00
Observations	1837				1837			

Table 4.2: Transition Matrix of Early Alcohol Exposure

Early Alcohol Exposure (2013)	Early Alcohol Exposure (2016)		Total
	0	1	
0	57.43	42.57	100.00
1	29.05	70.95	100.00
Total	45.78	54.22	100.00

Table 4.3: Early Alcohol Exposure by Demographic Groups using Pooled Sample

	Early Alcohol Exposure		
	No	Yes	Total
<i>Age Groups</i>			
9 ≤ Age ≤ 12	1069	744	1813
	58.96	41.04	100.00
13 ≤ Age ≤ 16	636	1225	1861
	34.18	65.82	100.00
<i>Gender</i>			
Male	832	1044	1876
	44.35	55.65	100.00
Female	873	925	1798
	48.55	51.45	100.00
<i>Age Groups: Male Composition</i>			
9 ≤ Age ≤ 12	517	397	914
	56.56	43.44	100.00
13 ≤ Age ≤ 16	315	647	962
	32.74	67.26	100.00
<i>Age Groups: Female Composition</i>			
9 ≤ Age ≤ 12	552	347	899
	61.40	38.60	100.00
13 ≤ Age ≤ 16	321	578	899
	35.71	64.29	100.00
<i>HH Income Terciles</i>			
Tercile 1	708	705	1413
	50.11	49.89	100.00
Tercile 2	550	649	1199
	45.87	54.13	100.00
Tercile 3	447	615	1062
	42.09	57.91	100.00
<i>Region of Residence</i>			
Andean	922	1392	2314
	39.84	60.16	100.00
Caribbean	694	464	1158
	59.93	40.07	100.00
Orinoquia	20	30	50
	40.00	60.00	100.00

Table 4.4: Summary Statistics of Control Variables

	(1)				(2)			
	2013 Wave				2016 Wave			
	Mean	St Dev	Min	Max	Mean	St Dev	Min	Max
Male	0.51	0.50	0	1.00	0.51	0.50	0	1.00
Female	0.49	0.50	0	1.00	0.49	0.50	0	1.00
Age	11.02	0.86	9	13.00	14.03	0.88	12	16.00
HH Income Tercile 1	0.39	0.49	0	1.00	0.38	0.48	0	1.00
HH Income Tercile 2	0.32	0.47	0	1.00	0.33	0.47	0	1.00
HH Income Tercile 3	0.28	0.45	0	1.00	0.29	0.46	0	1.00
Household Size	5.57	2.39	2	39.00	5.24	2.40	2	47.00
Father lives in the Household	0.67	0.47	0	1.00	0.63	0.48	0	1.00
Mother lives in the Household	0.90	0.30	0	1.00	0.88	0.32	0	1.00
Observations	1837				1837			

Table 4.5: Summary Statistics of Municipality-Level Variables

	(1)					(2)				
	Obs.	Mean	St Dev	Min	Max	Obs.	Mean	St Dev	Min	Max
Panel A. Municipality-Level Controls										
Municipality-level GDP	95	4305.83	17002.21	26.40	158889.66	95	5372.83	21308.82	36.25	199661.45
Aqueduct Coverage Index	94	71.46	27.21	5.27	100.00	92	71.88	25.84	0.00	100.00
Population Size	95	278013.54	857313.19	3378.00	7674366.00	95	288086.08	890009.87	3362.00	7980001.00
Number of Schools	95	166.61	332.59	11.00	2737.00	95	170.52	331.03	11.00	2776.00
Panel B. Municipality-Level Violence Exposure										
Threats	92	105.62	413.31	0.00	3900.00	91	67.27	170.27	0.00	1145.00
Forced Displacement	94	483.07	1363.44	0.00	12038.00	92	208.09	438.48	0.00	3143.00
Terrorist Attacks	73	16.10	48.67	0.00	363.00	52	2.27	5.99	0.00	42.00

Table 4.6: Correlation Matrix between Conflict-Related Measures

	Threats	Forced Displacement	Terrorist Attacks
Threats	1.000		
Forced Displacement	0.948	1.000	
Terrorist Attacks	0.378	0.389	1.000
	0.000	0.000	

Table 4.7: Proportion of Adolescents living in Top Decile Municipalities

	(1)			(2)		
	2013 Wave			2016 Wave		
	N	Percentage	Cum. Percent.	N	Percentage	Cum. Percent
<i>Top Threats</i>						
0	1350	78.76	78.76	1358	75.95	75.95
1	364	21.24	100.00	430	24.05	100.00
<i>Top Forced Displacement</i>						
0	1581	86.11	86.11	1406	78.50	78.50
1	255	13.89	100.00	385	21.50	21.50
<i>Top Terrorist Attacks</i>						
0	1144	89.10	89.10	747	93.84	93.84
1	140	10.90	100.00	49	6.16	100.00

Table 4.8: Transition Matrix of Conflict-Related Variables

Top Threats (2013)	Top Threats (2016)		Total
	0	1	
0	89.04	10.96	100.00
1	18.75	81.25	100.00
Total	76.40	23.60	100.00
Top Forced Displacement (2013)	Top Forced Displacement (2016)		Total
	0	1	
0	92.41	7.59	100.00
1	15.38	84.62	100.00
Total	81.52	18.48	100.00
Top Terrorist Attacks (2013)	Top Terrorist Attacks (2016)		Total
	0	1	
0	100.00	0.00	100.00
1	66.67	33.33	100.00
Total	95.83	4.17	100.00

Table 4.9: Regression Results for Top Threats Decile

	(1)	(2)	(3)
	Early Alcohol Exposure	Early Alcohol Exposure	Early Alcohol Exposure
Top Threats	-0.003 (0.043)	0.038 (0.042)	0.031 (0.025)
Age	0.067*** (0.010)	0.069*** (0.010)	0.017 (0.037)
HH Income Tercile 2	0.042 (0.032)	0.034 (0.027)	-0.016 (0.023)
HH Income Tercile 3	0.079** (0.036)	0.064** (0.031)	-0.018 (0.029)
Mother Lives in the Household	0.011 (0.026)	0.006 (0.024)	-0.142*** (0.039)
Father lives in the Household	-0.049** (0.024)	-0.056** (0.023)	0.022 (0.035)
Household Size	-0.002 (0.003)	-0.002 (0.003)	0.011 (0.008)
2016 Dummy	0.051 (0.033)	0.040 (0.037)	0.210* (0.109)
Municipality-level Controls		Yes	Yes
Individual FEs			Yes
R-squared	0.086	0.117	0.823
Observations	3502	3457	3457

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level.

Table 4.10: Regression Results for Top Forced Displacement Decile

	(1)	(2)	(3)
	Early Alcohol Exposure	Early Alcohol Exposure	Early Alcohol Exposure
Top Forced Displacement	-0.041 (0.046)	0.009 (0.040)	0.049 (0.036)
Age	0.067*** (0.010)	0.068*** (0.010)	0.024 (0.037)
HH Income Tercile 2	0.035 (0.033)	0.031 (0.029)	-0.034 (0.026)
HH Income Tercile 3	0.073** (0.036)	0.067** (0.031)	-0.035 (0.030)
Mother Lives in the Household	0.013 (0.025)	0.003 (0.025)	-0.135*** (0.039)
Father lives in the Household	-0.043* (0.025)	-0.048* (0.025)	0.005 (0.035)
Household Size	-0.002 (0.003)	-0.003 (0.003)	0.008 (0.007)
2016 Dummy	0.045 (0.033)	0.048 (0.035)	0.188* (0.109)
Municipality-level Controls		Yes	Yes
Individual FEs			Yes
R-squared	0.081	0.112	0.816
Observations	3627	3582	3582

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level.

Table 4.11: Conditional Effects of Conflict-Related Violence on Early Alcohol Exposure

	(1)	(2)
	Early Alcohol Exposure	Early Alcohol Exposure
Top Threats	-0.019 (0.041)	-0.024 (0.031)
Age Dummy	0.063 (0.068)	-0.118* (0.070)
Top Threats x Age Dummy	0.099*** (0.031)	0.092*** (0.024)
R-squared	0.105	0.824
Observations	3457	3457
Top Forced Displacement	-0.065* (0.036)	-0.015 (0.036)
Age Dummy	0.072 (0.069)	-0.089 (0.070)
Top Forced Displacement x Age Dummy	0.129*** (0.048)	0.099*** (0.030)
R-squared	0.101	0.817
Observations	3582	3582
Household-level Controls	Yes	Yes
Municipality-level Controls	Yes	Yes
2016 Dummy	Yes	Yes
Individual FEs		Yes

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level. The age dummy is equal to 1 for adolescents aged 13-16 and 0 for those aged 9-12.

Table 4.12: Regression Results of Early Alcohol Exposure by Gender Groups

	(1)	(2)
	Early Alcohol Exposure: Males	Early Alcohol Exposure: Females
Top Threats	0.036** (0.018)	0.039 (0.048)
Age	-0.051 (0.045)	0.098 (0.061)
R-squared	0.830	0.820
Observations	1762	1695
Top Forced Displacement	-0.033 (0.034)	0.119*** (0.043)
Age	-0.050 (0.044)	0.106* (0.059)
R-squared	0.824	0.813
Observations	1827	1755
Household-level Controls	Yes	Yes
Municipality-level Controls	Yes	Yes
2016 Dummy	Yes	Yes
Individual FEs	Yes	Yes

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level.

Table 4.13: Conditional Effects of Conflict-Related Violence by Gender Groups

	(1)	(2)
	Early Alcohol Exposure: Males	Early Alcohol Exposure: Females
Top Threats	-0.007 (0.027)	-0.023 (0.057)
Age Dummy	-0.138* (0.082)	-0.071 (0.126)
Top Threats x Age Dummy	0.072** (0.033)	0.095** (0.043)
R-squared	0.831	0.820
Observations	1762	1695
Top Forced Displacement	-0.094** (0.038)	0.063 (0.057)
Age	-0.121 (0.080)	-0.025 (0.119)
Top Forced Displacement x Age Dummy	0.103*** (0.036)	0.080 (0.048)
R-squared	0.826	0.813
Observations	1827	1755
Household-level Controls	Yes	Yes
Municipality-level Controls	Yes	Yes
2016 Dummy	Yes	Yes
Individual FEs	Yes	Yes

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level. The age dummy is equal to 1 for adolescents aged 13-16 and 0 for those aged 9-12.

Table 4.14: Regression Results on using Sample of Migrant and Non-Migrant Youth

	(1)	(2)
	Early Alcohol Exposure	Early Alcohol Exposure
Top Threats	-0.021 (0.043)	-0.027 (0.042)
Age Dummy	0.086 (0.063)	-0.112 (0.096)
Top Threats x Age Dummy	0.092*** (0.031)	0.088** (0.034)
R-squared	0.105	0.821
Observations	3726	3726
Top Forced Displacement	-0.072** (0.034)	-0.033 (0.043)
Age Dummy	0.096 (0.064)	-0.088 (0.095)
Top Forced Displacement x Age Dummy	0.115** (0.045)	0.104** (0.041)
R-squared	0.101	0.815
Observations	3858	3858
Household-level Controls	Yes	Yes
Municipality-level Controls	Yes	Yes
2016 Dummy	Yes	Yes
Individual FEs	Yes	Yes

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level. The age dummy is equal to 1 for adolescents aged 13-16 and 0 for those aged 9-12.

Table 4.15: Regression Results excluding Adolescents with Inconsistent Alcohol Use Responses

	(1)	(2)
	Early Alcohol Exposure	Early Alcohol Exposure
Top Threats	-0.011 (0.036)	-0.024 (0.035)
Age Dummy	0.100 (0.076)	-0.141* (0.077)
Top Threats x Age Dummy	0.104*** (0.034)	0.096*** (0.028)
R-squared	0.125	0.810
Observations	3058	3058
Top Forced Displacement	-0.044 (0.036)	-0.007 (0.041)
Age Dummy	0.104 (0.077)	-0.119 (0.076)
Top Forced Displacement x Age Dummy	0.125** (0.048)	0.097*** (0.033)
R-squared	0.120	0.802
Observations	3160	3160
Household-level Controls	Yes	Yes
Municipality-level Controls	Yes	Yes
2016 Dummy	Yes	Yes
Individual FEs		Yes

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level. The age dummy is equal to 1 for adolescents aged 13-16 and 0 for those aged 9-12.

Table 4.16: Regression Results using the Top 2 Deciles of Conflict-Related Violence

	(1)
	Early Alcohol Exposure
Top Threats	-0.090* (0.050)
Age Dummy	-0.125* (0.069)
Top Threats x Age Dummy	0.077*** (0.025)
R-squared	0.824
Observations	3457
Top Forced Displacement	-0.100 (0.067)
Age Dummy	-0.095 (0.070)
Top Forced Displacement x Age Dummy	0.073*** (0.023)
R-squared	0.817
Observations	3582
Municipality-level Controls	Yes
Household-level Controls	Yes
2016 Dummy	Yes
Individual FEs	Yes

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level. The age dummy is equal to 1 for adolescents aged 13-16 and 0 for those aged 9-12.

Table 4.17: Regression Results for Top Terrorist Attacks Decile

	(1)	(2)
	Early Alcohol Exposure	Early Alcohol Exposure
Top Terrorist Attacks	-0.051 (0.038)	0.033 (0.025)
Age	0.050*** (0.012)	0.006 (0.072)
R-squared	0.097	0.865
Observations	2056	2056
Top Terrorist Attacks	-0.036 (0.042)	0.034 (0.029)
Age Dummy	0.059 (0.086)	-0.112 (0.120)
Top Terrorist Attacks x Age Dummy	-0.019 (0.043)	0.012 (0.041)
R-squared	0.090	0.865
Observations	2056	2056
Household-level Controls	Yes	Yes
Municipality-level Controls	Yes	Yes
2016 Dummy	Yes	Yes
Individual FEs		Yes

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level. The age dummy is equal to 1 for adolescents aged 13-16 and 0 for those aged 9-12.

Table 4.18: Regression Results on Externalising Behaviours

	(1)	(2)	(3)
	Enjoys Peer Fights	Retributive Behaviour	Taking the Low-Road
Top Threats	0.050*** (0.017)	0.050* (0.029)	0.034 (0.042)
Age	-0.015 (0.034)	0.012 (0.037)	-0.024 (0.050)
R-squared	0.571	0.607	0.578
Observations	3457	3457	3457
Top Forced Displacement	0.059*** (0.020)	0.037 (0.024)	0.012 (0.021)
Age	-0.015 (0.033)	0.015 (0.036)	-0.019 (0.048)
R-squared	0.553	0.586	0.560
Observations	3582	3582	3582
Household-level Controls	Yes	Yes	Yes
Municipality-level Controls	Yes	Yes	Yes
2016 Dummy	Yes	Yes	Yes
Individual FEs	Yes	Yes	Yes

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level.

Table 4.19: Conditional Effects of Conflict-Related Violence on Externalising Behaviours

	(1)	(2)	(3)
	Enjoys Peer Fights	Retributive Behaviour	Taking the Low-Road
Top Threats	0.016 (0.023)	0.044 (0.033)	0.046 (0.048)
Age Dummy	-0.025 (0.068)	-0.031 (0.057)	0.000 (0.078)
Top Threats x Age Dummy	0.059** (0.026)	0.009 (0.030)	-0.019 (0.041)
R-squared	0.572	0.607	0.578
Observations	3457	3457	3457
Top Forced Displacement	0.019 (0.024)	0.051 (0.036)	0.021 (0.032)
Age Dummy	-0.011 (0.065)	-0.014 (0.054)	0.001 (0.072)
Top Forced Displacement x Age Dummy	0.060** (0.028)	-0.022 (0.034)	-0.013 (0.043)
R-squared	0.553	0.586	0.559
Observations	3582	3582	3582
Household-level Controls	Yes	Yes	Yes
Municipality-level Controls	Yes	Yes	Yes
2016 Dummy	Yes	Yes	Yes
Individual FEs	Yes	Yes	Yes

Standard errors are in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Notes: Standard errors clustered at the municipality-level. The age dummy is equal to 1 for adolescents aged 13-16 and 0 for those aged 9-12.

Table 4.20: Number of General and Externalising Behaviours exhibited in the Sample

	(1)		(2)	
	General Behaviour		Externalising Behaviour	
	Percentage	Cum. Percent.	Percentage	Cum. Percent.
0	31.60	31.60	66.47	66.47
1	45.40	77.00	22.86	89.33
2	15.68	92.68	8.03	97.36
3	5.61	98.29	2.64	100.00
4	1.71	100.00		
Observations	3674		3674	

Table 4.21: Correlation Matrix between Behavioural Indices and Outcomes of Interest

	General Behaviour Index	External Behaviour Index	Early Alcohol Exposure	Enjoy Peer Fights	Retributive Behaviour	Taking the Low Road
General Behaviour Index	1.000					
External Behaviour Index	0.843	1.000				
Early Alcohol Exposure	0.000	0.057	1.000			
Enjoy Peer Fights	0.517	0.616	0.031	1.000		
Retributive Behaviour	0.621	0.718	0.071	0.211	1.000	
Taking the Low Road	0.620	0.750	0.019	0.200	0.275	1.000
	0.000	0.000	0.241	0.000	0.000	

Table 4.22: Regression Results on Behaviour Index Scores

	(1)	(2)
	General Behaviour Index	Externalising Behaviour Index
Top Threats	0.165**	0.135**
	(0.069)	(0.062)
Age	-0.010	-0.028
	(0.098)	(0.088)
R-squared	0.677	0.618
Observations	3457	3457
Top Forced Displacement	0.157**	0.108***
	(0.060)	(0.033)
Age	0.004	-0.019
	(0.096)	(0.085)
R-squared	0.611	0.595
Observations	3582	3582
Household-level Controls	Yes	Yes
Municipality-level Controls	Yes	Yes
2016 Dummy	Yes	Yes
Individual FEs	Yes	Yes

Standard errors are in parentheses.

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Notes: Standard errors clustered at the municipality-level.

4.8 Figures

Figure 4.1: Municipality-Level Violence during 2013-2016

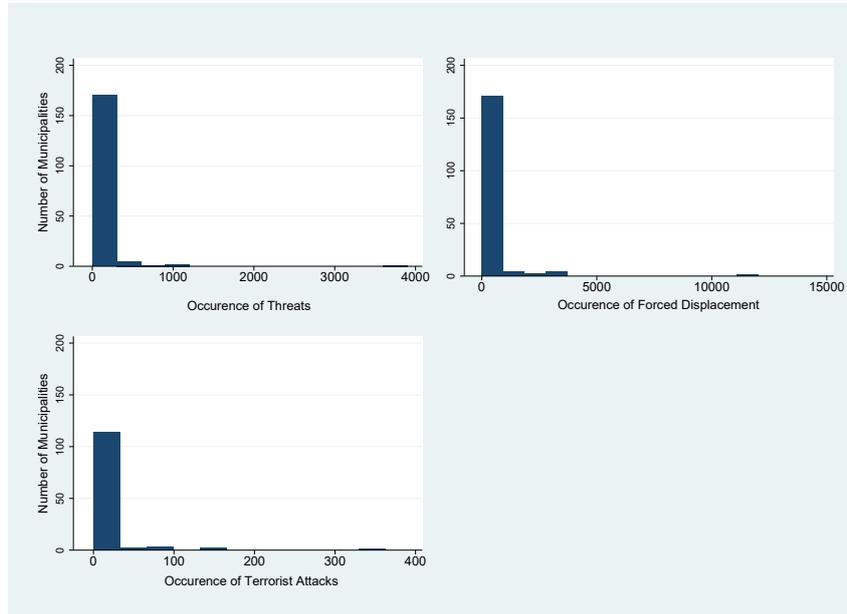
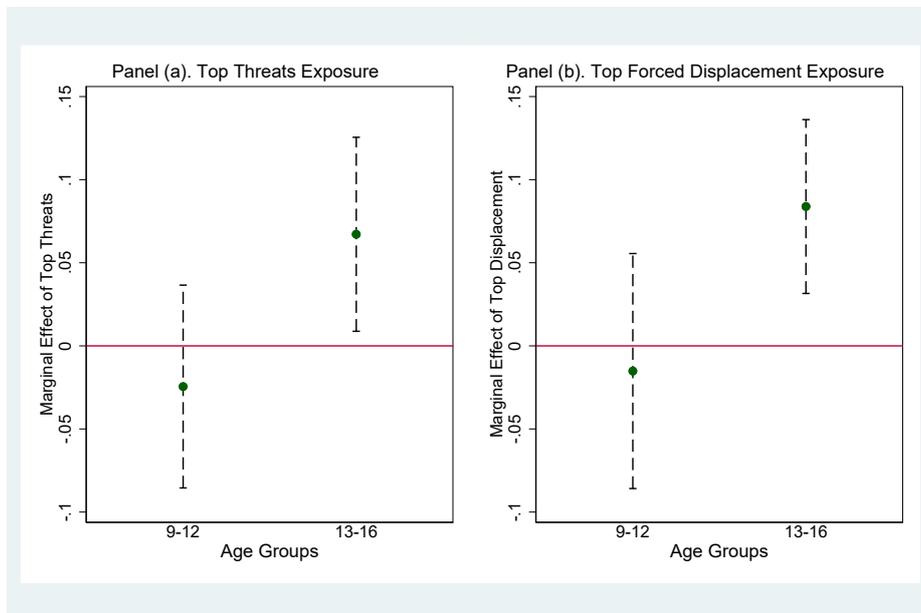
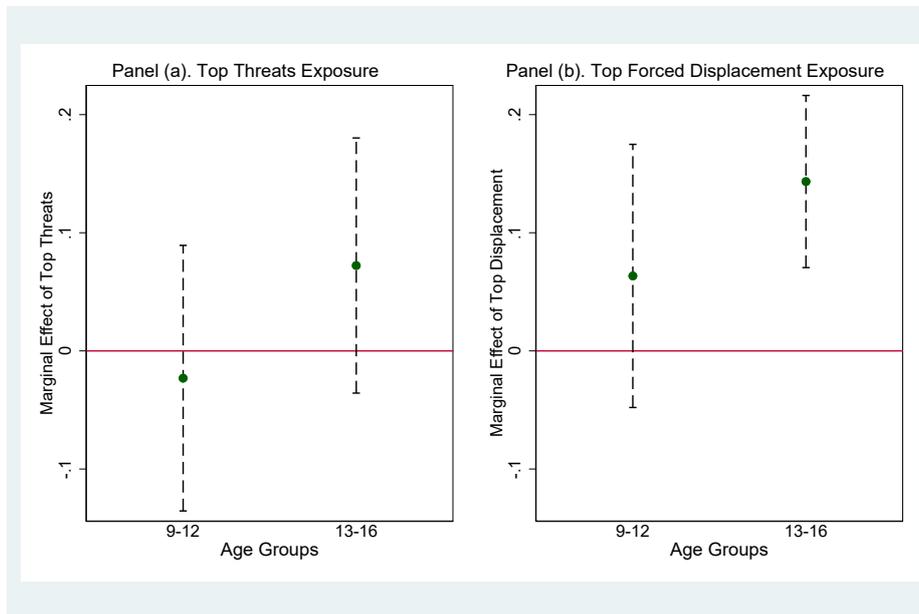


Figure 4.2: Conditional Effects of Violence Exposure on Alcohol Consumption



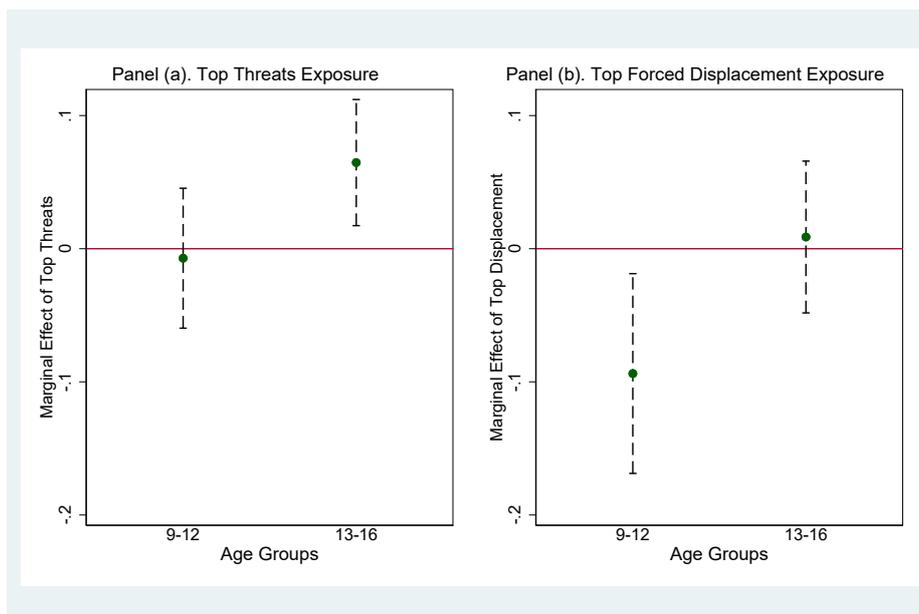
Note: Marginal effect of violence exposure across age groups. The dependent variable in both panels is 'Alcohol Consumption'. Solid vertical lines signify 95% confidence intervals. Red horizontal lines signify marginal effect of 0.

Figure 4.3: Conditional Effects of Violence Exposure amongst Female Adolescents



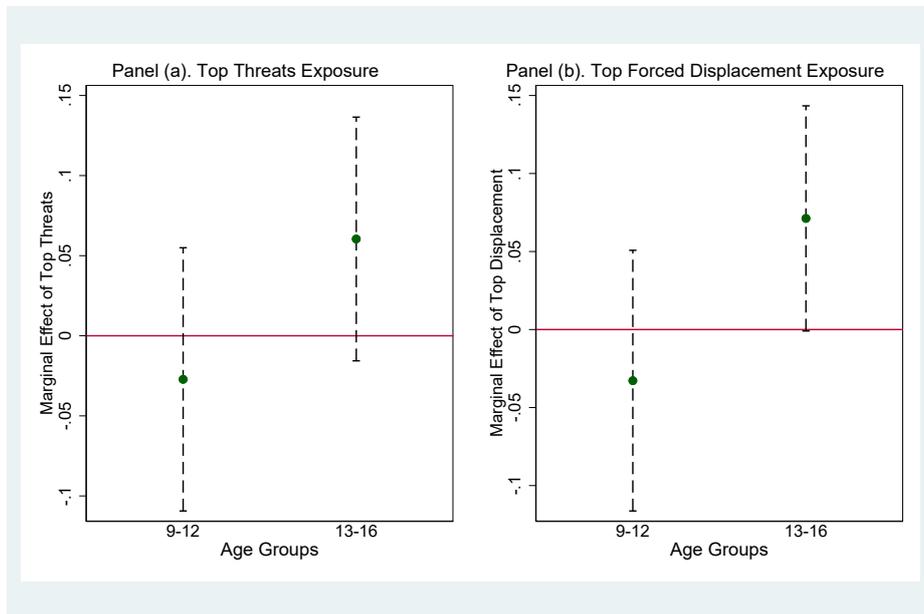
Note: Marginal effect of violence exposure across age groups. The dependent variable in both panels is 'Alcohol Consumption'. Solid vertical lines signify 95% confidence intervals. Red horizontal lines signify marginal effect of 0.

Figure 4.4: Conditional Effects of Violence Exposure amongst Male Adolescents



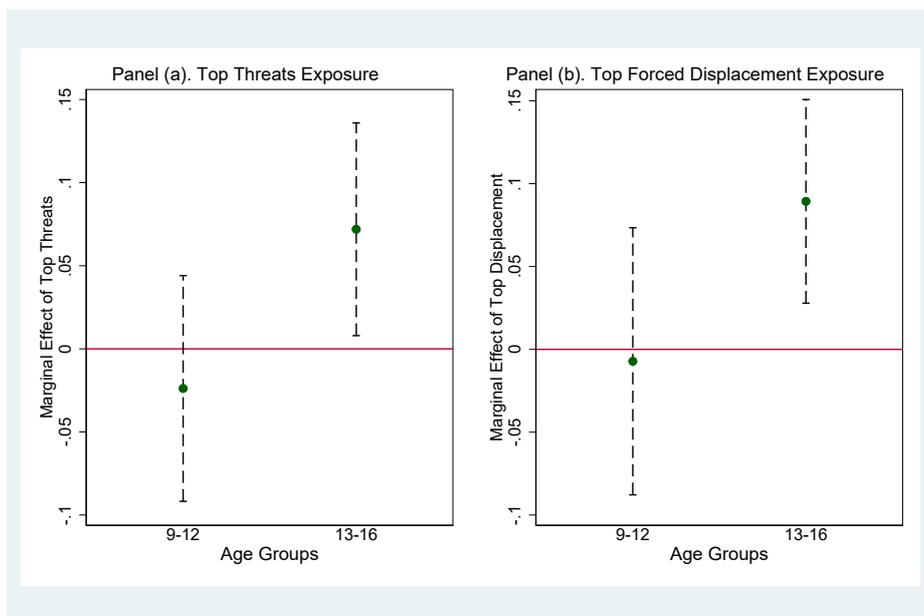
Note: Marginal effect of violence exposure across age groups. The dependent variable in both panels is 'Alcohol Consumption'. Solid vertical lines signify 95% confidence intervals. Red horizontal lines signify marginal effect of 0.

Figure 4.5: Conditional Effects of Violence Exposure using Sample of Migrant and Non-Migrant Youth



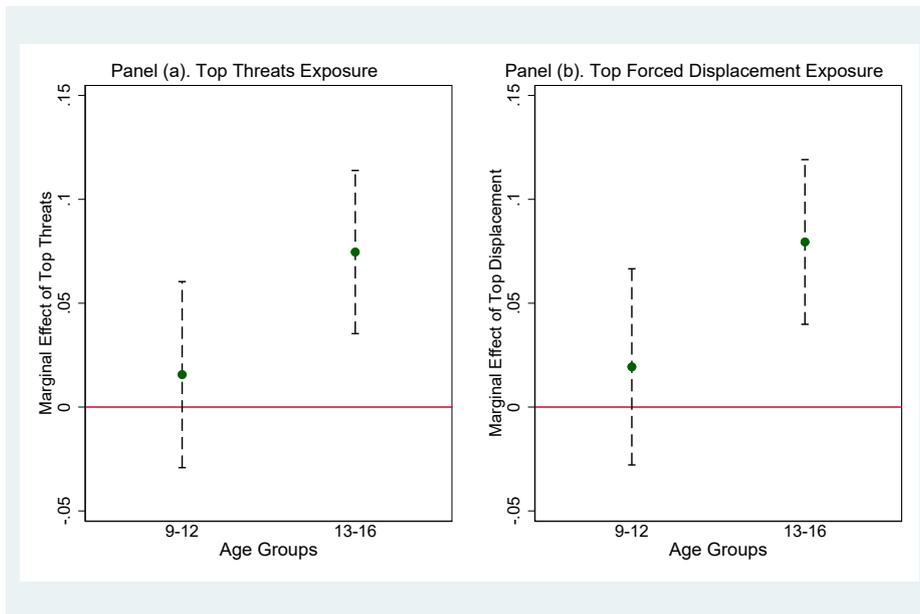
Note: Marginal effect of violence exposure across age groups. The dependent variable in both panels is 'Alcohol Consumption'. Solid vertical lines signify 95% confidence intervals. Red horizontal lines signify marginal effect of 0.

Figure 4.6: Conditional Effects of Violence Exposure on Alcohol Consumption excluding Adolescents with Inconsistent Alcohol Use Responses



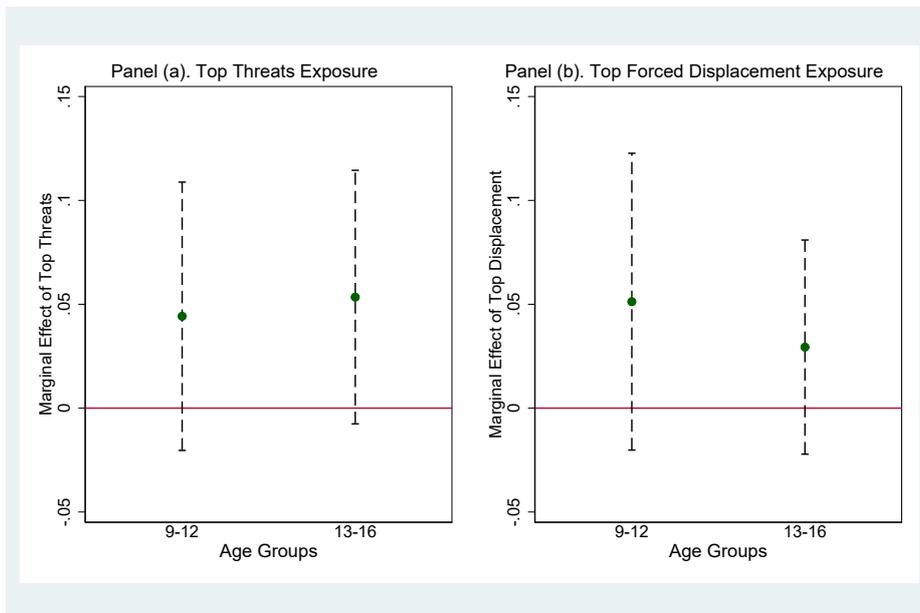
Note: Marginal effect of violence exposure across age groups. The dependent variable in both panels is 'Alcohol Consumption'. Solid vertical lines signify 95% confidence intervals. Red horizontal lines signify marginal effect of 0.

Figure 4.7: Conditional Effects of Violence Exposure on Enjoy Peer Fights



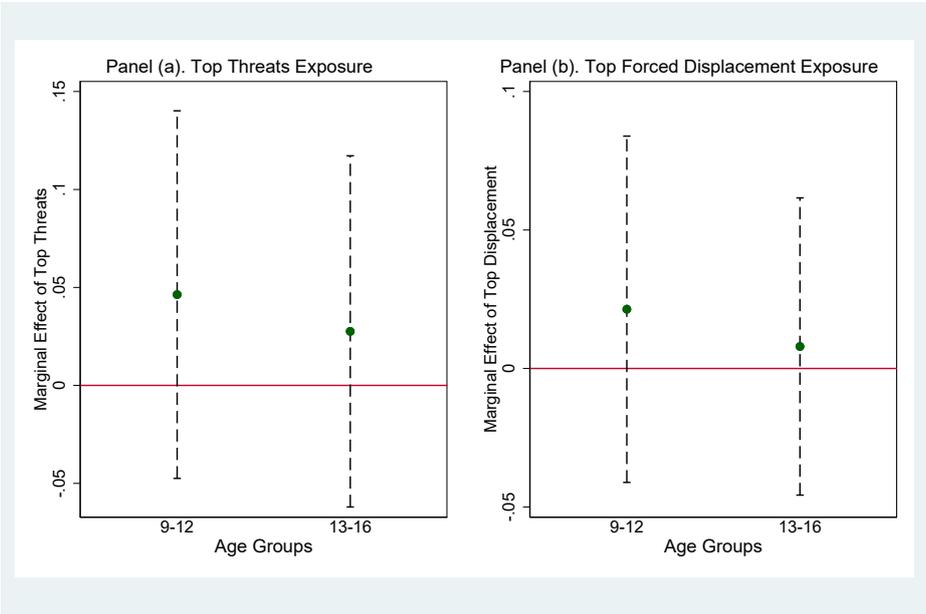
Note: Marginal effect of violence exposure across age groups. The dependent variable in both panels is 'Enjoy Peer Fights'. Solid vertical lines signify 95% confidence intervals. Red horizontal lines signify marginal effect of 0.

Figure 4.8: Conditional Effects of Violence Exposure on Retributive Behaviour



Note: Marginal effect of violence exposure across age groups. The dependent variable in both panels is 'Retributive Behaviour'. Solid vertical lines signify 95% confidence intervals. Red horizontal lines signify marginal effect of 0.

Figure 4.9: Conditional Effects of Violence Exposure on Taking the Low Road



Note: Marginal effect of violence exposure across age groups. The dependent variable in both panels is 'Taking the Low Road'. Solid vertical lines signify 95% confidence intervals. Red horizontal lines signify marginal effect of 0.

Chapter 5

Conclusions

This thesis is motivated by the long-standing barriers to economic development and growth. Using Colombia as a case study, each chapter examines distinct socioeconomic topics, including financial literacy, social preferences, and youths' wellbeing. Although existent studies shed light on the importance of each of these outcomes for promoting social wellbeing and overall development, several gaps are still present in the literature. To address these shortcomings, each chapter addresses important questions that had remained unanswered or relatively unexplored until now. The first empirical study examines the impact of financial sophistication on consumers' economic behaviour. Focusing particularly on debt-related outcomes, the evidence in this chapter highlights the crucial role of financial literacy in mitigating the high levels of poverty and inequality seen in emerging countries like Colombia. The second empirical chapter assesses the role of armed conflict in shaping individual-level social preferences. By exploiting the uneven geographic and temporal distribution of violence, we show how the social consequences of the conflict may differ between high and low-exposure municipalities. Finally, the last empirical chapter of this thesis looks at the effect of conflict-related violence on youth's risk behaviour. Drawing on recent findings in the field of developmental neuroscience, this study provides evidence on the heterogeneous effects of violence exposure across age groups.

5.1 Summary of Findings

Chapter 2 assesses the degree of financial literacy amongst Colombian consumers and its role in promoting optimal financial decision-making. Using the "Big Three" questions developed by Lusardi and Mitchell (2008, 2009, 2011a), the descriptive analysis reveals a poor understanding

of basic, yet critical economic concepts, including interest rates compounding, inflation, and risk diversification. Furthermore, using two novel instruments to address concerns of reverse causality and measurement error, we show that financially sophisticated individuals are significantly less likely to engage in detrimental financial practices. Specifically, we find that: (i) answering correctly one additional financial literacy question results in a 9 and 4 percentage points decline in informal credit use and debt accumulation, respectively; and (ii) understanding risk diversification lowers the likelihood of informal borrowing and debt incurrence by 18 and 7.1 percentage points, respectively.

Additionally, given that extant studies show that the use of detrimental services – such as informal credit – is particularly prevalent among specific demographic groups, the analysis tests for heterogeneous effects of financial literacy across gender, income, and educational attainment. As expected, the results indicate that financial sophistication has a stronger negative effect on the probability of informal credit use amongst individuals who are most vulnerable to such borrowing, particularly those with low education and income levels. As such, promoting financial literacy amongst these groups may be the key to safeguarding and supporting their economic well-being and security.

Chapter 3 investigates the role of Colombia's armed conflict in determining individual-level social preferences. While the conflict continues to have a lingering effect on Colombian society in general, violence has been historically notorious across specific regions and communities in the northern and eastern areas of the country. Thus, using reports on municipality-level violence during the period 2013-2016, the chapter implements a difference-in-differences model that exploits the uneven geographic distribution of the conflict. Notably, by accounting for time trends and unobserved time invariant characteristics of high- and low-exposure groups, this estimation strategy allows us to get closer to the causal effect of violence exposure.

The results of this analysis indicate that conflict exposure is an important determinant of individual-level social preferences. Specifically, we find that respondents living in municipalities highly exposed to homicides, kidnappings, terrorist attacks, and forced displacement are significantly less likely to support the use of violence, relative to their counterparts in lower exposure municipalities. Furthermore, relative to these low-exposure areas, municipalities with high

exposure to threats and forced displacement are significantly less likely to support state-security measures that erode the rule of law and perpetuate violence. These findings echo the results of Tellez (2019) and Meernik (2019) who show that individuals living in conflict-ridden municipalities in Colombia are more likely to support peace and hold pro-reconciliatory beliefs, relative to their counterparts in low-exposure areas. Interestingly, however, the results suggest that high exposure to threats is also associated with a significant increase in the likelihood of political polarisation. This is in line with evidence by Acemoglu et al. (2013) and Gallego (2018) who find that rebel groups rely on the use of threats and violence to shape individuals' political behaviour.

Chapter 4 continues to examine the social legacies of the country's 58-year-long armed conflict. Specifically, in this analysis, we focus on understanding whether changes in violence exposure are a significant determinant of youth's risk behaviour. While the chapter is concerned primarily with early onset of alcohol use, we also assess the impact of violence on other measures of externalising behaviours. To tackle this question, the chapter employs a balanced panel of 9-16-year-old adolescents from 2013 and 2016. Similarly, we continue to rely on municipality-level reports on violent events – particularly threats and forced displacement – to capture conflict exposure. To exploit the panel nature of the data, the analysis relies on a child fixed effects methodology that controls for potential time-invariant factors which may confound the analysis. Furthermore, we also control for various household- and municipality-level characteristics to further mitigate the risk of bias in the model.

The results indicate that conflict-related violence plays a key role in shaping youth's behaviour. In particular, we find that changes in threats and forced displacement significantly increase the probability of early alcohol exposure amongst 13-16-year old adolescents. This finding is in line with evidence from developmental neuroscience (Steinberg, 2008), which shows that risk behaviour is predominantly a mid-adolescence phenomenon. By contrast, we find no significant effects of violence exposure amongst younger children, particularly those aged 9-12. To further understand the potential heterogeneous effects of violence across other individual-level characteristics – such as gender – we split the sample into male and female adolescents. The results of this analysis show minimal gender differences in the effect of violence exposure, with both older female and male adolescents experiencing a significant increase in the probability of early alcohol exposure.

Finally, the findings also show a significant effect of municipality-level violence on other forms of externalising behaviours. In particular, we show that changes in threats and forced displacement significantly increase youth's probability of enjoying peer fights and exhibiting retributive behaviour. Equally, changes in both violent events lead to a significant increase in index scores that summarise the different maladaptive behaviours that children engage in.

5.2 Policy implications, limitations and future research

The evidence found in the previous chapters has important economic and policy implications. Starting with chapter 2, the results suggest that financial literacy protects individuals from detrimental financial practices that ultimately threaten their long-term economic wellbeing and security, including informal credit use and debt accumulation. As such, there is an important need to develop financial education initiatives that equip consumers with a better and deeper understanding of concepts used in day-to-day financial decision-making. Furthermore, given the low levels of financial literacy observed across various groups, such as those with low income, no university degree, and both the young and the elderly, it is imperative for these programmes to reach these demographic groups efficiently. Given their particular vulnerability to economic insecurity and detrimental financial practices, these initiatives may be key to protecting their wellbeing, as well as to preventing a further exacerbation of existent socio-economic inequalities.

The analysis in chapter 2 is subject to various limitations. First, as the data focuses exclusively on individuals living in Bogotá, we are unable to assess financial literacy in other areas of the country – such as rural communities – where the effects of financial sophistication may differ to those observed in the capital city. Likewise, given that the data only includes consumers with formal access to the financial system, the analysis ignores the potential effects of financial literacy on individuals who could benefit the most from increased financial sophistication. More importantly, such a selective sampling could also imply our estimates suffer from potential selection bias insofar as those with formal access to the financial system are less likely to use informal credit, regardless their financial sophistication. Thus, future research could focus on exploring financial literacy outside the context of Bogotá and amongst individuals with no formal links to

the financial system.

The difference-in-differences analysis of chapter 3 reveals that Colombia's armed conflict plays a significant role in shaping individual-level social preferences. Specifically, respondents living in municipalities heavily exposed to terrorist attacks, kidnappings, homicides, and forced displacement are significantly less likely to support the use of violence, relative to their peers in lower exposure areas. Similarly, individuals living in municipalities with high exposure to threats and forced displacement are significantly less likely to support iron-fist policies which rely on violence itself. However, high exposure to municipality-level threats also increases the probability of exhibiting political polarisation.

Several political, economic, and social issues emerge from these findings. On the one hand, the lower support for the use of violence across conflict-ridden municipalities suggests the possibility of a peaceful, lasting resolution of the armed struggle and a strong post-conflict social recovery. Likewise, lower support for state security measures that weaken the rule of law and perpetuate violence should not only support the country's peace-building efforts, but also prevent incumbent governments from adopting populist policies that ultimately violate citizens' civil liberties. This is particularly important in the Colombian context, where past administrations have promoted iron-fist policies linked to the erosion of democratic institutions and civil rights. On the other hand, an increase in political polarisation across conflict zones could disrupt communities' social ties and collective action capacity, thus potentially inciting further violence. Lastly, such an increased polarisation could impede the effective provision of public goods (Alesina et al., 1999; Easterly and Levine, 1997), whilst also slowing down the post-conflict economic recovery of victimised communities (Rohner et al., 2013).

Important caveats need to be highlighted regarding the analysis of chapter 3. First, a lack of sufficient data prevents us from formally testing the parallel trend assumption which difference-in-differences models rest upon. Thus, while we conduct various endogeneity and balancing tests, we cannot fully rule out the possibility that other municipality- and/or individual-level unobserved characteristics are affecting the observed effects. Furthermore, due to similar data constraints, we are also unable to determine the effects of violence amongst individuals who experienced the conflict first-hand. Consequently, our findings may represent only a lower-bound

estimate of the true impact of the conflict. Finally, as we restrict our sample to non-migrant individuals, our analysis could potentially suffer from selection bias if migration is correlated with our outcomes of interest. Therefore, future research could implement additional techniques – particularly matching or instrumental variables – to further disentangle the causal effect of violence on individual-level preferences. Additionally, it would be interesting to compare the effects of conflict exposure between those with direct and indirect exposure to violence. Finally, future studies could also explore the mechanisms behind the observed changes in social preferences.

Chapter 4 sheds light on yet another social dimension impacted by the armed conflict, namely youth's behaviour. Specifically, the findings show that changes in municipality-level threats and forced displacement increase the probability of early alcohol use, particularly amongst 13-16-year-old male and female adolescents. Likewise, additional analyses reveal that changes in municipality-level violence significantly increase youths' probability of enjoying peer fights and exhibiting retributive behaviour. Furthermore, as expected, changes in exposure to threats and forced displacement have a positive and significant impact on index scores that capture the various detrimental behaviours that adolescents engage in.

Unfortunately, given the detrimental effects of alcohol on youth's development, its early onset could result in a wide array of short-term consequences, such as cognitive impairment, increased risk behaviour, school dropout, and poor academic performance. Furthermore, given the role of these factors in determining later-life outcomes – e.g. earnings and employment – the increased probability of early alcohol use amongst victimised adolescents could worsen these individuals' long-term wellbeing and eventually lead to sharp inequalities between exposed and non-exposed communities. Consequently, the findings of chapter 4 highlight the critical need of developing programmes centred on the prevention of early alcohol amongst youths exposed to the conflict, particularly those transitioning to mid-adolescence. Similarly, given the impact of violence on other forms of externalising behaviour, these programmes could benefit from adopting an integrated risk prevention focus in order to protect adolescents from multiple maladaptive behaviours.

This analysis has various shortcomings. First, even though we complement the child fixed effects estimator with various household- and municipality-level controls, it is possible that other unob-

served time-varying factors are driving the relationship between violence exposure and youth's outcomes. Consequently, we cannot fully rule out the possibility that our parameter of interest suffers from bias. Therefore, future studies could focus on employing additional strategies – e.g. based on instrumental variables – to further disentangle the causal effect of conflict-related violence on adolescents' behaviour. Second, a lack of data prevents us from examining the impact of violence on children who experienced violence first-hand. Unfortunately, insofar as direct victimisation entails stronger effects than vicarious exposure, our estimates could understate the true impact of the conflict on youth's outcomes. Therefore, future research could focus on obtaining data for those who have personally experienced violence. Alternatively, researchers could also employ geocoded data to identify whether – and how – the effects of the conflict may differ for those closer to the epicentre of violence. Lastly, as future waves of the ELCA survey become available, it would be interesting to assess how the behavioural effects of violence exposure change as youth transition to early adulthood, as well as implement more advanced econometric techniques, such as differences-in-differences.

Overall, the three chapters presented in this thesis shed light on various socioeconomic issues that continue to undermine Colombia's prospects of long-term development. Using a wide range of data and econometric techniques, each of these analyses makes important contributions to distinct strands of the literature, ranging from financial literacy and personal finance, to political economy and the microeconomics of conflict. Moreover, while each study presents various limitations, several future avenues of research have been identified to further our understanding of these different issues. Finally, given the various social, economic, and political implications of each analysis, we hope that the research presented throughout this thesis helps to support evidence-based policymaking and encourage further research among other economists and social scientists alike.

Bibliography

- Abadia-Alvarado, L. and Bernal, G. (2017), ‘A Widening Gap? A Gender-Based Analysis of Performance on the Colombian High School Exit Examination’, *Revista de Economía del Rosario* **20**(1), 5–31.
- Abadie, A. and Gardeazabal, J. (2003), ‘The Economic Costs of Conflict: A Case Study of the Basque Country’, *American Economic Review* **93**(1), 113–132.
- Acemoglu, D., Johnson, S. and Robinson, J. A. (2002), ‘Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution’, *The Quarterly Journal of Economics* **117**(4), 1231–1294.
- Acemoglu, D., Robinson, J. A. and Santos, R. J. (2013), ‘The Monopoly of Violence: Evidence from Colombia’, *Journal of the European Economic Association* **11**(suppl 1), 5–44.
- Ackerman, B. P. and Brown, E. D. (2010), Physical and Psychosocial Turmoil in the Home and Cognitive Development, in G. W. Evans and T. D. Wachs, eds, ‘*Chaos and its Influence on Children’s Development: An Ecological Perspective*’, Washington: American Psychological Association, pp. 35–47.
- Agarwal, S., Driscoll, J. C., Gabaix, X. and Laibson, D. (2009), ‘The Age of Reason: Financial Decisions over the Life Cycle and Implications for Regulation’, *Brookings Papers on Economic Activity* **2009**, 51–101.
- Aggarwal, R. and Goodell, J. W. (2013), ‘Political-Economy of Pension Plans: Impact of Institutions, Gender, and Culture’, *Journal of Banking and Finance* **37**(6), 1860–1879.
- Agnew, J. R., Bateman, H. and Thorp, S. (2013), ‘Financial Literacy and Retirement Planning in Australia’, *Numeracy* **6**(2), 1–25.

- Akerlof, G. A. and Kranton, R. E. (2000), 'Economics and Identity', *The Quarterly Journal of Economics* **115**(3), 715–753.
- Akresh, R. and de Walque, D. (2018), *Armed Conflict and Schooling: Evidence from the 1994 Rwandan Genocide*, World Bank Policy Research Working Paper 4606, The World Bank.
- Akresh, R., Lucchetti, L. and Thirumurthy, H. (2012), 'Wars and Child Health: Evidence from the Eritrean–Ethiopian Conflict', *Journal of Development Economics* **99**(2), 330–340.
- Alesina, A., Baqir, R. and Easterly, W. (1999), 'Public Goods and Ethnic Divisions', *The Quarterly Journal of Economics* **114**(4), 1243–1284.
- Alesina, A. F., Lotti, F. and Mistrulli, P. E. (2013), 'Do Women Pay More for Credit? Evidence From Italy', *Journal of the European Economic Association* **11**(1), 45–66.
- Alesina, A., Giuliano, P. and Nunn, N. (2013), 'On the Origins of Gender Roles: Women and the Plough', *The Quarterly Journal of Economics* **128**(2), 469–530.
- Alessie, R., Van Rooij, M. and Lusardi, A. (2011), 'Financial Literacy and Retirement Preparation in the Netherlands', *Journal of Pension Economics and Finance* **10**(4), 527–545.
- Allgood, S. and Walstad, W. B. (2016), 'The Effects of Perceived and Actual Financial Literacy on Financial Behaviors', *Economic inquiry* **54**(1), 675–697.
- Allianz (2017), *When Will the Penny Drop? Money, Financial Literacy and Risk in the Digital Age*, International Pension Papers 1/2017, Allianz.
- Almenberg, J. and Säve-Söderbergh, J. (2011), 'Financial Literacy and Retirement Planning in Sweden', *Journal of Pension Economics and Finance* **10**(4), 585—598.
- Almond, D. and Currie, J. (2011), 'Killing Me Softly: The Fetal Origins Hypothesis', *Journal of Economic Perspectives* **25**(3), 153–72.
- Annan, J., Blattman, C., Mazurana, D. and Carlson, K. (2011), 'Civil War, Reintegration, and Gender in Northern Uganda', *Journal of conflict resolution* **55**(6), 877–908.
- Arrondel, L., Debbich, M. and Savignac, F. (2013), 'Financial Literacy and Financial Planning in France', *Numeracy* **6**(2), 1–17.

- Asobancaria (2016), '*Experiencias y Aprendizajes de la Educación Financiera: Contribuyendo al Crecimiento del País*'. <https://www.sabermassermas.com/wp-content/uploads/2016/08/Cartilla-Educacion-Financiera-Asobancaria-Mayo-Sin-lineas-de-Impresion.pdf> (Accessed: July 10, 2020).
- Babiarz, P. and Robb, C. A. (2014), 'Financial Literacy and Emergency Saving', *Journal of Family and Economic Issues* **35**(1), 40–50.
- Bakke, K. M., O'Loughlin, J. and Ward, M. D. (2009), 'Reconciliation in Conflict-Affected Societies: Multilevel Modeling of Individual and Contextual Factors in the North Caucasus of Russia', *Annals of the Association of American Geographers* **99**(5), 1012–1021.
- Banca de las Oportunidades (2016), Reporte Inclusión Financiera 2016, Technical report, *Banca de las Oportunidades*, Bogotá, Colombia.
- Banco de la República (1999), '*Informe Sobre Inflación*'. https://www.banrep.gov.co/docum/Lectura_finanzas/pdf/marzo_23.pdf (Accessed: July 12, 2020).
- Banco de la República (2010), Reporte de Estabilidad Financiera, Technical report, *Banco de la República*, Bogotá, Colombia.
- Banerjee, A. V. and Duflo, E. (2007), 'The Economic Lives of the Poor', *Journal of Economic Perspectives* **21**(1), 141–168.
- Bateson, R. (2012), 'Crime Victimization and Political Participation', *American Political Science Review* **106**(3), 570–587.
- Bauer, M., Blattman, C., Chytilová, J., Henrich, J., Miguel, E. and Mitts, T. (2016), 'Can War Foster Cooperation?', *Journal of Economic Perspectives* **30**(3), 249–74.
- Bauer, M., Cassar, A., Chytilová, J. and Henrich, J. (2014), 'War's Enduring Effects on the Development of Egalitarian Motivations and In-Group Biases', *Psychological Science* **25**(1), 47–57.
- Bauer, M., Fiala, N. and Lively, I. (2018), 'Trusting Former Rebels: An Experimental Approach to Understanding Reintegration after Civil War', *The Economic Journal* **128**(613), 1786–1819.
- Bayer, C. P., Klasen, F. and Adam, H. (2007), 'Association of Trauma and PTSD Symptoms

- With Openness to Reconciliation and Feelings of Revenge Among Former Ugandan and Congolese Child Soldiers', *JAMA* **298**(5), 555–559.
- Becchetti, L., Conzo, P. and Romeo, A. (2014), 'Violence, Trust, and Trustworthiness: Evidence from a Nairobi Slum', *Oxford Economic Papers* **66**(1), 283–305.
- Beck, T. and Webb, I. (2003), 'Economic, Demographic, and Institutional Determinants of Life Insurance Consumption across Countries', *The World Bank Economic Review* **17**(1), 51–88.
- Beckmann, E. (2013), 'Financial Literacy and Household Savings in Romania', *Numeracy* **6**(2), 1–22.
- Behrman, J. R., Mitchell, O. S., Soo, C. and Bravo, D. (2010), Financial Literacy, Schooling, and Wealth Accumulation, NBER Working Paper 16452, National Bureau of Economic Research.
- Behrman, J. R., Mitchell, O. S., Soo, C. K. and Bravo, D. (2012), 'How Financial Literacy Affects Household Wealth Accumulation', *American Economic Review* **102**(3), 300–304.
- Bell, C., Srinivasan, T. and Udry, C. (1997), 'Rationing, Spillover, and Interlinking in Credit Markets: The Case of Rural Punjab', *Oxford Economic Papers* **49**(4), 557–585.
- Bellows, J. and Miguel, E. (2006), 'War and Institutions: New Evidence from Sierra Leone', *American Economic Review* **96**(2), 394–399.
- Bellows, J. and Miguel, E. (2009), 'War and Local Collective Action in Sierra Leone', *Journal of public Economics* **93**(11-12), 1144–1157.
- Berenson, A. B., Wiemann, C. M. and McCombs, S. (2001), 'Exposure to Violence and Associated Health-Risk Behaviors among Adolescent Girls', *Archives of Pediatrics and Adolescent Medicine* **155**(11), 1238–1242.
- Beyers, J. M., Bates, J. E., Pettit, G. S. and Dodge, K. A. (2003), 'Neighborhood Structure, Parenting Processes, and the Development of Youths' Externalizing Behaviors: A Multilevel Analysis', *American journal of community psychology* **31**(1), 35–53.
- Black, S. E., Devereux, P. J. and Salvanes, K. G. (2007), 'From the Cradle to the Labor Market? The Effect of Birth Weight on Adult Outcomes', *The Quarterly Journal of Economics* **122**(1), 409–439.

- Blattman, C. (2009), 'From Violence to Voting: War and Political Participation in Uganda', *American Political Science Review* **103**(2), 231–247.
- Boisclair, D., Lusardi, A. and Michaud, P.-C. (2017), 'Financial Literacy and Retirement Planning in Canada', *Journal of Pension Economics and Finance* **16**(3), 277–296.
- Bowles, S. (2008), 'Being Human: Conflict: Altruism's Midwife', *Nature* **456**(7220), 326–327.
- Bowles, S. (2009), 'Did Warfare Among Ancestral Hunter-Gatherers Affect the Evolution of Human Social Behaviors?', *Science* **324**(5932), 1293–1298.
- Boyd, R., Gintis, H., Bowles, S. and Richerson, P. J. (2003), 'The Evolution of Altruistic Punishment', *Proceedings of the National Academy of Sciences* **100**(6), 3531–3535.
- Brakman, S., Garretsen, H. and Schramm, M. (2004), 'The Strategic Bombing of German Cities during World War II and its Impact on City Growth', *Journal of Economic Geography* **4**(2), 201–218.
- Brown, J. R., Ivković, Z., Smith, P. A. and Weisbenner, S. (2008), 'Neighbors Matter: Causal Community Effects and Stock Market Participation', *The Journal of Finance* **63**(3), 1509–1531.
- Brown, M. and Graf, R. (2013), 'Financial Literacy and Retirement Planning in Switzerland', *Numeracy* **6**(2), 1–21.
- Bucher-Koenen, T. and Lusardi, A. (2011), 'Financial Literacy and Retirement Planning in Germany', *Journal of Pension Economics and Finance* **10**(4), 565–584.
- Buka, S. L., Stichick, T. L., Birdthistle, I. and Earls, F. J. (2001), 'Youth Exposure to Violence: Prevalence, Risks, and Consequences', *American Journal of Orthopsychiatry* **71**(3), 298–310.
- Bundervoet, T., Verwimp, P. and Akresh, R. (2009), 'Health and Civil War in Rural Burundi', *Journal of Human Resources* **44**(2).
- CAF (2014a), 'Encuesta de Medición de las Capacidades Financieras en Los Países Andinos: Informe para Colombia 2014'. <https://scioteca.caf.com/bitstream/handle/123456789/743/ENCUESTA%20DE%20MEDICION%20DE%20LAS%20CAPACIDADES%20FINANCIERAS%20EN%20LOS%20PA%3%8DESE%20ANDINOS%20-%20COLOMBIA.pdf> (Accessed: August 25, 2020).

- CAF (2014b), 'Encuesta de Medición de las Capacidades Financieras en Los Países Andinos. Informe Comparativo 2014'. <https://scioteca.caf.com/bitstream/handle/123456789/740/ENCUESTA%20DE%20MEDICION%20DE%20LAS%20CAPACIDADES%20FINANCIERAS%20EN%20LOS%20PA%c3%8dESE%20ANDINOS%20-%20COMPARATIVO.pdf?sequence=5&isAllowed=y> (Accessed: August 25, 2020).
- Calvo, T., Lavallée, E., Razafindrakoto, M. and Roubaud, F. (2020), 'Fear Not For Man? Armed Conflict and Social Capital in Mali', *Journal of Comparative Economics* **48**(2), 251–276.
- Camacho, A. and Rodríguez, C. (2012), 'Firm Exit and Armed Conflict in Colombia', *Journal of Conflict Resultion* **57**(1), 89–116.
- Cardenas, J. C. and Carpenter, J. (2008), 'Behavioural Development Economics: Lessons from Field Labs in the Developing World', *The Journal of Development Studies* **44**(3), 311–338.
- Cardenas, M. (2007), 'Economic Growth in Colombia : A Reversal of "Fortune"?', *Revista Ensayos Sobre Política Económica* **25**(53), 220–259.
- Carmil, D. and Breznitz, S. (1991), 'Personal Trauma and World View — Are Extremely Stressful Experiences Related to Political Attitudes, Religious Beliefs, and Future Orientation?', *Journal of Traumatic Stress* **4**(3), 393–405.
- Carpenter, J. and Seki, E. (2011), 'Do Social Preferences Increase Productivity? Field Experimental Evidence from Fishermen in Toyama Bay', *Economic Inquiry* **49**(2), 612–630.
- Casey, B., Getz, S. and Galvan, A. (2008), 'The Adolescent Brain', *Developmental Review* **28**(1), 62–77.
- Cassar, A., Grosjean, P. and Whitt, S. (2013), 'Legacies of Violence: Trust and Market Development', *Journal of Economic Growth* **18**(3), 285–318.
- Castellanos-Ryan, N., O'Leary-Barrett, M. and Conrod, P. J. (2013), 'Substance-Use in Childhood and Adolescence: A brief Overview of Developmental Processes and their Clinical Implications', *Journal of the Canadian Academy of Child and Adolescent Psychiatry* **22**(1), 41–46.
- Cecchi, F., Leuvel, K. and Voors, M. (2016), 'Conflict Exposure and Competitiveness: Experimental Evidence from the Football Field in Sierra Leone', *Economic Development and Cultural Change* **64**(3), 405–435.

- Chamarbagwala, R. and Morán, H. E. (2011), 'The Human Capital Consequences of Civil War: Evidence from Guatemala', *Journal of Development Economics* **94**(1), 41–61.
- Chaux, E., Arboleda, J. and Rincón, C. (2012), 'Community Violence and Reactive and Proactive Aggression: The Mediating Role of Cognitive and Emotional Variables', *Revista Colombiana de Psicología* **21**(2), 233–251.
- Chemtob, C. M., Pat-Horenczyk, R., Madan, A., Pitman, S. R., Wang, Y., Doppelt, O., Burns, K. D., Abramovitz, R. and Brom, D. (2011), 'Israeli Adolescents with Ongoing Exposure to Terrorism: Suicidal Ideation, Posttraumatic Stress Disorder, and Functional Impairment', *Journal of Traumatic Stress* **24**(6), 756–759.
- Choi, J.-K. and Bowles, S. (2007), 'The Coevolution of Parochial Altruism and War', *Science* **318**(5850), 636–640.
- Christelis, D., Jappelli, T. and Padula, M. (2010), 'Cognitive Abilities and Portfolio Choice', *European Economic Review* **54**(1), 18–38.
- Christiansen, C., Joensen, J. S. and Rangvid, J. (2008), 'Are Economists More Likely to Hold Stocks?', *Review of Finance* **12**(3), 465–496.
- Chui, A. C. and Kwok, C. C. (2008), 'National Culture and Life Insurance Consumption', *Journal of International Business Studies* **39**(1), 88–101.
- CIEEF (2017), '*Estrategia Nacional de Educación Financiera de Colombia (ENEEF)*'. https://www.banrep.gov.co/sites/default/files/publicaciones/archivos/estrategia_nacional_educacion_economica.pdf (Accessed: July 12, 2020).
- Coley, R. L., Leventhal, T., Lynch, A. D. and Kull, M. (2013), 'Relations between Housing Characteristics and the Well-Being of Low-Income Children and Adolescents', *Developmental Psychology* **49**(9), 1775–1789.
- Collier, P. (1999), 'On the Economic Consequences of Civil War', *Oxford Economic Papers* **51**(1), 168–183.
- Collier, P., Elliott, V. L., Hegre, H., Hoeffler, A., Reynal-Querol, M. and Sambanis, N. (2003), *Breaking the Conflict Trap: Civil War and Development Policy*, Washington: World Bank Publications.

- Collier, P., Hoeffler, A. and Söderbom, M. (2008), 'Post-Conflict Risks', *Journal of Peace Research* **45**(4), 461–478.
- Comisión de la Verdad (2022), '*Hallazgos y Recomendaciones de la Comisión de la Verdad de Colombia: Informe Final*'. <https://www.comisiondelaverdad.co/sites/default/files/descargables/2022-06/Informe%20Final%20capi%CC%81tulo%20Hallazgos%20y%20recomendaciones.pdf> (Accessed: July, 2022).
- Contreras, D., Delgadillo, J. and Riveros, G. (2019), 'Is Home Overcrowding a Significant Factor in Children's Academic Performance? Evidence from Latin America', *International Journal of Educational Development* **67**, 1–17.
- Cook, P. J. and Moore, M. J. (1993), 'Drinking and Schooling', *Journal of Health Economics* **12**(4), 411–429.
- Cárdenas, J. S., García, N. B. and Cuadros, P. A. (2017), '*Mapeo de Inicitativas de Educación Financiera En Colombia*'. <https://publicaciones.banrepcultural.org/index.php/emisor/article/view/8014/8409> (Accessed: July 10, 2020).
- Currie, J. and Hyson, R. (1999), 'Is the Impact of Health Shocks Cushioned by Socioeconomic Status? The Case of Low Birthweight', *American Economic Review* **89**(2), 245–250.
- Davis, D. R. and Weinstein, D. E. (2002), 'Bones, Bombs, and Break Points: The Geography of Economic Activity', *American Economic Review* **92**(5), 1269–1289.
- de Bassa Scheresberg, C. (2013), 'Financial literacy and financial behavior among young adults: Evidence and implications', *Numeracy* **6**(2), 1–21.
- De Juan, A. and Pierskalla, J. H. (2016), 'Civil War Violence and Political Trust: Microlevel Evidence from Nepal', *Conflict Management and Peace Science* **33**(1), 67–88.
- De Luca, G. and Verpoorten, M. (2015a), 'Civil War and Political Participation: Evidence from Uganda', *Economic Development and Cultural Change* **64**(1), 113–141.
- De Luca, G. and Verpoorten, M. (2015b), 'Civil War, Social Capital and Resilience in Uganda', *Oxford Economic Papers* **67**(3), 661–686.
- Disney, R. and Gathergood, J. (2013), 'Financial Literacy and Consumer Credit Portfolios', *Journal of Banking and Finance* **37**(7), 2246–2254.

- Doan, S. N. and Evans, G. W. (2020), 'Chaos and Instability from Birth to Age Three', *The Future of Children* **30**(2), 93–114.
- Dodge, K. A. (2006), 'Translational Science in Action: Hostile Attributional Style and the Development of Aggressive Behavior Problems', *Development and Psychopathology* **18**(3), 791–814.
- Duflo, E. and Saez, E. (2003), 'The Role of Information and Social Interactions in Retirement Plan Decisions: Evidence from a Randomized Experiment', *The Quarterly Journal of Economics* **118**(3), 815–842.
- Easterly, W. and Levine, R. (1997), 'Africa's Growth Tragedy: Policies and Ethnic Divisions', *The Quarterly Journal of Economics* **112**(4), 1203–1250.
- Echandía, C. C. (2000), 'El Conflicto Armado Colombiano en los Años Noventa: Cambios en las Estrategias y Efectos Económicos', *Colombia Internacional* **50**, 117–134.
- Ehlers, A. and Clark, D. M. (2000), 'A Cognitive Model of Posttraumatic Stress Disorder', *Behaviour research and therapy* **38**(4), 319–345.
- Ellickson, P. L., Tucker, J. S. and Klein, D. J. (2003), 'Ten-Year Prospective Study of Public Health Problems Associated With Early Drinking', *Pediatrics* **111**(5), 949–955.
- Evans, G. W. (2006), 'Child Development and the Physical Environment', *Annual Review of Psychology* **57**, 423–451.
- Evans, G. W. (2021), 'The Physical Context of Child Development', *Current Directions in Psychological Science* **30**(1), 41–48.
- Evans, G. W., Bullinger, M. and Hygge, S. (1998), 'Chronic Noise Exposure and Physiological Response: A Prospective Study of Children Living Under Environmental Stress', *Psychological Science* **9**(1), 75–77.
- Fafchamps, M. (2006), 'Development and Social Capital', *Journal of Development Studies* **42**(7), 1180–1198.
- Fafchamps, M. and Lund, S. (2003), 'Risk-Sharing Networks in Rural Philippines', *Journal of Development Economics* **71**(2), 261–287.
- Fiscalía General de la Nación (2020), '*Organizaciones Delicuenciales que se Lucraban del Cobro de Elevados Intereses por Préstamos en la Modalidad 'Gota a Gota' Fueron Desarticuladas*

- por la Fiscalía General de la Nación. 37 Capturados Hacen Parte del Balance*'. <https://www.fiscalia.gov.co/colombia/noticias/organizaciones-delincuenciales-que-se-lucraban-del-cobro-de-elevados-intereses-por-prestamos-en-la-modalidad-gota-a-gota-fueron-desarticuladas-por-la-fiscalia-general-de-la-nacion-3/> (Accessed: October, 2020).
- Fornero, E. and Monticone, C. (2011), 'Financial Literacy and Pension Plan Participation in Italy', *Journal of Pension Economics and Finance* **10**(4), 547—564.
- Fowler, P. J., Tompsett, C. J., Braciszewski, J. M., Jacques-Tiura, A. J. and Baltes, B. B. (2009), 'Community Violence: A Meta-Analysis on the Effect of Exposure and Mental Health Outcomes of Children and Adolescents', *Development and psychopathology* **21**(1), 227–259.
- Franić, T., Dodig, G., Kardum, G., Marčinko, D., Ujević, A. and Bilušić, M. (2011), 'Early Adolescence and Suicidal Ideations in Croatia: Sociodemographic, Behavioral, and Psychometric Correlates', *Crisis: The Journal of Crisis Intervention and Suicide Prevention* **32**(6), 334–345.
- French, D. and McKillop, D. (2016), 'Financial Literacy and Over-Indebtedness in Low-Income Households', *International Review of Financial Analysis* **48**, 1–11.
- French, M. T. and Maclean, J. C. (2006), 'Underage Alcohol Use, Delinquency, and Criminal Activity', *Health Economics* **15**(12), 1261–1281.
- Gallego, J. (2018), 'Civil Conflict and Voting Behavior: Evidence from Colombia', *Conflict Management and Peace Science* **35**(6), 601–621.
- Galovski, T. and Lyons, J. A. (2004), 'Psychological Sequelae of Combat Violence: A Review of the Impact of PTSD on the Veteran's Family and Possible Interventions', *Aggression and Violent Behavior* **9**(5), 477–501.
- García, S. and Ritterbusch, A. (2014), 'Child Poverty in Colombia: Construction of a Multidimensional Measure Using a Mixed-Method Approach', *Child Indicators Research* **8**(4), 801–823.
- García, N., Grifoni, A., Lopez, J. C. and Mejía, D. (2013), *Financial Education in Latin America and the Caribbean: Rationale, Overview and Way Forward*, OECD Working Papers on Finance, Insurance and Private Pensions 33, OECD.

- García-Ponce, O., Young, L. E. and Zeitzoff, T. (2018), '*Anger and Support for Punitive Justice in Mexico's Drug War*'. California: University of California. Unpublished.
- Gardner, M. and Steinberg, L. (2005), 'Peer Influence on Risk Taking, Risk Preference, and Risky Decision Making in Adolescence and Adulthood: An Experimental Study', *Developmental Psychology* **41**(4), 625–635.
- Gathergood, J. (2012), 'Self-Control, Financial Literacy and Consumer Over-Indebtedness', *Journal of Economic Psychology* **33**(3), 590–602.
- Georgarakos, D. and Fürth, S. (2015), 'Household Repayment Behavior: The Role of Social Capital and Institutional, Political, and Religious Beliefs', *European Journal of Political Economy* **37**, 249–265.
- Georgarakos, D., Haliassos, M. and Pasini, G. (2014), 'Household Debt and Social Interactions', *The Review of Financial Studies* **27**(5), 1404–1433.
- Gáfaró, M., Ibáñez, A. M. and Justino, P. (2014), *Local Institutions and Armed Group Presence in Colombia*, HiCN Working Papers 178, Households in Conflict Network.
- Gilligan, M. J., Pasquale, B. J. and Samii, C. (2014), 'Civil War and Social Cohesion: Lab-in-the-Field Evidence from Nepal', *American Journal of Political Science* **58**(3), 604–619.
- Gneezy, A. and Fessler, D. M. T. (2012), 'Conflict, Sticks and Carrots: War Increases Prosocial Punishments and Rewards', *Proceedings. Biological Sciences* **279**(1727), 219–223.
- Grant, B. F. and Dawson, D. A. (1997), 'Age at Onset of Alcohol Use and its Association with DSM-IV Alcohol Abuse and Dependence: Results from the National Longitudinal Alcohol Epidemiologic Survey', *Journal of Substance Use* **9**, 103–110.
- Grupo de Memoria Histórica (2013), '*¡Basta Ya! Colombia: Memorias de Guerra y Dignidad: Informe General Grupo Memoria Histórica*'. <https://centrodememoriahistorica.gov.co/wp-content/uploads/2021/12/1.-Basta-ya-2021-baja.pdf> (Accessed: May, 2021).
- Guerra, N. G., Rowell Huesmann, L. and Spindler, A. (2003), 'Community Violence Exposure, Social Cognition, and Aggression among Urban Elementary School Children', *Child Development* **74**(5), 1561–1576.

- Guiso, L., Sapienza, P. and Zingales, L. (2004), 'The Role of Social Capital in Financial Development', *American Economic Review* **94**(3), 526–556.
- Guiso, L., Sapienza, P. and Zingales, L. (2011), Capital as the Missing Link, in J. Benhabib, A. Bisin and M. O. Jackson, eds, 'Handbook of Social Economics', Vol. 1, North-Holland, pp. 417–480.
- Gutierrez, I. A. and Gallegos, J. V. (2016), *The Effect of Civil Conflict on Domestic Violence: The Case of Peru*, Working Paper 1168, RAND Corporation.
- Guyer, A. E., Choate, V. R., Pine, D. S. and Nelson, E. E. (2012), 'Neural Circuitry Underlying Affective Response to Peer Feedback in Adolescence', *Social cognitive and affective neuroscience* **7**(1), 81–92.
- Hanson, K. L., Medina, K. L., Padula, C. B., Tapert, S. F. and Brown, S. A. (2011), 'Impact of Adolescent Alcohol and Drug use on Neuropsychological Functioning in Young Adulthood: 10-year outcomes', *Journal of Child and Adolescent Substance Abuse* **20**(2), 135–154.
- Harker, A., Molano, A. and Cristancho, J.-C. (2017), Ecological Factors Associated to Social and Emotional Skill Development: Chronic exposure to violence in the context of the Colombian Civil Conflict, Documentos de trabajo 46, Escuela de Gobierno - Universidad de los Andes.
- Hasler, A., Lusardi, A. and Oggero, N. (2018), 'Financial Fragility in the US: Evidence and Implications', *Washington, DC: Global Financial Literacy Excellence Center, The George Washington University School of Business*.
- Hastings, J. and Mitchell, O. S. (2020), 'How Financial Literacy and Impatience Shape Retirement Wealth and Investment Behaviors', *Journal of Pension Economics and Finance* **19**(1), 1–20.
- Hastings, J. S., Madrian, B. C. and Skimmyhorn, W. L. (2013), 'Financial Literacy, Financial Education, and Economic Outcomes', *Annual Review of Economics* **5**(1), 347–373.
- Hazlett, C. (2020), 'Angry or Weary? How Violence Impacts Attitudes toward Peace among Darfuriian Refugees', *Journal of Conflict Resolution* **64**(5), 844–870.
- Henrich, C. C. and Shahar, G. (2013), 'Effects of Exposure to Rocket Attacks on Adolescent Distress and Violence: A 4-Year Longitudinal Study', *Journal of the American Academy of Child and Adolescent Psychiatry* **52**(6), 619–627.

- Henrich, J. (2004), 'Cultural Group Selection, Coevolutionary Processes and Large-Scale Cooperation', *Journal of Economic Behavior and Organization* **53**(1), 3–35.
- Henrich, J. and Boyd, R. (2001), 'Why People Punish Defectors: Weak Conformist Transmission can Stabilize Costly Enforcement of Norms in Cooperative Dilemmas', *Journal of Theoretical Biology* **208**(1), 79–89.
- Herbst, D. Z. and Mas, A. (2015), 'Peer Effects on Worker Output in the Laboratory Generalize to the Field', *Science* **350**(6260), 545–549.
- Hershey, D. A., Henkens, K. and Dalen, H. P. V. (2010), 'Aging and Financial Planning for Retirement: Interdisciplinary Influences Viewed through a Cross-Cultural Lens', *The International Journal of Aging and Human Development* **70**(1), 1–38.
- Hilgert, M. A., Hogarth, J. M. and Beverly, S. G. (2003), 'Household Financial Management: The Connection Between Knowledge and Behavior', *Federal Reserve Bulletin* **89**(7), 309–322.
- Holland, A. C. (2013), 'Right On Crime? Conservative Party Politics and "Mano Dura" Policies in El Salvador', *Latin American Research Review* **48**(1), 44–67.
- Hong, H., Kubik, J. D. and Stein, J. C. (2004), 'Social Interaction and Stock-Market Participation', *The Journal of Finance* **59**(1), 137–163.
- Hopfensitz, A. and Miquel-Florensa, J. (2013), *Investigating Social Capital in Colombia: Conflict and Public Good Contributions*, TSE Working Paper TSE-463, Toulouse School of Economics.
- Hsu, J. W. (2016), 'Aging and Strategic Learning: The Impact of Spousal Incentives on Financial Literacy', *Journal of Human Resources* **51**(4), 1036–1067.
- Ibáñez, A. M. and Moya, A. (2010), 'Vulnerability of Victims of Civil Conflicts: Empirical Evidence for the Displaced Population in Colombia', *World Development* **38**(4), 647–663.
- Ibáñez, A. M. and Vélez, C. E. (2008), 'Civil Conflict and Forced Migration: The Micro Determinants and Welfare Losses of Displacement in Colombia', *World Development* **36**(4), 659–676.
- Jain, S. and Mansuri, G. (2003), 'A Little at a Time: The Use of Regularly Scheduled Repayments in Microfinance Programs', *Journal of Development Economics* **72**(1), 253–279.
- Jappelli, T. and Padula, M. (2013), 'Investment in Financial Literacy and Saving Decisions', *Journal of Banking and Finance* **37**(8), 2779–2792.

- Jensen, R. and Oster, E. (2009), 'The Power of TV: Cable Television and Women's Status in India', *The Quarterly Journal of Economics* **124**(3), 1057–1094.
- Jürges, H., Stella, L., Hallaq, S. and Schwarz, A. (2022), 'Cohort at Risk: Long-term Consequences of Conflict for Child School Achievement', *Journal of Population Economics* **35**(1), 1–43.
- Justino, P., Leone, M. and Salardi, P. (2014), 'Short- and Long-Term Impact of Violence on Education: The Case of Timor Leste', *The World Bank Economic Review* **28**(2), 320–353.
- Karlan, D., McConnell, M., Mullainathan, S. and Zinman, J. (2016), 'Getting to the Top of Mind: How Reminders Increase Saving', *Management Science* **62**(12), 3393–3411.
- Kaustia, M. and Torstila, S. (2011), 'Stock Market Aversion? Political Preferences and Stock Market Participation', *Journal of Financial Economics* **100**(1), 98–112.
- Kim, H. (2019), 'In the Wake of Conflict: The Long-term Effect on Child Nutrition in Uganda', *Oxford Development Studies* **47**(3), 336–355.
- Klapper, L., Lusardi, A. and Panos, G. A. (2013), 'Financial Literacy and its Consequences: Evidence from Russia During the Financial Crisis', *Journal of Banking and Finance* **37**(10), 3904–3923.
- Klapper, L., Lusardi, A. and Van Oudheusden, P. (2015), 'Financial Literacy Around the World: Insights from the Standard & Poor's Ratings Services Global Financial Literacy Survey', *World Bank. Washington DC: World Bank* .
- Knack, S. and Keefer, P. (1997), 'Does Social Capital Have an Economic Payoff? A Cross-Country Investigation', *The Quarterly Journal of Economics* **112**(4), 1251–1288.
- Krause, K. (2014), 'Supporting the Iron Fist: Crime News, Public Opinion, and Authoritarian Crime Control in Guatemala', *Latin American Politics and Society* **56**(1), 98–119.
- Kreiman, G. and Masullo, J. (2020), 'Who Shot the Bullets? Exposure to Violence and Attitudes Toward Peace: Evidence from the 2016 Colombian Referendum', *Latin American Politics and Society* **62**(4), 24–49.
- Kremer, M. and Levy, D. (2008), 'Peer Effects and Alcohol Use among College Students', *Journal of Economic Perspectives* **22**(3), 189–206.

- Krueger, A. B. and Lindahl, M. (2001), 'Education for Growth: Why and for Whom?', *Journal of Economic Literature* **39**(4), 1101–1136.
- La Ferrara, E., Chong, A. and Duryea, S. (2012), 'Soap Operas and Fertility: Evidence from Brazil', *American Economic Journal: Applied Economics* **4**(4), 1–31.
- La Mattina, G. (2017), 'Civil Conflict, Domestic Violence and Intra-Household Bargaining in Post-Genocide Rwanda', *Journal of Development Economics* **124**, 168–198.
- Lees, B., Meredith, L. R., Kirkland, A. E., Bryant, B. E. and Squeglia, L. M. (2020), 'Effect of Alcohol Use on the Adolescent Brain and Behavior', *Pharmacology Biochemistry and Behavior* **192**, 1–27.
- León, G. (2012), 'Civil Conflict and Human Capital Accumulation: The Long-term Effects of Political Violence in Perú', *The Journal of Human Resources* **47**(4), 991–1022.
- Letourneau, N. L., Duffett-Leger, L., Levac, L., Watson, B. and Young-Morris, C. (2013), 'Socioeconomic Status and Child Development: A Meta-Analysis', *Journal of Emotional and Behavioral Disorders* **21**(3), 211–224.
- Linares, L. O., Heeren, T., Bronfman, E., Zuckerman, B., Augustyn, M. and Tronick, E. (2001), 'A Mediational Model for the Impact of Exposure to Community Violence on Early Child Behavior Problems', *Child Development* **72**(2), 639–652.
- Lusardi, A. (2011), *Americans' Financial Capability*, NBER Working Paper 17103, National Bureau of Economic Research.
- Lusardi, A. (2019), 'Financial Literacy and the Need for Financial Education: Evidence and Implications', *Swiss Journal of Economics and Statistics* **155**(1), 1–8.
- Lusardi, A. and de Bassa Scheresberg, C. (2013), *Financial Literacy and High-Cost Borrowing in the United States*, NBER Working Paper 18969, National Bureau of Economic Research.
- Lusardi, A., Michaud, P.-C. and Mitchell, O. S. (2017), 'Optimal Financial Knowledge and Wealth Inequality', *Journal of Political Economy* **125**(2), 431–477.
- Lusardi, A. and Mitchell, O. S. (2008), 'Planning and Financial Literacy: How Do Women Fare?', *American Economic Review* **98**(2), 413–417.

- Lusardi, A. and Mitchell, O. S. (2009), *How Ordinary Consumers Make Complex Economic Decisions: Financial Literacy and Retirement Readiness*, NBER Working Paper 15350, National Bureau of Economic Research.
- Lusardi, A. and Mitchell, O. S. (2011a), Financial Literacy and Planning: Implications for Retirement Well-Being, in A. Lusardi and O. S. Mitchell, eds, '*Financial Literacy: Implications for Retirement Security and the Financial Marketplace*', Oxford: Oxford University Press, pp. 17–39.
- Lusardi, A. and Mitchell, O. S. (2011b), 'Financial Literacy around the World: An Overview', *Journal of Pension Economics and Finance* **10**(4), 497–508.
- Lusardi, A. and Mitchell, O. S. (2014), 'The Economic Importance of Financial Literacy: Theory and Evidence', *Journal of Economic Literature* **52**(1), 5–44.
- Lusardi, A., Mitchell, O. S. and Curto, V. (2010), 'Financial Literacy among the Young', *The Journal of Consumer Affairs* **44**(2), 358–380.
- Lusardi, A. and Tufano, P. (2015), 'Debt Literacy, Financial Experiences and Overindebtedness', *Journal of Pension and Economics Finance* **14**(4), 332–368.
- Álvarez-Franco, P. B., Muñoz-Murillo, M. and Restrepo-Tobón, D. A. (2017), 'Challenges in Assessing the Effectiveness of Financial Education Programs: The Colombian Case', *Cuadernos De Administración* **30**(54), 155–180.
- Lynch, M. and Cicchetti, D. (1998), 'An Ecological-Transactional Analysis of Children and Contexts: The Longitudinal Interplay among Child Maltreatment, Community violence, and Children's Symptomatology', *Development and Psychopathology* **10**(2), 235—257.
- Lyons, R. F., Mickelson, K. D., Sullivan, M. J. and Coyne, J. C. (1998), 'Coping as a Communal Process', *Journal of Social and Personal Relationships* **15**(5), 579–605.
- MacArthur, G., Smith, M., Melotti, R., Heron, J., Macleod, J., Hickman, M., Kipping, R., Campbell, R. and Lewis, G. (2012), 'Patterns of Alcohol Use and Multiple Risk Behaviour by Gender during Early and Late Adolescence: The ALSPAC Cohort', *Journal of Public Health* **43**(1), 20–30.

- Mandell, L. (2009), *The Financial Literacy of Young American Adults: Results of the 2008 National Jump\$tart Coalition Survey of High School Seniors and College Students.*, Washington, D.C.: Jumpstart Coalition.
- Margolin, G. and Gordis, E. B. (2000), 'The Effects of Family and Community Violence on Children', *Annual Review of Psychology* **51**, 445–79.
- McCarthy, Y. (2016), *Behavioural Characteristics and Financial Distress*, ECB Working Paper 1303, European Central Bank.
- McCoy, D. C., Raver, C. C. and Sharkey, P. (2015), 'Children's Cognitive Performance and Selective Attention Following Recent Community Violence', *Journal of Health and Social Behavior* **56**(1), 19–36.
- McDermott, J. (2017), 'The FARC's Riches: Up to \$580 Million in Annual Income'. *Insigt Crime*, 6 September. <https://insightcrime.org/news/analysis/farc-riches-yearly-income-up-to-580-million/> (Accessed: February, 2021).
- McGue, M. and Iacono, W. G. (2005), 'The Association of Early Adolescent Problem Behavior with Adult Psychopathology', *American Journal of Psychiatry* **162**(6), 1118–1124.
- Meernik, J. (2019), 'Violence and Reconciliation in Colombia: The Personal and the Contextual', *Journal of Politics in Latin America* **11**(3), 323–347.
- Meléndez-Guevara, A. M., Gaias, L. M., Fraser, A. M. and Johnson, S. L. (2021), 'Violence Exposure, Aggressive Cognitions and Externalizing Behaviors among Colombian Youth: The Moderating Role of Community Belongingness', *Youth and Society* **00**(0), 1–28.
- Miguel, E. and Roland, G. (2011), 'The Long-Run Impact of Bombing Vietnam', *Journal of Development Economics* **96**(1), 1–15.
- Molano, A., Harker, A. and Cristancho, J. C. (2018), 'Effects of Indirect Exposure to Homicide Events on Children's Mental Health: Evidence from Urban Settings in Colombia', *Journal of Youth and Adolescence* **47**(10), 2060–2072.
- Moore, D. (2003), *Survey of Financial Literacy in Washington State: Knowledge, Behavior, Attitudes, and Experiences*, Technical report, Social and Economic Sciences Research Center.

- Mottola, G. R. (2013), 'In Our Best Interest: Women, Financial Literacy, and Credit Card Behaviour', *Numeracy* **6**(2), 1–15.
- Mullahy, J. and Sindelar, J. L. (1993), 'Alcoholism, Work, and Income', *Journal of Labor Economics* **11**(3), 494–520.
- Mullahy, J. and Sindelar, J. L. (1996), 'Employment, Unemployment, and Problem Drinking', *Journal of Health Economics* **15**(4), 409–434.
- Muravyev, A., Talavera, O. and Schäfer, D. (2009), 'Entrepreneurs' Gender and Financial Constraints: Evidence from International data', *Journal of Comparative Economics* **37**(2), 270–286.
- Mushinski, D. W. (1999), 'An Analysis of Offer Functions of Banks and Credit Unions in Guatemala', *The Journal of Development Studies* **36**(2), 88–112.
- Noe, D. and Rieckmann, J. (2013), *Violent Behaviour: The Effect of Civil Conflict on Domestic Violence in Colombia*, Discussion Paper 136, Georg-August Universität Göttingen, Courant Research Centre.
- Nunn, N. and Wantchekon, L. (2011), 'The Slave Trade and the Origins of Mistrust in Africa', *American Economic Review* **101**(7), 3221–52.
- Observatorio de Drogas de Colombia (2016), '*Estudio Nacional de Consumo de Sustancias Psicoactivas en Población Escolar Colombiana*'. https://www.unodc.org/documents/colombia/2018/Junio/C003142016_estudio_consumo_escolares_2016.pdf (Accessed: December 2, 2022).
- OECD (2005), *Improving Financial Literacy: Analysis of Issues and Policies*, Paris: OECD Publishing.
- OECD (2013), *Women and Financial Education: Evidence, Policy Responses and Guidance*, Paris: OECD Publishing.
- OECD (2016), '*OECD/INFE International Survey of Adult Financial Literacy Competencies*'. <https://www.oecd.org/daf/fin/financial-education/OECD-INFE-International-Survey-of-Adult-Financial-Literacy-Competencies.pdf> (Accessed: February 10, 2020).

- OECD (2020), 'OECD/INFE 2020 International Survey of Adult Financial Literacy'. <https://www.oecd.org/financial/education/launchoftheoecdinfeglobalfinancialliteracysurveyreport.htm> (Accessed: July 22, 2020).
- Ojeda, D. (2019), 'El "Gota a Gota" en Bogotá Mueve al Menos \$71 Mil Millones al Año'. *El Espectador*, 3 December. <https://openknowledge.worldbank.org/handle/10986/37619> (Accessed: January 2019).
- Okello, J., Nakimuli-Mpungu, E., Musisi, S., Broekaert, E. and Derluyn, I. (2013), 'War-Related Trauma Exposure and Multiple Risk Behaviors among School-Going Adolescents in Northern Uganda: The Mediating Role of Depression Symptoms', *Journal of Affective Disorders* **151**(2), 715–721.
- Oreopoulos, P., Stabile, M., Walld, R. and Roos, L. L. (2008), 'Short-, Medium-, and Long-Term Consequences of Poor Infant Health: An Analysis using Siblings and Twins', *Journal of Human Resources* **43**(1), 88–138.
- Ottaviani, C. and Vandone, D. (2018), 'Financial literacy, debt burden and impulsivity: A mediation analysis', *Economic Notes: Review of Banking, Finance and Monetary Economics* **47**(2-3), 439–454.
- Pat-Horenczyk, R., Peled, O., Miron, T., Brom, D., Villa, Y. and Chemtob, C. M. (2007), 'Risk-Taking Behaviors among Israeli Adolescents Exposed to Recurrent Terrorism: Provoking Danger under Continuous Threat?', *American Journal of Psychiatry* **164**(1), 66–72.
- Pennebaker, J. W. and Harber, K. D. (1993), 'A Social Stage Model of Collective Coping: The Loma Prieta Earthquake and The Persian Gulf War', *Journal of Social Issues* **49**(4), 125–145.
- Perez-Reyna, D. and Osorio-Rodríguez, D. O. (2018), *The Monetary and Fiscal History of Colombia: 1960-2017*, BFI Working Paper 2018-61, Becker Friedman Institute.
- Petersen, R. D. (2002), *Understanding Ethnic Violence: Fear, Hatred, and Resentment in Twentieth-Century Eastern Europe*, Cambridge: Cambridge University Press.
- Portafolio (2018a), 'Así Llegó el 'Gota a Gota' a Gran Parte de América Latina'. *Portafolio*, 4 December. <https://www.portafolio.co/economia/asi-llego-el-gota-a-gota-a-gran-parte-de-america-latina-523351> (Accessed: October, 2020).

- Portafolio (2018b), 'Bajó la Pobreza, pero el 80% de la Población es de Estratos 1,2,3'. *Portafolio*, 11 November. <https://www.portafolio.co/economia/el-pais-bajo-su-pobreza-pero-el-80-de-su-poblacion-es-de-estratos-1-2-y-3-523233> (Accessed: May, 2021).
- Posen, B. R. (1993), 'The Security Dilemma and Ethnic Conflict', *Survival* **35**(1), 27–47.
- Powell, S., Rosner, R., Butollo, W., Tedeschi, R. G. and Calhoun, L. G. (2003), 'Posttraumatic Growth after War: A Study with Former Refugees and Displaced People in Sarajevo', *Journal of Clinical Psychology* **59**(1), 71–83.
- Prem, M., Rivera, A. F., Romero, D. A. and Vargas, J. F. (2022), 'Selective Civilian Targeting: The Unintended Consequences of Partial Peace', *Quarterly Journal of Political Science* **17**(3), 317–354.
- Prescott, C. A. and Kendler, K. S. (1999), 'Genetic and Environmental Contributions to Alcohol Abuse and Dependence in a Population-Based Sample of Male Twins', *American Journal of Psychiatry* **156**(1), 34–40.
- Pérez Gómez, A., Díaz-Granados, O. and Alarcón Florez, L. (2011), 'Age at Onset of Alcohol Consumption and Risk of Problematic Alcohol and Psychoactive Substance Use in Adulthood in the General Population in Colombia', *The Journal of International Drug, Alcohol and Tobacco Research* **1**(1), 19–24.
- Punamäki, R.-L., Qouta, S. and Sarraj, E. E. (1997), 'Relationships between Traumatic Events, Children's Gender, and Political Activity, and Perceptions of Parenting Styles', *International Journal of Behavioral Development* **21**(1), 91–110.
- Qouta, S., Punamäki, R.-L., Miller, T. and El-Sarraj, E. (2008), 'Does War Beget Child Aggression? Military Violence, Gender, Age and Aggressive Behaviour in Two Palestinian Samples', *Aggressive Behaviour* **34**(3), 231–244.
- Reddy, R., Bruhn, M. and Tan, C. (2013), '*Financial Capability in Colombia: Results from a National Survey on Financial Behaviors, Attitudes, and Knowledge*'. World Bank. Washington, D.C: World Bank.
- Reiss, F. (2013), 'Socioeconomic Inequalities and Mental Health Problems in Children and Adolescents: A Systematic Review', *Social Science and Medicine* **90**, 24–31.

- Renna, F. (2007), 'The economic cost of teen drinking: Late graduation and lowered earnings', *Health Economics* **16**(4), 407–419.
- Reuters (2022), 'Forced Displacement Soared in Colombia in 2022, UN Agency Reports'. *Reuters*, 16 February. <https://www.reuters.com/world/americas/forced-displacements-soared-colombia-2021-un-agency-reports-2022-02-16/> (Accessed: July, 2022).
- Rodríguez, C. and Sánchez, F. (2012), 'Armed Conflict Exposure, Human Capital Investments, And Child Labor: Evidence From Colombia', *Defence and Peace Economics* **23**(2), 161–184.
- Rodrik, D., Subramanian, A. and Trebbi, F. (2004), 'Institutions Rule: The Primacy of Institutions over Geography and Integration in Economic Development', *Journal of Economic Growth* **9**(2), 131–165.
- Rohner, D., Thoenig, M. and Zilibotti, F. (2013), 'Seeds of Distrust: Conflict in Uganda', *Journal of Economic Growth* **18**(3), 217–252.
- Rozo, S. V. (2018), 'Is Murder Bad for Business? Evidence from Colombia', *The Review of Economics and Statistics* **100**(5), 769–782.
- Salas-Salazar, L. G. (2016), 'Conflicto Armado y Configuración Territorial: Elementos para la Consolidación de la Paz en Colombia', *Bitácora Urbano Territorial* **26**(2), 45–57.
- Save the Children (2017), '*Stolen Childhoods: End of Childhood Report 2017*'. https://resource-centre-uploads.s3.amazonaws.com/uploads/endofchildhood_report_2017_english.pdf (Accessed: January 8, 2022).
- Schiff, M., Benbenishty, R., McKay, M., DeVoe, E., Liu, X. and Hasin, D. (2006), 'Exposure to Terrorism and Israeli Youths' Psychological Distress and Alcohol Use: An Exploratory Study', *American Journal on Addictions* **15**(3), 220–226.
- Sekita, S. (2011), 'Financial Literacy and Retirement Planning in Japan', *Journal of Pension Economics and Finance* **10**(4), 637–656.
- Sharkey, P., Schwartz, A. E., Ellen, I. G. and Lacoë, J. (2014), 'High Stakes in the Classroom, High Stakes on the Street: The Effects of Community Violence on Student's Standardized Test Performance', *Sociological Science* **1**(14), 199–220.

- Sharkey, P. T., Tirado-Strayer, N., Papachristos, A. V. and Raver, C. C. (2012), 'The Effect of Local Violence on Children's Attention and Impulse Control', *American journal of Public Health* **102**(12), 2287–2293.
- Sibai, T., Tohme, R. A., Beydoun, H. A., Kanaan, N. and Sibai, A. M. (2009), 'Violent Behavior among Adolescents in Post-War Lebanon: The Role of Personal Factors and Correlation with other Problem Behaviors', *Journal of Public Health* **31**(1), 39–46.
- Sidorchuk, A., Hemmingsson, T., Romelsjö, A. and Allebeck, P. (2012), 'Alcohol Use in Adolescence and Risk of Disability Pension: A 39 Year Follow-up of a Population-Based Conscriptioin Survey', *PLOS ONE* **7**(8), 1–10.
- Sierra, J. R. (2017), *Breve Historia del Conflicto Armado en Colombia*, Madrid: Catarata.
- Silva, K., Chein, J. and Steinberg, L. (2016), 'Adolescents in Peer Groups Make More Prudent Decisions When a Slightly Older Adult Is Present', *Psychological Science* **27**(3), 322–330.
- Stango, V. and Zinman, J. (2009), 'Exponential Growth Bias and Household Finance', *The Journal of Finance* **64**(6), 2807–2849.
- Steinberg, L. (2008), 'A Social Neuroscience Perspective on Adolescent Risk-Taking', *Developmental Review* **28**(1), 78–106.
- Steinberg, L. (2010), 'A Dual Systems Model of Adolescent Risk-Taking', *Developmental Psychobiology* **52**(3), 216–224.
- Tedeschi, R. G. and Calhoun, L. G. (1996), 'The Posttraumatic Growth Inventory: Measuring the Positive Legacy of Trauma', *Journal of Traumatic Stress* **9**(3), 455–471.
- Tedeschi, R. G. and Calhoun, L. G. (2004), 'Posttraumatic Growth: Conceptual Foundations and Empirical Evidence', *Psychological Inquiry* **15**(1), 1–18.
- Tellez, J. F. (2019), 'Worlds Apart: Conflict Exposure and Preferences for Peace', *Journal of Conflict Resolution* **63**(4), 1053–1076.
- Tibavisco, M. and Castaño, L. M. (2017), '*Introducción ELCA: 6 años de Seguimiento Panel 2010-2013-2016*'. <https://encuestalongitudinal.uniandes.edu.co/es/publicaciones/colombia-en-movimiento/2017> (Accessed: January, 2021).

- Timoneda, J. C. (2021), 'Estimating Group Fixed Effects in Panel Data with a Binary Dependent Variable: How the LPM Outperforms Logistic Regression in Rare Events Data', *Social Science Research* **93**, 1–12.
- Tourangeau, R. and Yan, T. (2007), 'Sensitive questions in surveys', *Psychological bulletin* **133**, 859–883.
- Trejos, L. R. (2013), 'Colombia: Una Revisión Teórica de su Conflicto Armado', *Revista Enfoques: Ciencias Políticas y Administración Pública* **11**(18), 55–75.
- Tsai, K. S. (2004), 'Imperfect Substitutes: The Local Political Economy of Informal Finance and Microfinance in Rural China and India', *World Development* **32**(9), 1487–1507.
- Utkus, S. P. and Young, J. A. (2011), Financial Literacy and 401(k) Loans, in A. Lusardi and O. S. Mitchell, eds, '*Financial Literacy: Implications for Retirement Security and the Financial Marketplace*', Oxford: Oxford University Press, pp. 59–75.
- van Rooij, M. C., Lusardi, A. and Alessie, R. J. (2011a), 'Financial Literacy and Stock Market Participation', *Journal of Financial Economics* **101**(2), 449–472.
- van Rooij, M. C., Lusardi, A. and Alessie, R. J. (2011b), 'Financial Literacy and Retirement Planning in the Netherlands', *Journal of Economic Psychology* **32**(4), 593–608.
- van Rooij, M. C., Lusardi, A. and Alessie, R. J. (2012), 'Financial Literacy, Retirement Planning and Household Wealth', *The Economic Journal* **122**(560), 449–478.
- Vermeiren, R., Schwab-Stone, M., Deboutte, D., Leckman, P. E. and Ruchkin, V. (2003), 'Violence Exposure and Substance Use in Adolescents: Findings from Three Countries', *Pediatrics* **111**(3), 535–540.
- Verwimp, P. and Van Bavel, J. (2014), 'Schooling, Violent Conflict, and Gender in Burundi', *The World Bank Economic Review* **28**(2), 384–411.
- Visconti, G. (2020), 'Policy Preferences after Crime Victimization: Panel and Survey Evidence from Latin America', *British Journal of Political Science* **50**(4), 1481–1495.
- Voors, M. J., Nillesen, E. E. M., Verwimp, P., Bulte, E. H., Lensink, R. and Van Soest, D. P. (2012), 'Violent Conflict and Behavior: A Field Experiment in Burundi', *American Economic Review* **102**(2), 941–64.

- Walter, B. F. (2004), 'Does Conflict Beget Conflict? Explaining Recurring Civil War', *Journal of Peace Research* **41**(3), 371–388.
- Wooldridge, J. M. (2014), Instrumental Variables Estimation and Two Stage Least Squares, in 'Introduction to Econometrics', Andover: Cengage Learning, pp. 405–436.
- World Bank (2018), 'Education at a Glance 2018'. <https://www.oecd-ilibrary.org/docserver/eag-2018-en.pdf?expires=1671031136&id=id&accname=guest&checksum=758AF0D0BE6E8225BCDC270D21E98768> (Accessed: December 14, 2022).
- World Bank (2022), 'Colombia - Systematic Country Diagnostic Update: Together for a Better Future'. <https://openknowledge.worldbank.org/handle/10986/37619> (Accessed: July 2, 2022).
- Yoong, J. (2011), Financial Illiteracy and Stock Market Participation: Evidence From The RAND American Life Panel, in A. Lusardi and O. S. Mitchell, eds, 'Financial Literacy: Implications for Retirement Security and the Financial Marketplace', Oxford: Oxford University Press, pp. 76–97.
- Young, R. (2010), 'Trauma, Attempted Suicide, and Morning Cortisol in a Community Sample of Adolescents', *Journal of Traumatic Stress* **23**(2), 288–291.
- Zanghieri, P. (2013), *Participation to Pension Funds in Italy: The Role of Expectations and Financial Literacy*, Technical report, Assicurazioni Generali, Research and Development.
- Zellner, A. (1962), 'An Efficient Method of Estimating Seemingly Unrelated Regressions and Tests for Aggregation Bias', *Journal of the American statistical Association* **57**(298), 348–368.