This Is a Man's World: Crime and Intra-Household Resource Allocation

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ABSTRACT: Exposure to community violence is a pervasive development challenge. Using a nationally representative longitudinal dataset, I study the effects of violent crime on intra-household resource allocation and bargaining power exploiting the onset of the Mexican drug war. I estimate a system of demand equations and find the escalation in violence reallocated expenditures toward male goods, at the expense of food and other necessities. These findings are consistent with a deterioration in women's bargaining power. To provide further evidence, I document declines in women's intra-household decision-making power, structurally estimate women's resource shares, and analyze single households' expenditures. ***JEL Codes:*** D10, D13, J16, K42, O10.

Keywords: crime, Mexico, intra-household resource allocation, Engel curves, women's bargaining power, resource shares, decision-making.

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1 Introduction

Exposure to community violence is a pervasive development challenge. In 2023, an estimated 14% of the world population lived in close proximity to violent conflict (ACLED 2023), and the threat extends beyond armed conflicts. Homicide, rape, or kidnapping represent "everyday" crimes for millions of people not necessarily living in war-torn countries. In 2021, estimates suggest 458,000 people were victims of homicide worldwide,[2] a far larger number than the 116,000 fatal victims of terrorism and armed conflicts (UNODC 2023). Global threats such as economic recessions, climate change, and rising income inequality can all trigger new surges in violence in the near future (Miguel and Satyanath 2011; Enamorado et al. 2016; Levy, Sidel, and Patz 2017).

The effects of community violence are numerous and complex, and we should not expect them to be gender neutral (Buvinic et al. 2012; Klugman and Mukhtarova 2020). Exposure to violent conflict and crime often have gender-differentiated impacts on labor supply, marital outcomes, and human capital (Dustmann and Fasani 2016; La Mattina 2017; Chakraborty et al. 2018; Velásquez 2020; Borker 2020; Mishra, Mishra, and Parasnis 2021). Extensive research has shown how shocks that worsen an individual's relative capacity to contribute to the household, as well as their options outside of marriage, affect their intra-household bargaining power (Chiappori and Mazzocco 2017). Therefore, increased risk of victimization may further exacerbate gender inequalities inside the household, with potential welfare impacts. Women's intra-household bargaining power, defined as their capacity to negotiate or determine the allocation of a household's resources, commonly affects consumption allocations, and it is frequently associated with greater women's and children's well-being (Anderson and Baland 2002; Duflo 2003; Qian 2008; Brown 2009; Reggio 2011; Tommasi 2019; Armand et al. 2020; Sanin 2021; Huang et al. 2023).

In the late 2000s, Mexico experienced an unprecedented and unanticipated surge in violent crime. A large consensus indicates the increase in violent crime was mostly an unintended consequence of the new war on drugs initiated by the Mexican government in 2007 (Calderon et al. 2015; Dell 2015; Lessing 2015; Osorio 2015; Lindo and Padilla-Romo 2018). The sudden increase in violent crime during the Mexican drug war has been treated as plausibly exogenous to study causal impacts on various outcomes including labor, human capital, and risk preferences

[2] The International Classification of Crime for Statistical Purposes, developed by the United Nations Office on Drugs and Crimes (UNODC), defines intentional homicide as "unlawful death inflicted upon a person with the intent to cause death or serious injury." The complete liability of the perpetrator separates it from killings during armed conflicts, terrorist attacks, self-defense, suicide, or due to negligent actions (UNODC 2023).

(Brown and Velasquez 2017; Brown 2018; Brown et al. 2018). In particular, Velásquez (2020) showed that the rise in homicides discouraged labor force participation among women more than men, especially among self-employed women who became more afraid of being attacked outside the household. Dell (2015) also found negative effects on female labour supply, but not on men's.

This paper studies the impacts of exposure to community violence on intra-household resource allocation and bargaining power, exploiting the plausibly exogenous, geographical, and temporal variation of the Mexican drug war. Building on Brown et al. (2018) and Velásquez (2020)'s identification strategy, I use data from a nationally representative longitudinal survey that enables comparison of the same households before and after the increase in crime. The data's timing and structure allow us to control for unobserved time-invariant household heterogeneity and to account for behavioral responses such as non-random migration and marital formation.

To study the impacts on intra-household resource allocations, I estimate a system of household demand equations specified linearly on the logarithm of total household expenditure and local violence, captured by a function of the homicide rate at the municipality level, other time-varying characteristics, and household and time fixed effects. The outcome variables are expenditure shares by good category. Although the coefficient of interest in each of the equations is the local crime rate, I address the potential endogeneity of total expenditure to accurately classify household goods given their estimated expenditure elasticities (Blundell and Robin 1999; Dunbar, Lewbel, and Pendakur 2013; Attanasio and Lechene 2014). In addition, I first show the increase in violence did not affect total household resources, at least within this paper's analytical sample, which alleviates concerns of misspecification bias.

The results suggest increases in homicides decreased the share of household expenditures allocated to food consumed inside the household and other household necessities while increasing the expenditure shares of male clothing and transportation. A household living in a non-violent municipality prior to the escalation in homicides, who then experienced the average increase in crime during the period, decreased the share of total expenditure allocated to food by about two percentage points, and to hygiene and other care necessities by 0.8 percentage points. Relative to the baseline average expenditure shares, the increase in crime led to a decrease of 4% in food and 12% in other household necessities. By contrast, the same empirical exercise leads to 0.5-percentage-points (34% increase off baseline) increase in the budget shares of adult male clothing.

The main threat to identification would be that the heterogeneous geographic and sharp temporal variation in homicides reported in Mexico was actually anticipated or was correlated with other underlying trends related to households' consumption patterns. The results are robust to a placebo exercise to test for unobserved municipality trends using a prior survey wave, consistent with prior findings (Brown and Velasquez 2017; Velásquez 2020). Other robustness checks include accounting for multiple hypothesis testing, alternative specifications, and controlling for a wide range of economic municipality-level variables. I also explore and rule out a series of mechanisms that we could expect, either from theory or prior research, to have a relationship with expenditure allocations and that may also be affected by changes in local crime such as household composition, prices, male time allocations, and home production.

The reported impacts on consumption allocations are consistent with a deterioration in women's bargaining power inside the household. Previous research in Mexico, particularly in the context of the PROGRESA conditional cash transfer program, and elsewhere has shown improvements in women's control over the budget increases households' expenditure on food and women's private goods, such as clothing (Bobonis 2009; Attanasio and Lechene 2010; Tommasi 2019; Armand et al. 2020). This is in contrast to this paper's findings when estimating the impact of the crime shock. In the next part of the paper, I provide further empirical evidence of the Mexican drug war affecting women's control of household resources.

First, using a standard decision-making module and individual fixed-effects regressions, I show increases in crime lowered women's intra-household decision-making power regarding household expenses and time allocations. These findings are consistent with Tsaneva, Rockmore, and Albohmood (2018), who also find drug-related violence in Mexico reduced women's participation in household decision-making.

Then, within a model of intra-household resource allocation, I structurally estimate men's and women's resource shares, defined as the fraction of the total household budget individuals privately consume, and study how they vary with household's characteristics, including exposure to violent crime. The results suggest that in households who experienced the average increase in crime over the period, women's resource shares (a proxy for their bargaining power) decreased by about five to eight percentage points. The structural setting allows the crime rate to affect both bargaining power and individual preference parameters. I assume a collective model of the household (Chiappori and Mazzocco 2017) and apply the methodology developed by Browning, Chiappori, and Lewbel

(2013) and Dunbar, Lewbel, and Pendakur (2013).[3]

Third, I also show the effects of crime on male goods and household necessities are not observed when analyzing the demand equations of male single households. These results suggest that if the Mexican drug war increased the taste toward male adult clothing, the taste shock did not affect unmarried men. Analyzing the demand equations of female-headed households who married in between survey waves provides further complementary evidence of the bargaining power mechanism. Even if the increased exposure to violence also affected individual consumption preferences, the evidence provided by the intra-household decision-making regressions, the structural analysis, and the demand equations of single households suggest that shifts in bargaining power significantly contributed to the observed changes in intra-household resource allocation.

Heterogeneity analysis of the effects of crime on household expenditures highlights the role of fear of victimization as in Velásquez (2020). The reported effects of homicides on food, adult male clothing, and transportation are stronger in those households whose members report being more scared of victimization than before. The effects of fear of victimization on intra-household dynamics may operate through multiple channels, including marital outside options, as well as psychological effects (Dustmann and Fasani 2016; Velásquez 2020; Baranov et al. 2020).

This paper contributes to the understanding of the hidden costs of exposure to violent crime on households' behavior and well-being (Dustmann and Fasani 2016; Koppensteiner and Manacorda 2016; Velásquez 2020; Alloush and Bloem 2022; Dustmann, Mertz, and Okatenko 2023). The causal effects of violence on intra-household dynamics remain largely understudied because exposure to violence is usually endogenous, households' self-select their place of residence, and panel surveys, especially including consumption surveys, have been largely unavailable in such settings (Buvinic et al. 2012; Verwimp, Justino, and Brück 2019). This paper directly addresses these challenges.

Specifically, I add to the understanding of gender-differentiated effects of exposure to community violence, which is key for effective policy design and evaluation. The reported results, finding opposite effects of what occurred when married women received cash transfers in Mexico and other countries, suggest that treatment effects of many policy interventions may be heterogeneous by exposure to violence. Buehren et al. (2017) find that a randomized vocational and

[3]Recent work has used this approach to explain the phenomenon of elderly missing women in India (Calvi 2020), the effect of a cash-conditional-transfer program in Mexico (Tommasi 2019; Sokullu and Valente 2021), and relevant patterns of intra-household consumption inequality (Penglase 2020; Brown, Calvi, and Penglase 2021; Calvi and Keskar 2021).

life-skills training in South Sudan was only effective for girls not previously exposed to violent conflict. A recent and growing literature documents the effects of fear of crime on female educational outcomes (Muralidharan and Prakash 2017; Borker 2020; Fiala et al. 2020; Trawalter et al. 2022) and women's willingness to pay to ride in women-only public transportation to avoid sexual harassment (Kondylis et al. 2020; Aguilar, Gutiérrez, and Villagrán 2021). But, to my knowledge, this paper is the first to document how changes in violent crime can shift consumption allocations consistent with changes in intra-household dynamics. To date, the majority of related research has focused on the consequences of armed conflicts, such as international or civil wars, distorting marriage markets through increased male scarcity (Abramitzky, Delavande, and Vasconcelos 2011; Brainerd 2017; La Mattina 2017).

More generally, the results also contribute to the literature on the determinants of intra-household allocation of resources and bargaining power (Doss 2013; Baland and Ziparo 2018), the growing literature on the structural estimation of intra-household bargaining power within a collective model of the household (Chiappori 1992; Bourguignon et al. 1993; Udry 1996; Chiappori and Mazzocco 2017), and the estimation of resource shares as a proxy of control over household resources and empowerment (Browning, Chiappori, and Lewbel 2013; Dunbar, Lewbel, and Pendakur 2013; Tommasi 2019; Calvi 2020; Penglase 2020; Bargain, Lacroix, and Tiberti 2021; Brown, Calvi, and Penglase 2021; Calvi and Keskar 2021; Sokullu and Valente 2021; Calvi, Penglasi, and Tommasi 2022).

The next section describes the background of the increase in drug-related crime in Mexico and its gender-differentiated impacts. Section 3 discusses the theoretical framework. Section 4 details the data, the empirical strategy, and discusses the results on the effects of crime on household resource allocations. In section 5, I provide evidence of the intra-household bargaining-power mechanism through three empirical exercises, and section 6 discusses potential channels. Finally, section 7 concludes.

2 Background

2.1 The Mexican Drug War

Mexico experienced a sudden, unanticipated, and large increase in violent crime starting in 2007. The homicide rate in the country almost tripled within five years (Figure 1). The increase in homicides per capita was so drastic it surpassed countries in the midst of armed conflicts at the time, such as Iraq and Afghanistan (GPI 2016). Extensive research has studied the drivers of this

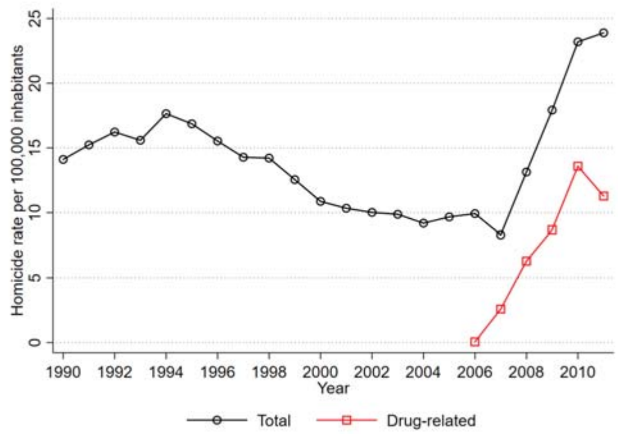

Figure 1: Annual Homicide Rate per 100,000 People

Sources: INEGI, Office of the Mexican Attorney General, CONAPO.
Notes: This Figure plots the Mexican annual homicide rate over time (black line), and a "drug-related" homicide rate based on data compiled by the government, which counts deaths that can be directly linked to cartel members killing each other or resulting from confrontation with military and police forces (red line).

rapid and unanticipated spike in violence. A large consensus suggests the surge in violence was mostly an unintended consequence of the new war on drugs initiated by the Mexican government in 2007 (Calderon et al. 2015; Dell 2015; Lessing 2015; Osorio 2015; Lindo and Padilla-Romo 2018). Within weeks of President Felipe Calderon's election in December 2006, the federal government deployed thousands of troops to fight drug-trafficking organizations (DTOs). The new government combined this militarized approach with a "kingpin strategy" consisting of arresting the leaders of the main drug cartels. As a consequence, the number of DTOs skyrocketed, and violence both escalated and spread geographically as drug leaders fought to gain control of the cartels and territory (Coscia and Ríos 2012; Sobrino 2020). Dell (2015) uses a regression discontinuity design to show how a subsequent and larger increase occurred in the homicide rate in the municipalities where Calderon's political party won mayoral elections. Calderon et al. (2015) and Lindo and Padilla-Romo (2018) both show how the captures or killings of drug kingpins and lieutenants brought destabilizing effects through the cartels and were accompanied by escalations in homicides. Beyond President Calderon's war on drugs, previous research has identified other risk factors for the increase in homicides, including scarcity in cocaine markets (Castillo, Mejía, and Restrepo 2018), manufacturing job loss (Dell, Feigenberg, and Teshima 2019), agricultural price shocks (Dube, Garcia-Ponce, and Thom 2016), and income inequality (Enamorado et al. 2016).

In addition to the temporal variation in violence, the increase in drug-related violence was also geographically heterogeneous. Whereas in some municipalities, the homicide rate was multiplied by 30, others continued to witness a decline in crime rates (see Figure A1 for a geographic distribution of the rise in homicides at the municipality level). In 2007, violence was concentrated in a few municipalities along the border with the US and the states of Sinaloa and Michoacan, the two main drug-producing states and home to the powerful Sinaloa and Michoacan Family cartels.[4] By 2012, violence had spread to many new municipalities with low levels of crime and narco presence before, as they had become newly attractive routes of drug trafficking (Calderon et al. 2015; Dell 2015).

The large increments in drug-related violence go beyond homicides. Mexican civilians have been exposed to a much higher prevalence of other types of crimes as well, including extortion, kidnapping, rape, theft, and human trafficking (Calderon et al. 2015; Magaloni et al. 2020). Recent literature has already documented negative impacts on several outcomes, including young male educational investment (Brown and Velasquez 2017), individual risk aversion (Brown et al. 2018), newborns' birth weight (Brown 2018), migration displacement effects (Basu and Pearlman 2017; Orozco-Aleman and Gonzalez-Lozano 2018), and manufacturing output and employment (Utar 2021).

2.2 Gender-Differentiated Impacts

During the Mexican drug war, although the majority of the homicides have been perpetrated against adult men, the female homicide rate also doubled from 2007 to 2010 (Figure A2), and stories of girls and adult women forced, kidnapped, and sold into sex trafficking and slavery have become daily news in many parts of the country. The cartels also actively engage in "narco-propaganda" deliberately displaying victims' bodies in public, including abandoning raped or sexually tortured women undressed in public (Risley 2010; Grillo 2013; Campbell 2014).[5]

Mexican municipalities exposed to a higher drug-conflict intensity have experienced decreases in female labor supply—both among self-employed women and blue-collar workers (Dell 2015; Velásquez 2020; Utar 2021). Dell (2015) and Velásquez (2020) both find no effect on male la-

[4] The Sinaloa cartel has been commonly declared the most powerful cartel in the world and is infamously known for its leader, "El Chapo."

[5] Excerpt of 2020 song "Cancion sin miedo" from Mexican songwriter Vivir Quintana: "A cada minuto, de cada semana, nos roban amigas, nos matan hermanas. Destrozan sus cuerpos, los desaparecen.", which can be translated as "In every minute, of every week, they steal our female friends, they kill our sisters. They destroy their bodies, they make them disappear".

bor force participation. Utar (2021) uses plant-level data of manufacturing firms and shows that firms with a female-intensive workforce experienced a much larger decline in employment. In addition, Velásquez (2020) shows the effect is stronger among women who become more afraid of being attacked outside the household. Beyond labor supply, Tsaneva, Rockmore, and Albohmood (2018) document reductions in women's decision-making, Alamir (2023) documents increases on women's report of intimate partner violence, and Balmori de la Miyar (2020) finds the increase in drug-related crime had a negative effect on women's mental well-being, but no statistical effects on men. Qualitative evidence on the so-called "narco-culture" also suggests changes in social norms involving stagnation or regression on attitudes toward women's place in the economy and the household (Garcia 2011, Kim 2014).

The direct and indirect effects of the Mexican crime rise can have gendered impacts on intra-household dynamics through multiple channels. The potential effects on individuals' marital outside options and preferences may influence how the gains from marriage are distributed. Previous research has provided substantial theoretical support and empirical evidence showing how unanticipated shocks that worsen individuals' capacity to earn income affects their intra-household bargaining power (Anderson and Eswaran 2009; Majlesi 2016; Chiappori and Mazzocco 2017). Additionally, the strengthening of traditional social norms, the safety perception of having a male partner, or psychological effects, could each be sufficient to affect women's relative position inside the household and their control over households' resources (Angrist 2002; Qian 2008; Jensen and Oster 2009; Attanasio and Lechene 2014; Baland and Ziparo 2018).

3 Theoretical Framework

In this section, I present a general version of the collective model of intrahousehold allocation based on Browning, Chiappori, and Lewbel (2013) and Dunbar, Lewbel, and Pendakur (2013) within a static framework. Assuming limited commitment, where households are assumed to fully cooperate in each period to achieve *within-period* Pareto efficiency, but cannot commit to the allocation of resources for every future period and possible state of nature (Mazzocco 2007; Chiappori and Mazzocco 2017), the distribution of bargaining power can shift over time and marriages can end.[6] Chiappori and Mazzocco (2017) show how the dynamic limited-commitment model can be

[6]Participation constraints will depend on each partner's option outside of the marriage. Marital breakup occurs when no arrangement that makes both partners better off staying together is feasible. But as long room for renegotiation remains, we may expect intra-household allocations to shift over time (Chiappori and Mazzocco 2017). The outside option has also been modeled as the non-cooperative solution instead of divorce (Lundberg and Pollak 1993). The evolution of the bargaining-power parameters over time can be thought of as the solution to a repeated bargaining

formulated as a three-stage problem. In the first stage, households decide on the disposition of lifetime resources across time and states of nature. In the second stage, households decide on the optimal allocation of commodities for household production and time allocation in labor, leisure, and household production. This paper focuses on the final stage, the static "intra-household allocation" that corresponds to the stage at which households decide on the optimal allocation of private goods within the household members. I also abstract from modeling marital-formation decisions, because the empirical analysis will be restricted to households that were formed prior to the escalation in violence.

3.1 A Collective Model of the Household

Consider a static collective model of the household with two adult decision-makers, a woman w and a man m.[7] Households can consume K different goods with market prices $p = (p^1, ..., p^k)'$. Let $z = (z^1, ..., z^k)'$ be the K-vector of goods consumed by the household, and let y be the total expenditure incurred by the household. Given a household consumption bundle z, a private-good equivalent vector x_i exists for each household member, such that $z = F(x_w + x_m)$. In the absence of economies of scale, z would be equal to the sum of the private equivalent consumptions $x_w + x_m$. Consumption sharing and the presence of public goods suggests, however, this assumption is plausibly unrealistic. Instead, I assume *à* la Barten linear consumption technology $z = A'(x_w + x_m)$, a standard approach in the literature (Browning, Chiappori, and Lewbel 2013; Dunbar, Lewbel, and Pendakur 2013; Calvi 2020).[8]

Let $U_i(x_i)$ be the utility of individual i over the vector of consumption goods x_i. Individuals' total utility may also depend on other household members' utilities (caring preferences) or depend on other economic decisions (e.g., leisure, savings). The individual's total utility function would then be assumed to be weakly separable over the subutility functions for the consumption goods $U_i(x_i)$ in a given period, so that an individual type who gets utility from another as well as her own

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model subject to the period's outside options, or as updated only when one of the individual's participation constraints binds and renegotiation occurs to achieve a new feasible allocation more favorable to this individual (Mazzocco 2007).

[7]For ease of exposition, I limit the discussion to households with two adult decision-makers. The model can be easily extended to households with a greater number of adult decision-makers and the empirical analysis will account for them.

[8]A is a $K \times K$ matrix such that $x_w + x_m = A^{-1}z$. This technology allows for different levels of jointness of consumption rather than categorizing goods as either private or public. Suppose the two members of the household always watch TV streaming services together. Then, the consumption of streaming services in private good equivalents is two times the purchased quantity at the household level. Assuming the consumption of streaming services does not depend on consumption of other goods, $z^k = \frac{1}{2}(x_w^k + x_m^k)$. Off-diagonal elements of A may be different from zero if the degree to which a good can be shared depends on the consumption of other goods.

would have a utility function of the separable form $U^i[U_i(x_i), U_{-i}(x_{-i})]$. I assume the $U_i(x_i)$ are monotonically increasing in consumption, twice continuously differentiable, and strictly quasi-concave. At each period, households solve the following problem:

$$\max_{\{x_w, x_m, z\}} \mu(p,y)\, U_w(x_w) + (1-\mu(p,y))\, U_m(x_m), \tag{1}$$

subject to a budget constraint,

$$z' p \leq y, \tag{2}$$

and the consumption technology constraint,

$$z = A(x_w + x_m), \tag{3}$$

where $\mu(p,y)$ and $(1-\mu(p,y))$ are the Pareto weights for the woman and the man, respectively. Both preferences and Pareto weights are allowed to depend on individuals' socio-demographic characteristics (e.g., age, education, community characteristics) but will be suppressed to simplify notation in this section.

The collective model allows each individual to have their own utility function and assumes Pareto efficiency within each period. The collective model has been tested empirically in Mexico, exploiting exogenous variation from the PROGRESA conditional cash transfer and both Attanasio and Lechene (2014) and Bobonis (2009) fail to reject efficiency of household consumption decisions.[9,10]

By the second welfare theorem, any Pareto-efficient allocation can be supported as an equilibrium after transfers within household members. The solution to the maximization problem in (1) is equivalent to an economy in which each individual i maximizes her private utility U^i subject to a vector of shadow prices $A'p$ and a shadow income of $\eta_i y$. Let η and $(1-\eta)$ be defined as

[9] Angelucci and Garlick (2016) study within-sample variation in the efficiency of intra-household resource allocation among low-income Mexican households and observe that consumption patterns are Pareto efficient for households with relatively old heads but not in households with relatively young heads. The average age of the household head in the empirical analysis of this paper is over 45 years old in the first round of the panel data used, which heavily alleviates the concerns posed by Angelucci and Garlick (2016)'s findings. De Rock, Pottoms, and Tommasi (2022) also show household decisions are compatible with the testable implications of the collective model at the beginning of the PROGRESA program but later reject them (using post-treatment data), but they provide suggestive evidence that is plausibly driven by the treatment affecting not only bargaining power parameters but also individual preferences.

[10] Research also exists that challenges the Pareto-efficiency assumption in other contexts (Udry 1996; Vreyer, Lambert, and Ravallion 2020). But most rejections of the efficiency assumption come from production decisions, not consumption allocations (Rangel and Thomas 2019). Lewbel and Pendakur (2021) develop a collective household model allowing households to behave inefficiently and show this assumption has little effect on their estimation of intra-household bargaining power (through the estimation of resource shares) in Bangladesh.

the resource share of the woman and the man, respectively (Browning, Chiappori, and Lewbel 2013; Dunbar, Lewbel, and Pendakur 2013). The resource shares capture the fraction of household expenditure consumed by each household member and they must add up to 1. Under standard utility assumptions, a one-to-one relationship exists between the Pareto weights and the resource shares.[11] Hence, the resource shares are a proxy for an individual's bargaining power in the intra-household allocation stage.

3.2 Household Expenditure Shares

The demand function for each good k derived from the maximization of equation (1) can be expressed as a household budget share W^k, a function of prices, total expenditure, and household characteristics. Let ω_i^k be the hypothetical budget share we would observe if individual i would independently maximize her own utility with respect to the shadow price vector $(A'p)$ and shadow income $(\eta_i y)$. I parametrize the individual budget shares ω_i^k assuming price-independent generalized logarithm (PIGLOG) preferences, a widely used parametrization in the literature (Attanasio and Lechene 2010, 2014; Calvi 2020). The main advantage is that it allows estimation of the budget shares as a system of Engel curves linear in the log of expenditure: $\omega_i^k = \alpha_i^k + \beta_i^k \ln(\eta_i y)$, $\forall k = 1, ..., K$.

Given the linear consumption technology, the household budget shares W^k can be expressed as a weighted sum of the individual budget shares ω_i^k, where the weights are the bargaining power of each individual represented by their resource share η_i: $W^k = \eta \omega_k^w + (1-\eta)\omega_m^k$. Therefore, both the intercept and slope parameters in the standard household Engel-curve equations W^k are a function of both the household members' individual preferences and of the distribution of bargaining power within the household:

$$W^k = \alpha^k + \beta^k \ln(y), \tag{4}$$

where $\alpha^k = \eta(\alpha_w^k + \beta_w^k \ln(\eta)) + (1-\eta)(\alpha_m^k + \beta_m^k \ln(1-\eta))$ and $\beta^k = \eta \beta_w^k + (1-\eta)\beta_m^k$. Hence, ceteris paribus, for any shock that improves women's intra-household bargaining power, we may expect a reallocation of household expenditures toward those goods that women prefer more than men do, and vice versa (Bourguignon, Browning, and Chiappori 2009; Browning, Chiappori, and Lewbel 2013).

[11] $\frac{\mu}{(1-\mu)} = \frac{\partial V^m(A'p,(1-\eta)y)}{\partial(1-\eta)y} \Big/ \frac{\partial V^w(A'p,\eta y)}{\partial \eta y}$, where V_i is the indirect utility function of individual i, see Browning, Chiappori, and Lewbel (2013) for the full proof.

Finally, a type of goods exists for which the Engel curves are simpler, and these are private assignable goods. A good is private if it cannot be shared with other members of the household, that is, no economies of scale. It is assignable if we can identify which member of the household consumes it, for example, adult women. The household consumption of a private assignable good is equal to the private equivalent consumption of this good. For ease of exposition, assume here the wife and the husband are the only adults in the household. Let Γ_w and Γ_m be the vectors of the private assignable goods of adult women and men, respectively, with $|\Gamma_w| + |\Gamma_m| \leq K$. Then, the household's budget shares of these private assignable goods for each individual type i can be expressed as:

$$W^k = \eta_i \omega_i^k = \eta_i[\alpha_i^k + \beta_i^k \ln(\eta_i y)] \quad \forall k \in \Gamma_i \tag{5}$$

In section 4, I will estimate a system of households' Engel curves parametrizing and adding an error term to each equation of (4) to test the effect of the Mexican drug war on households' resource allocation. In section 5.2, I will identify individuals' resource shares parametrizing and adding an error term to equations (5), and study how they vary with household characteristics, allowing for violent crime to affect both preference and bargaining power parameters.

4 Effect of Violence on Household Allocations

In this section, I first describe the crime and household data used in the analysis. I then describe the empirical strategy to study the effects of violent crime on household expenditure allocations and summarize the results, including a discussion of robustness checks and analysis of potential mechanisms.

4.1 Homicide Data

The local crime data come from the National Institute of Statistics and Geography (INEGI). I measure exposure to local crime with the homicide rate per 100,000 people at the municipality level. The use of the homicide rate can be considered as a proxy for the general escalation in insecurity and crime victimization that occurred in Mexico during the relevant time period. Homicides do not capture the whole crime environment civilians are exposed to, but they are much less subject to misreporting bias than other crime data. The trend in homicides also matches the available data on other crime activities, such as extortions and kidnappings (Heinle, Molzahn, and Shirk 2015). In the main empirical analysis, I apply the quartic root transformation to the homicide rate. The quartic-root serves as a proxy for a logarithmic transformation for positive numbers, avoiding either dropping zeroes or adding an arbitrary small amount. It is a common transformation for variables with outliers that could disproportionately influence the estimates, such as crime rates, saving rates, or earnings (Ashraf et al. 2015; Velásquez 2020). It has been used in most papers measuring the impacts of the Mexican drug war using the MxFLS data.

4.2 Household Data: Mexican Family Life Survey

The Mexican Family Life Survey (MxFLS) is a longitudinal survey containing a wide range of information at the community and household level, including a very detailed consumption module. The baseline survey (MxFLS-1) was conducted in 2002 and collected data on 8,442 households and over 35,600 individuals. The second wave was collected in 2005–2006 (MxFLS-2), right before the sharp increase in homicides in Mexico. The third wave was conducted in 2009–2012 (MxFLS-3). The timing of the MxFLS surveys allows the comparison of the same households before and after the escalation in violence across Mexico and has been previously used to estimate causal impacts of the Mexican drug war (Brown and Velasquez 2017; Velásquez 2020; Brown 2018; Brown et al. 2018; Tsaneva, Rockmore, and Albohmood 2018). The survey is representative at the national level of the Mexican population, and for urban and rural areas within regions at baseline. It is also geographically representative of the increase in homicides over the period (Appendix Table B1).

4.3 Sample Structure and Descriptive Statistics

This paper's main empirical analysis will use the second (2005-2006 MxFLS-2) and third (2009-2012 MxFLS-3) survey waves. The main sample includes every household who was interviewed both in the MxFLS-2 and MxFLS-3 waves consisting of at least one household head, his/her spouse, and a son or daughter living in the household. Hence, the sample includes married couples that were already formed by the time MxFLS-2 was collected in 2005–2006. I further restrict the sample by excluding households with the following characteristics: missing age or relationship to the head for any household member, missing education information for the household head or the spouse, same-sex couples, the household head or the spouse less than 15 years old, missing consumption or assets survey module, reported zero household expenditure on food, and missing date or location of the interview. I apply these restrictions to both survey waves. Robustness checks will be provided by limiting the sample to nuclear households, to households where both main adult members are of working-age, and by including households without offspring.

The total household expenditure data and the corresponding budget shares are estimated using self-reported monetary-value of non-durable goods from a standard consumption module, transforming expenditures into a comparable annual period; see Table B2 for a detailed description of each of the goods included in the analysis. The methodology used to estimate total expenditure is similar to the one used by, among others, Bobonis (2009), Attanasio and Lechene (2010), and Attanasio and Lechene (2014) in their estimation of Engel curves for Mexican households.

Table 1 presents descriptive statistics of the analytical sample measured at the 2005–2006 MxFLS-2 wave. The first column shows the mean and standard deviation of several household characteristics. Each of the rows in columns (2) to (4) report the OLS coefficient and standard error, in parentheses, of a regression of the household characteristic on the measure of the municipality's violence, clustering standard errors at the municipality level.

Overall, household heads and the spouses are on average above 40 years old, 42% of the households live in rural localities, 43% of the wives and 45% of the husbands have achieved secondary education or higher, and the average household size is five members. In general, households self-select into their place of residence, and the homicide rate in their municipality of residence, prior to the Mexican drug war, cannot be treated as randomly assigned. Column (2) documents that households who lived in municipalities with a greater homicide rate in 2005–2006 were more likely to live in urban localities and to be more educated. This observation is consistent with the higher prevalence of homicides in Mexican urban areas (Dell, Feigenberg, and Teshima 2019). Columns (3) and (4) show the increase between MxFLS-2 and MxFLS-3 in the level and quartic root of the annual homicide rate has no predictive power on household demographic characteristics in 2005–2006.

The bottom part of Table 1 reports descriptive statistics of households' expenditure patterns in 2005–2006. The average annual total expenditure is approximately 70,000 MXN ($10,000 2005 in US PPP). The largest expenditure share is food consumed inside the household, accounting for about 56% of total household expenditures in the sample. In columns (3) and (4), we can see the increase in crime during the period is also largely uncorrelated with prior households' expenditure patterns, although, the expenditure shares on education and gambling have some predictive power on the posterior change in homicide rates. Overall, the summary statistics based on observable characteristics are largely in line with the increase in violent crime being largely unanticipated, although the statistical significance of some of the expenditure shares highlights the importance of using a longitudinal survey that provides the ability to control for initial household characteristics.

Table 1: Descriptive Statistics: Household Characteristics in MxFLS-2 (2005-2006)

	Mean and standard deviation	**Violence variables** $\sqrt[4]{H_{m2005}}$	ΔH_m	$\Delta\sqrt[4]{H_m}$
	(1)	(2)	(3)	(4)
Wife's age	40.54	–0.79**	–0.02	0.21
	[11.88]	(0.37)	(0.01)	(0.33)
Husband's age	43.96	–1.03**	–0.01	0.53
	[12.81]	(0.42)	(0.02)	(0.43)
Wife's secondary education	0.43	0.07***	0.00	–0.01
	[0.49]	(0.02)	(0.00)	(0.02)
Husband's secondary education	0.45	0.06***	0.00	–0.02
	[0.50]	(0.02)	(0.00)	(0.02)
Number of children	2.61	–0.07	–0.00	–0.02
	[1.40]	(0.06)	(0.00)	(0.06)
Average age children	13.88	–0.49*	–0.00	0.19
	[9.08]	(0.30)	(0.01)	(0.24)
Share of daughters	0.50	0.01	–0.00	–0.00
	[0.35]	(0.01)	(0.00)	(0.01)
Rural locality	0.42	–0.15***	0.00	0.09*
	[0.49]	(0.05)	(0.00)	(0.05)
Household size	5.04	–0.08	–0.00	–0.03
	[1.80]	(0.07)	(0.00)	(0.06)
Total expenditure	73,742.71	6,000.47	–129.63	–6,129.15
	[464,095.71]	(3,693.89)	(203.96)	(7,168.14)
Expenditure shares:				
Food	55.84	–1.56	0.04	1.45
	[18.73]	(0.98)	(0.03)	(0.92)
Drinks and Tobacco	3.33	–0.09	0.01**	0.27
	[3.97]	(0.19)	(0.01)	(0.18)
Male adult clothing	1.47	0.08	–0.00**	–0.10
	[2.63]	(0.08)	(0.00)	(0.07)
Female adult clothing	1.50	–0.02	–0.00	–0.02
	[2.62]	(0.08)	(0.00)	(0.07)
Children goods	2.15	–0.07	0.00	0.07
	[3.56]	(0.10)	(0.00)	(0.11)
Hygiene and care	6.02	–0.15	0.00	0.07
	[5.51]	(0.18)	(0.01)	(0.13)
Other household goods	12.80	0.53	–0.01	–0.40
	[9.68]	(0.38)	(0.01)	(0.34)
Transportation	10.17	0.83*	–0.01	–0.73
	[12.42]	(0.44)	(0.02)	(0.53)
Health	1.63	–0.00	–0.01	–0.07
	[5.14]	(0.15)	(0.00)	(0.15)
Education	2.42	0.16	–0.01***	–0.32***
	[4.25]	(0.12)	(0.00)	(0.09)
Recreation	2.62	0.28	–0.01	–0.20
	[6.40]	(0.18)	(0.01)	(0.19)
Gambling	0.05	0.02*	–0.00**	–0.02**
	[0.45]	(0.01)	(0.00)	(0.01)
Observations	3,715	3,715	3,715	3,715

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Column (1) presents sample means and standard deviations, in brackets, of the analytical sample in MxFLS-2. Columns (2)-(4) are calculated with OLS and clustering standard errors (in parentheses) at the municipality level. Column (2) reports the OLS coefficient of a regression of the household characteristic on the homicide rate in 2005-2006 MxFLS-2. Column (3) reports an OLS coefficient of a regression of the household characteristic on the increase in the homicide rate between MxFLS-2 and MxFLS-3. Column (4) also reports an OLS coefficient, but of the increase in the quartic root of the homicide rate.

4.4 Empirical Strategy

Assuming that the sharp and heterogeneous increase in homicides in Mexico was largely unanticipated, as previously discussed, the identification strategy relies on comparing the same households over time with the inclusion of household fixed effects, which allows to control for any time-invariant household characteristics potentially correlated with the trends of violence and of the households' budget shares (Brown et al. 2018; Velásquez 2020). The longitudinal nature of the MxFLS data and the restriction to previously married households also enable isolation of the effects that the rise in violence may have had on selection into marriage. But two other sources of sample selection may still raise concerns: non-random attrition and selective migration.

4.4.1 Non-random attrition

The MxFLS survey was quite successful in terms of attrition: 89% of the original respondents from the 2002 baseline were interviewed again in both MxFLS-2 and MxFLS-3. The high retention rate, however, does not fully alleviate the concerns of attrition bias if the probability of individuals being reinterviewed in the MxFLS-3 wave is correlated with the exposure to the violence. Appendix B.2 shows the increase in homicide rates at the municipality level does not predict the probability of attrition at the household level, and this null effect does not seem to mask heterogeneity based on household characteristics. To alleviate further concerns, I delve into the potential sources of attrition. I find no evidence of the increase in crime affecting the probability of households not responding to the consumption module from which the expenditure data are derived (Table B4). Finally, as appointed by Berniell, de la Mata, and Machado (2020), testing for the assumption of marriage stability is important, especially given this paper's interest in bargaining power (section 5). Table B5 shows the increase in crime has no effect on the overall probability of being divorced or widowed in MxFLS-3, with the exception of a higher probability of female widows, consistent with the drastic male victimization brought about by the Mexican drug war (see discussion in section 2).

4.4.2 Selective migration

Previous research has found effects of the Mexican drug war on migration behavior (Basu and Pearlman 2017; Orozco-Aleman and Gonzalez-Lozano 2018). Appendix B.3 shows the average effect of violence intensity on the probability of migration is not statistically significantly different from zero, but some heterogeneity exists. Households with a highly educated husband were more likely to migrate between survey waves in the face of greater violence.

Table 2: Effect of Homicide Rates on Total Household Expenditure and Wealth

	ln(Exp) (1)	ln(Wealth) (2)	Has Savings (3)	$\sqrt[4]{}$ Savings (4)	log(Savings) (5)
$\sqrt[4]{}$ Homicide rate last 12 months	-0.009	-0.107	0.016	0.160	0.131
	(0.027)	(0.123)	(0.013)	(0.112)	(0.095)
Household controls	✓	✓	✓	✓	✓
Month and year of interview FE	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓
Outcome variable mean	10.92	10.85	0.13	0.97	0.81
Observations	7,430	7,430	7,430	6,754	6,754
adj. R^2	0.55	0.23	0.16	0.16	0.15

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level. Column (1) outcome variable is the logarithm of total household expenditure on non-durable goods. Column (2) outcome variable is the natural logarithm of the monetary value of all household assets included in the wealth measure (see Appendix B.4). Columns (4) and (5) are the quartic root and logarithm, respectively, of the monetary value of the savings asset. Household controls include wife's and husband's age, wife's and husband's age squared, and the number of household members by gender and age group. Columns (4) and (5) have a reduced number of observations because there are 338 households who report having savings but do not report a monetary value.

To deal with the potential selective migration threat, I follow the relevant literature and implement an "intention-to-treat" (ITT) approach (Brown and Velasquez 2017; Brown et al. 2018; Velásquez 2020), which consists of assigning the 2005–2006 households' municipality of residence to both survey waves MxFLS-2 and MxFLS-3. This methodology might induce some attenuation bias, but it lessens concerns about the results being biased due to migration responses. Robustness checks excluding migrant households from the sample will also be presented.

4.5 Effect of Violence on Household Resources

Prior to the estimation of demand equations, I study whether increases in local crime led to changes in total household expenditure, estimating the following specification:

$$\ln(y_{ijt}) = \alpha + \gamma H_{jt} + \Theta D_{ijt} + \lambda_t + \delta_i + \varepsilon_{ijt}, \tag{6}$$

where $\ln(y_{ijt})$ is the logarithm of total household expenditure on non-durable goods by household i living in municipality j and survey t. H_{jt} is the measure of violence in municipality j, defined as the quartic root of the homicide rate per 100,000 people over the last 12 months prior to the interview of household i in survey t. D_{ijt} includes wife's and husband's age and age squared, and the number of household members by gender and age group; δ_i are household fixed effects that, given the ITT approach, will control for both unobserved time-invariant household- and municipality-level heterogeneity; λ_t are and year- and month-of-interview fixed effects; and ε_{ijt} are conditionally mean-zero errors clustered by municipality. The sample is restricted to the MxFLS-2 and MxFLS-3 waves as explained in section 4.3.

Increases in violent crime did not have, on average, a significant effect on total household expenditure (column (1) of Table 2). The null results are also robust to controlling for time-varying economic municipality characteristics (Table B7). Table 2 also shows the increase in homicide rates does not predict any changes in households' wealth, defined as the monetary value of all durable assets, including savings. The wealth measure will be used as an instrumental variable for total expenditure as further described in sections 4.6 and B.4.

4.6 Effect of Violence on Expenditure Shares

This section tests whether the increase in local violence in Mexico had any effects on household decision-making with respect to expenditure allocations, despite having no effect on total household expenditure. I estimate a system of households' Engel curves parametrizing and adding an error term to each equation of (4):

$$W_{ijt}^{k} = \alpha^{k} + \beta^{k}\ln(y_{ijt}) + \gamma^{k}H_{jt} + \Theta^{k}D_{ijt} + \lambda_{t}^{k} + \delta_{i}^{k} + \varepsilon_{ijt}^{k}, \tag{7}$$

where W_{ijt}^{k} is the budget share spent on good k by household i living in municipality j in survey t. The coefficients of interest are γ^{k}, and H_{jt} remains defined as the quartic root of the homicide rate per 100,000 people over the last 12 months prior to the interview. δ_{i}^{k} are household fixed effects and λ_{t}^{k} are survey fixed effects. The main sample remains restricted to the MxFLS-2 and MxFLS-3 survey waves.

4.6.1 Estimation Strategy

I estimate the set of Engel curves specified in (7) simultaneously as a system allowing for correlation of the error terms, clustering at the municipality level. The set of time-varying regressors D_{ijt} will be selected implementing the post-double-cluster-lasso methodology proposed by Belloni et al. (2016), which allows to control for household fixed effects and a clustered covariance structure. The methodology allows variable selection from a high dimensional list of controls. The list of controls includes wife's and husband's age and age squared, the number of household members by gender and age group, month- and year-of-interview fixed effects, as well as the square of all these variables, and interactions among all of the controls.[12,13]

Although the coefficients of interest are γ^k, if we are interested in an unbiased estimation of β^k to classify goods as necessity or non-necessity goods based on their expenditure elasticity, we need to address the potential endogeneity of total expenditure. I use household wealth as an instrumental variable for total household expenditure within a period. This strategy is standard when estimating demand equations (Dunbar, Lewbel, and Pendakur 2013; Armand et al. 2020). The theoretical foundation relies on households' inter-temporal problem of allocating resources over time and across states of nature. Wealth will be uncorrelated with unobserved consumption heterogeneity within the same period if consumption decisions within a period are separable from saving decisions across time (see Appendix B.4 for a more detailed discussion). Also, as Table 2 shows, the increase in homicide rates did not have a statistically significant effect on the wealth instrument. I implement the instrumental-variable strategy using a control-function approach bootstrapping the standard errors and clustering at the municipality level (Blundell and Robin 1999; Attanasio and Lechene 2010, 2014; Armand et al. 2020). The instrument has the expected positive effect on total expenditure and is highly predictive (Table B8).

Finally, I will account for price variation estimating the demand equations including state-time fixed effects (see Attanasio and Lechene (2014) or Armand et al. (2020) for similar methodologies) to the list of controls in D_{ijt}. This approach requires that prices are constant within a state, though they can vary across time, and I also include a rural locality linear trend to account for urban versus rural differences over time. Appendix B.5 also provides evidence showing the increase in homicides did not have a meaningful impact on local prices, at least within the MxFLS municipalities, for all the available goods considered: food, household goods, and men's, women's, and children's clothing.[14]

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[12] I remove one control from any pair of covariates that had a bivariate correlation exceeding 0.99 in absolute value. High-dimensional variable-selection methods work best when the set of variables to be selected is not very large (Belloni, Chernozhukov, and Hansen 2014).

[13] The following steps summarize the methodology: (i) select control variables that predict H_{jt} by cluster-lasso; (ii) select control variables that predict the budget shares W^k_{ijt} by cluster-lasso, excluding the regressor of interest H_{jt}; and (iii) estimate the coefficient of interest γ^k controlling for any variables selected in either of the first two steps, clustering errors at the municipality level. I include total household expenditure in each of the three steps, as well as household and survey fixed effects. The first step helps implement robustly the conditional exogeneity assumption, finding variables that are highly correlated with the homicide rate and could be confounding factors. The second step aims to keep the residual variance small by providing a good prediction of the budget shares, and it is an additional opportunity to find potential confounders (Belloni, Chernozhukov, and Hansen 2013).

[14] I use market prices collected at the community level by the MxFLS, although, unfortunately, not all goods have price information. I aggregate prices estimating the median price across markets and communities within the municipality. Appendix B.5 presents the results of difference-in-differences estimations of the price indices by good category.

4.6.2 Results: Expenditure elasticities

The estimation of the system of demand equations (7) of the log of total expenditure ($\hat{\beta}^k$) show that food is a necessity, consistent with Engel's law (Table B11). An increase of 10% in total expenditure is associated with a 1.7-percentage-points decrease in the food budget share. Hygiene and care goods are also necessities; that is, they also have expenditure elasticity less than 1. The estimates also suggest the remaining household goods and services are luxury goods; that is, the expenditure share increases with total spending. Table B12 presents the elasticities of each good category at the mean sample values.

4.6.3 Results: Effect of violent crime on budget structure

Table 3 presents the results of the household Engel curves specified in equations (7), reporting the estimates of interest $\hat{\gamma}^k$, the effect of an increase in homicide rates on expenditure shares. All regressions implement the instrumental-variable strategy and include lasso-selected household time-varying controls, as well as household and survey fixed effects. Columns (2), (4), and (6) include state- and rural-time linear trends to control for unobserved prices in the set of available time-varying controls. Columns (3) and (4) exclude households in the top 1% percent of total annualized expenditures in MxFLS-2 to eliminate outliers. Columns (5) and (6) exclude migrant households who changed municipality of residence between the two survey waves.

Negative effect on household necessities The results present evidence that an increase in the local homicide rate decreased the expenditure shares of food and hygiene and personal care goods (Table 3). Both of these goods are necessities according to their estimated elasticities (Table B11). A household living in a non-violent municipality in 2005–2006, who then experienced the average increase in homicides (15 in 100,000), decreased the share of total expenditure allocated to food by about 2.2 percentage points less of food, and to hygiene and other household necessities by 0.8 percentage points ($\hat{\gamma}^k * \sqrt[4]{15}$). It is worth noting meals outside the household are not included in the food category, as they are included in the recreation expenditure category.[15]

Relative to the baseline average expenditure shares (Table 1), the increase in crime led to a decrease of 4% in food and 12% in hygiene and other household necessities. To put magnitudes

[15] Appendix Table B13 splits the food expenditure share by food categories (fruits and vegetables, cereals and grains, meats and dairy, and other food) and shows the point estimates are negative across the board although imprecisely estimated. Appendix Table B14 splits the hygiene and care goods in household, male, and female goods and shows the overall effect is largely driven by the gender-neutral household goods, although the point estimates on female and male care goods are also negative.

Table 3: Effect of Homicide Rates on Expenditure Shares

	(1)	(2)	(3)	(4)	(5)	(6)
Food	–1.10*	–1.10*	–1.17**	–1.17**	–1.16**	–1.16**
	(0.56)	(0.56)	(0.56)	(0.56)	(0.58)	(0.58)
Drinks and Tobacco	0.02	0.02	0.01	0.01	0.03	0.03
	(0.13)	(0.13)	(0.14)	(0.14)	(0.14)	(0.14)
Male adult clothing	0.25***	0.25***	0.25***	0.25***	0.26***	0.26***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Female adult clothing	0.04	0.04	0.04	0.04	0.04	0.04
	(0.07)	(0.08)	(0.07)	(0.08)	(0.07)	(0.07)
Children goods	–0.15	–0.15	–0.13	–0.13	–0.14	–0.14
	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)
Hygiene and care	–0.38*	–0.38*	–0.42**	–0.42**	–0.42**	–0.42**
	(0.20)	(0.20)	(0.19)	(0.19)	(0.19)	(0.19)
Other household goods	0.23	0.23	0.24	0.18	0.28	0.22
	(0.30)	(0.30)	(0.31)	(0.31)	(0.30)	(0.32)
Transportation	0.58*	0.58*	0.66**	0.66*	0.61*	0.61*
	(0.34)	(0.34)	(0.33)	(0.34)	(0.33)	(0.33)
Health	0.15	0.15	0.15	0.15	0.16	0.16
	(0.18)	(0.18)	(0.18)	(0.18)	(0.19)	(0.19)
Education	0.08	0.08	0.06	0.06	0.09	0.09
	(0.12)	(0.12)	(0.12)	(0.12)	(0.13)	(0.13)
Recreation	0.18	0.18	0.19	0.19	0.17	0.17
	(0.20)	(0.19)	(0.19)	(0.18)	(0.21)	(0.21)
Gambling	0.06	0.06*	0.06	0.06	0.06	0.06
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Double Lasso	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓	✓
Instrument expenditure	✓	✓	✓	✓	✓	✓
Price proxy		✓		✓		✓
Excluding top 1% expenditure			✓	✓		
Excluding migrants					✓	✓
Observations	7,430	7,430	7,366	7,366	7,176	7,176

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Table 3 reports $\hat{\gamma}^k$ on the quartic of the homicide rate in 100,000 of each equation (7). Estimates are based on a control-function approach bootstrapping standard errors (500 replications) clustered at the municipality level. The dependent variables are budget shares of household goods, defined as the expenditure on that good divided by total household expenditure multiplied by 100.

in perspective, Tommasi (2019) show, in the context of the Mexican PROGRESA cash transfer program, that mothers having majority control of household resources relative to fathers increase food consumption as a share of the household budget by 6.5–8.3%. In Macedonia, Armand et al. (2020) document that targeting cash transfers to women, as opposed to men, increases the expenditure share on food by 4 to 5 percentage points.

Positive effect on male goods and transportation The results also indicate an increase in the local homicide rate led to an increase in the budget share spent on adult male clothing (Table 3). A household living in a municipality that experienced the average increase in the annual homicide rate consumed about 0.5 percentage points more of adult male clothing, about 34% increase of a 2005–2006 average. By contrast, the effect of homicides on adult female clothing is small in terms of point estimates and not statistically significant across specifications.

In contrast, Bobonis (2009) shows that, conditional on aggregate household expenditures, the Mexican PROGRESA program led to a 42% increase in the adult female clothing expenditure share and had no effects on adult male clothing. Brown (2009)'s research in China shows that increasing dowry by 100 yuan leads to increasing expenditure on women's goods by 0.08 percentage points (45.6 percent of the average expenditure). The results in Table 3 also provide some evidence that the increase in homicide rates led to a greater expenditure share on gambling, which has been reported to be more common among Mexican men than women (Velazquez et al. 2018).

Finally, the results also provide evidence that the increase in homicide rates led to greater expenditure share on transportation. This finding may reflect the need to invest in safer routes or modes of transportation, due to an increased risk of victimization. In fact, heterogeneity analysis shows it is in those households where men report an increased fear of victimization where the effects of crime on transportation expenditures are observed (Table D3).

4.6.4 Threats to identification and other robustness checks

Unobserved municipality trends and other economic confounders. The main threat to identification would be that the heterogeneous geographic and sharp temporal variation in homicides reported in Mexico was actually anticipated or was correlated with other underlying trends related to households' consumption patterns. To assess the plausibility of this source of bias, I conduct a placebo test estimating the system of demand equations using data from the 2002 MxFLS-1 and the 2005–2006 MxFLS-2, but assigning to each survey wave the homicide rate of the subsequent wave (Brown and Velasquez 2017; Velásquez 2020). In the within-household framework, this test captures whether prior trends of households' budget shares are correlated with posterior changes in homicides at the municipality level. In this case, the future homicide rate changes between MxFLS-2 and MxFLS-3 should not, for instance, predict smaller expenditure shares of food and other household necessities or a greater share on male clothing between 2002 and 2005. Indeed, the results show the effect of violence on the budget shares is never simultaneously statistically significant and of the same sign as in the main results (Table B15).

These results alleviate concerns with respect to non-random linear unobserved municipal trends. A word of caution remains with respect to sources of bias coming from non-linear omitted trends. However, these unobserved endogenous variables would need to be on a similar temporal path as the increase in homicide rates and to mirror the geographic heterogeneity of the change in violence in Mexico after 2006. Still, one might worry that several local economic conditions could be confounding the results, especially given the occurrence of the Great Recession between the two survey waves, although previous research has failed to provide evidence in support of a significant relationship between the heterogeneity in the exposure to violence and to the economic effects of the Recession (Velásquez 2020). The results are robust to adding a wide set of economic municipality controls and allowing for a flexible functional form including higher polynomial orders and interactions among household and municipality controls (Table B16).[16]

Alternative specifications. On the right-hand side, the main coefficient of interest is the quartic root of the homicide rate, but the results hold when we instead implement other standard monotonic transformations such as the logarithmic and inverse hyperbolic sine functions to the crime rate (Table B18). With respect to the curvature of the Engel curves, the Engel equations in (7) assume a linear relationship between total expenditure and expenditure shares. Note the null effect of the increase in homicides on total expenditure already alleviates concerns about misspecification bias (Table 2). Still, the results are also robust to introducing the square of total expenditure following the common QUAIDS model (Table B19).

Randomization-based inference and multiple hypothesis testing To analyze the likelihood that the main results could have occurred by chance, I generate randomness in the exposure to

[16]The municipality-level controls are the following: share of manufacturing, commerce, and services employment, share of rural population, Gini index, food poverty index, assets poverty index, and capacities poverty index. Sources: Population Census, Federal Electricity Commission, ENIGH, Technical Committee on Poverty Measurement. The three poverty measures are monetary poverty measures. Capacities poverty is defined as the lack of sufficient household resources to maintain expenditures on a minimum diet, education, and health care. Assets poverty expands the notion of capabilities poverty to include households that cannot afford clothing, housing, energy, and transportation expenditures.

increased local violence and calculate randomization-based p-values (Athey and Imbens 2016; Young 2019). The estimated p-values indicate the sharp null hypothesis—that the increase in homicides had no effect on households' expenditure shares among these good categories—should be rejected, further confirming the main results (appendix B.7). In addition, given the joint estimation of a set of demand equations, the probability of type-I error is greater than the size of the test we choose when deciding whether to reject the null hypothesis of statistical significance in each regression. Appendix Table B17 shows the results are robust to re-estimating the model, controlling for the familywise error rate (List, Shaikh, and Xu 2019; Steinmayr 2020).

4.6.5 Ruling out mechanisms

I explore and rule out a series of mechanisms that we could expect, either from a theoretical perspective or prior empirical evidence, to have a relationship with expenditure allocations and that may also be affected by changes in local crime.

Household composition The main specifications already include controls for the number of people living in the household by gender and age group in the list of lasso-selected time-varying controls. Therefore, if the change in local violence had an impact on household composition, the results would already capture the average effect of the increase in homicides on consumption net of the effect on the number and type of household members. The results are also robust to including all these controls in the demand equations despite not being chosen by double-lasso (Table B20). In addition, the increase in local violence is not predictive of changes in the number of household members (Table B22).

A second potential concern could be whether the increase in homicides affected the type of household, in this case, defined as a household with a head, a spouse, and at least one son or daughter living with them. Section 4.4.1 addressed concerns over non-random attrition, but the results are also robust to including those households that do not meet the criteria any longer in the 2009-2012 MxFLS-3 survey wave. In addition, results are consistent when either restricting the sample to nuclear households or expanding the sample to all married households formed prior to the 2005-2006 MxFLS-2 wave, regardless of offspring's presence in the household (Table B20).

Finally, the results are also not driven by old households that are forced to exit the labor force due to retirement, Table B21 show the results are robust when restricting to households where the household head and the spouse are both below 60 years old in the 2005-2006 MxFLS-2 wave .

Male time allocations The main results, and all the aforementioned robustness checks, show an increase in the budget share of adult male clothing. This reallocation of household expenditure can reflect a shift of intra-household bargaining power toward men, which I discuss in section 5. But an alternative explanation could be that households are responding to the increase in homicide rates with an increase in male labor supply, or simply the time men spend outside the household, and they might need to spend more resources on male clothing. Using the MxFLS survey, Velásquez (2020) documents no effects on working hours either among self-employed or wage-employed men. Also, no statistically significant evidence exists that crime affected men's labor supply within this paper's analytical sample (Table B23). In addition, the MxFLS also includes a time-use module that asked how many hours respondents spent in a series of activities during the last week, and no evidence suggests the change in crime affected the hours men spent participating in other activities outside the household (Table B24).

Households' standards of living The negative effects on the expenditure shares on food and other necessities along with the positive effect of homicides on the shares spent on luxury goods could also raise concerns about the possibility of homicides reflecting an increase in households' total resources, not fully captured by controlling for total expenditure. The empirical evidence to date has, in fact, documented the opposite (Balmori de la Miyar 2016; Gorrin, Morales, and Ricca 2019). Still, we may worry that households might be positively benefiting from the increase in illicit activities in their communities. In this case, self-reported income data may suffer from (under)reporting bias. The use of consumption data as opposed to self-reported income already largely alleviates these concerns and, as shown in Table 2, there were no effects of the increase in crime either on non-durable or durable consumption. In addition, there is no evidence of the increase in violence affecting households' labor earnings within this paper's sample (Table B25).

Home production and the survey interview process The budget shares are calculated including consumption that the household purchased, received as a gift or payment, or obtained from its crops, animals, or businesses. A concern could be that the increase in homicides could have affected informal trading markets, gifts and transfers, or the type of home production households engage in. But, splitting the budget shares shows it is the household purchases that drive the results (Table B26). We may also worry the increase in crime affected which household member completed the survey if men and women have different recall bias for different goods or if they hide expenditures from each other that they are otherwise willing to report to the enumerators.[17] The Engel-curve results are robust to limiting the sample to households in which the person who fills the consumption survey is the same across waves (Table B27). There is also no evidence that crime affected who is present at the time of the interview in case we worry about bystander effects (Table B28).

5 The Effect on Intra-household Bargaining Power

Given previous research, the results on intra-household resource allocation are consistent with the increase in violence deteriorating women's relative intra-household bargaining power. For instance, clothing is a private good that has been shown to be correlated with individuals' bargaining power in Mexico and other countries (Bobonis 2009). Attanasio and Lechene (2010) also show the budget share of food is unchanged following the receipt of a large cash-conditional transfer in Mexico, in contrast to what would be predicted by Engel's law. They rule out multiple mechanisms and argue the key is that the transfer is made to women, which changes the control over household resources. Tommasi (2019) studies the same cash-transfer program and shows that mothers with majority control of household resources relative to fathers increase food consumption as a share of the household budget.

In this section, I present further empirical evidence supporting the decline in women's bargaining power as a consequence of the Mexican drug war by estimating the effect on women's decision-making power, structurally estimating resource shares, and analyzing demand equations for single households.

5.1 The Effect on Women's Intra-household Decision-Making Power

Women's participation in intra-household decision-making is commonly used as a metric of bargaining power (Banerjee et al. 2015; Ambler 2016; Lavy, Lotti, and Yan 2022). The MxFLS survey includes individual questionnaires asking household members who makes decisions regarding twelve different categories of expenses and time allocations. I estimate the effect of homicide rates on women's decision-making power with the following individual fixed-effects specification,

[17] The consumption module of the MxFLS survey had to be completed by a household member who was above 18 years old and "who knows about the characteristics of all household members." In 95% of the sample, either the head of the household or the spouse completed the section. In 83% of the cases, the female spouse of the head of the household completed it.

where the coefficient of interest is again γ:

$$\text{Women's decision-making power}_{ijt} = \alpha + \gamma H_{jt} + \Theta D_{ijt} + \lambda_t + \delta_i + \varepsilon_{ijt}. \quad (8)$$

The outcome variables are indices that aggregate twelve indicator variables, each of them equal to one if the woman says she participates in that particular household decision, and zero otherwise (the decisions may be made solely or jointly). Panel A of Table 4 provides summary statistics of these twelve variables.

The first outcome variable is an index that combines the twelve variables using principal component analysis (PCA index). Secondly, I treat women's decision-making power as a construct with a potential multidimensional structure and use exploratory factor analysis (EFA). The EFA results indicate that four dimensions emerge from the data (Table C1).[18] I use the correspondent factor loadings to combine the different decisions in four aggregate measures of decision-making (Laajaj and Macours 2021). Hence, I consider five outcome variables in total: the PCA index and the four EFA-based indexes, all of which are standardized for ease of interpretation. Panel B of Table 4 report the effect of homicides on women's decision-making power from estimating equation (8).

The results show that exposure to local violence had a negative effect on women's self-reported decision-making power, both when measured as an aggregate (PCA index), and when isolating the different factors.[19] A woman living in a non-violent municipality in 2005-2006, who then experienced the average increase in homicides (15 per 100,000), would experience a decrease in the decision-making PCA index of approximately 0.26 to 0.30 standard deviations—a significant decline relative to the baseline mean.

The aggregate approach using PCA and EFA, as opposed to analyzing each decision separately, allows a more nuanced measure of intra-household decision-making by accounting for the joint

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[18]The first factor relates to children's decisions (education, health, and clothes). The second factor aggregates female-related decisions (whether she should work or not, use of contraceptives, and money given to the woman's family). The third factor aggregates money given to the husband's family, whether the husband should work, husband's clothing, and decisions on large household expenditures, all of the decisions in which women report the least power over. The fourth factor aggregates the two expenditures in which women report the greatest decision-making power: food eaten in the household and her own clothing.

[19]The regressions only include women that have non-missing response in every decision in both MxFLS-2 and MxFLS-3. The smaller sample size has two reasons. First, 10% of the women in the main sample were not administered the decision-making module. Second, there are certain items that are not applicable to all women (e.g. 33% of the women do not answer the money transfer question because they do not have parents/parents in law/relatives, or they do not give them money) and this can vary across survey waves.

Table 4: Women's Intra-Household Decision-Making Power

A) Summary Statistics in MxFLS-2	(1) Mean	(2) St. Dev.	(3) Observations
Factor 1			
The education of your children	0.95	0.22	1,005
Health services and medicine for your children	0.94	0.24	1,005
Your children's clothes	0.83	0.38	1,005
Factor 2			
If you should work or not	0.79	0.41	1,005
If you or your spouse/partner use contraceptives	0.97	0.18	1,005
Money that is given to your family	0.93	0.25	1,005
Factor 3			
Money that is given to your spouse/partner's family	0.65	0.48	1,005
If your spouse/partner should work or not	0.42	0.49	1,005
Large expenditures for the house	0.73	0.44	1,005
Your spouses'/partners' clothes	0.35	0.48	1,005
Factor 4			
Food eaten in the house	0.97	0.17	1,005
Your clothes	0.96	0.19	1,005

B) Effect of Homicides on Women's Decision-Making Power	Regressions		Outcome MxFLS-2
	(1)	(2)	(3)
Regression outcome variables:			
PCA index	–0.13**	–0.15*	0.15
	(0.06)	(0.08)	[0.90]
Index-factor 1	–0.04	–0.06	0.16
	(0.05)	(0.05)	[0.79]
Index-factor 2	–0.10*	–0.12*	0.07
	(0.06)	(0.06)	[0.89]
Index-factor 3	–0.15**	–0.16**	0.10
	(0.07)	(0.07)	[0.98]
Index-factor 4	–0.12*	–0.11*	0.00
	(0.06)	(0.06)	[0.99]
Individual and time fixed effects	✓	✓	
Household controls	✓	✓	
Double-lasso		✓	
Observations	2,010	2,010	2,010

Notes: The MxFLS survey includes individual questionnaires asking household members who makes decisions regarding twelve different categories of expenses and time allocations. Panel A presents summary statistics of women's answers to the decision-making questions in MxFLS-2 (2005-2006). In particular, each variable is equal to one if she says she participates in that particular decision category, and zero otherwise (the decisions may be made solely or jointly). Panel B columns (1) and (2) report estimated coefficient $\hat{\gamma}$ on the quartic of the homicide rate in 100,000 of each equation (8). The dependent variables are defined in each row. Column (3) reports the mean and standard deviation, in brackets, of each outcome variable in MxFLS-2. $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level.

distribution of responses across decisions (Kline 2014; Seymour and Peterman 2018) and minimizes the risk of type-I errors. Still, as a robustness check to understand the underlying sources of variation, I also estimate the same regressions with decision-specific outcome variables and the results confirm women losing decision-making power across domains, especially regarding expenditures on male clothing, large household expenditures, and money transfers (Figure C1).

Taken together with the previous results on the effects of violence on household allocations, this section provides further evidence of the hypothesis that exposure to local violence led to reductions in married women's control over their household's resources. Of course, the interpretation of self-reported decision-making has its own caveats since higher involvement in decision-making does not always reflect greater agency in certain contexts (Seymour and Peterman 2018; Donald et al. 2020; World Bank 2021). However, in Mexico, previous studies have used this MxFLS module to document a positive association between female decision-making power and higher secondary enrollment for boys (Chakraborty and De 2017) and less female child labor (Reggio 2011), a positive effect of women's labor market opportunities on their decision-making power (Majlesi 2016), and a negative relationship between increases in homicide rates and female decision-making power (Tsaneva, Rockmore, and Albohmood 2018). In addition, the decision-making subscales are positively correlated among them and they also display positive and statistically significant correlations with indicators that have been used in the literature to proxy women's status (e.g., age, education, labor force participation) and with the resource shares $\hat{\eta}$ estimated in section 5.2 (Table C2).

5.2 Structural Analysis of Intra-household Inequality

In this section, I set up a model of intra-household resource allocation identifying women's resource shares and study how they vary with household's characteristics, including the exposure to violent crime, which is also allowed to shift consumption preferences.

As explained in section 3, resource shares are a proxy for individuals' intra-household bargaining power under standard utility assumptions. Identification of the resource shares—the fraction of household expenditure consumed by each household member—rely on the presence of private assignable goods. In particular, male and female goods will comprise adult clothing and personal care goods. The computation of resource shares will derive from the slope of the Engel curve specified in equations (5). Note that in the absence of further preference assumptions, the system of Engel curves specified in equations (5) would consist of two Engel-curve equations and three unknown parameters: $\{\eta, \beta_w, \beta_m\}$. Therefore, identification would not be possible without additional constraints. I impose a semiparametric restriction following Dunbar, Lewbel, and Pendakur (2013) and assume similar preferences across members of the household restricting $\beta_w = \beta_m = \beta$ of the private assignable goods. This methodology, known in the literature as with preference SAP (Similarity Across People)[20] has been increasingly used to measure the levels and determinants of intra-household inequality.[21] In addition, I control for unobserved time-invariant heterogeneity, exploiting the use of panel data. Given that, within a non-linear model with unobserved effects, the direct inclusion of household fixed effects is not computationally feasible (Wooldridge 2001), I instead include Mundlak effects: average time-varying characteristics across survey waves.[22] The empirical implementation is the following:

$$W_{it}^{w} = \eta(x_{it})[\alpha^{w}(x_{it}, \bar{x}_i) + \beta(x_{it})[\ln(\eta(x_{it})) + \ln(y_{it}/n_{it}^{w})]] \tag{9a}$$

$$W_{it}^{m} = (1-\eta(x_{it}))[\alpha^{m}(x_{it}, \bar{x}_i) + \beta(x_{it})[\ln(1-\eta(x_{it})) + \ln(y_{it}/n_{it}^{m})], \tag{9b}$$

where W_{it}^{w} and W_{it}^{m} are the household budget shares spent on women's and male's private assignable goods, y_{it} is total household expenditure, and n^{w} and n^{m} are the number of adult women and men in the household, respectively. η denotes the share of total household expenditure consumed by all adult women and provides a measure of their overall bargaining power (Calvi 2020; Calvi et al. 2021).

5.2.1 Estimation strategy and results

The model is implemented by adding an error term to equations (9a) and (9b) and estimated by the non-linear seemingly unrelated regression method (NLSUR). The preference parameters $(\alpha^{w}, \alpha^{m}, \beta)$ are parametrized linear on a set of household time-varying controls, including the municipality-level homicide rate, and on Mundlak effects, $\bar{x}_i$, averages across panels of all the

[20] Although imposing the same β restricts preference heterogeneity, it does not impose identical preferences across household members. If it did, $W_w^k > W_m^k$ would imply η must be greater than 0.5. But this conclusion is not necessarily true when we just restrict the slope β (see Figure C2). In addition, the preference restriction only applies to the private assignable goods, it is silent regarding all other household goods.

[21] Calvi (2020) applies the methodology to estimate the age profile of women's resource shares in India. Brown, Calvi, and Penglase (2021) use the structural estimates of resource shares to measure intra-household consumption inequality in Bangladesh. Tommasi (2019) estimates the impact of the Mexican Progresa cash-conditional transfer on intra-household resource shares.

[22] This approach follows the one in Wooldridge (2019) exploiting the equivalence between the one-way fixed-effects estimator and the Mundlak regression in the small T case (two survey waves in this paper's context), and let the time dummy be included among the time-varying covariates, as opposed to the additional inclusion of cross-sectional averages for each time period (Wooldridge 2021). This methodology is used to replace household fixed effects when the model uses time-invariant regressors of interest. For instance, Vreyer, Lambert, and Ravallion (2020) include Mundlak effects in the estimation of household Engel curves in Senegal. This approach can also be crucial for analyzing non-linear models with unobserved heterogeneity.

Table 5: Determinants of Women's Resource Shares

	(1)	(2)	(3)	(4)	(5)
$\sqrt[4]{}$ Homicide rate last 12 months	–0.04**	–0.01	–0.04**	–0.03	–0.03**
	(0.02)	(0.08)	(0.02)	(0.02)	(0.02)
Rural locality	–0.11***	–0.06	–0.09***	–0.11***	–0.09***
	(0.03)	(0.12)	(0.02)	(0.03)	(0.02)
Avg. education adult women	0.00	0.01	–0.00	0.01	–0.00
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Avg. education adult men	0.01***	0.01	0.01**	0.01*	0.01**
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Avg. age adult women	0.00	0.00	0.00	0.00	0.01
	(0.01)	(0.02)	(0.00)	(0.01)	(0.00)
Avg. age all women^2	–0.00	–0.00	–0.00**	–0.00	–0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Avg. age adult men	0.01*	0.01	0.01***	0.01	0.01**
	(0.01)	(0.02)	(0.01)	(0.01)	(0.01)
Avg. age adult men^2	–0.00*	–0.00	–0.00***	–0.00	–0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
# hh members <=18	0.01	0.02	–0.00	0.01	–0.00
	(0.01)	(0.03)	(0.01)	(0.01)	(0.01)
Central region	0.03	0.03	0.04	0.02	0.05
	(0.04)	(0.17)	(0.04)	(0.05)	(0.04)
North region	–0.14***	–0.04	–0.17***	–0.09*	–0.17***
	(0.04)	(0.20)	(0.04)	(0.05)	(0.04)
West region	–0.01	0.02	–0.03	0.03	–0.02
	(0.04)	(0.19)	(0.04)	(0.05)	(0.04)
MxFLS-3	–0.04	–0.04	–0.04**	–0.04	–0.05**
	(0.02)	(0.08)	(0.02)	(0.03)	(0.02)
Intercept	0.34**	0.32	0.28**	0.33*	0.30**
	(0.15)	(0.54)	(0.13)	(0.17)	(0.14)
$\beta(.)$	Constant	x_{it}	x_{it}	x_{it}	x_{it}
Mundlak effects			✓	✓	✓
Excluding top 1% expenditure				✓	
Excluding migrants					✓
Observations	7,393	7,393	7,393	7,329	7,145

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Table 5 reports the nonlinear seemingly unrelated regression estimates of the determinants of $\eta(x_{ijt})$ based on equations 9a and 9b. Standard errors, in parentheses, clustered at the municipality level.

included household characteristics. The set of time-varying controls include the average age, average squared age, and average education of all adult women and of all adult men in the household, the number of adult members below 18 years old, and the quartic root of the municipality-level homicide rate. I also include time, region, and rural locality fixed effects to account for price variation. NLSUR is iterated until the estimated parameters and covariance matrix converge. To overcome difficulties with local minima, I perform a grid search over 1,400 starting values for β and η and select the estimates corresponding to the minimum of the sum-of-squared residuals (Calvi 2020; Sokullu and Valente 2021).

Table 5 reports the coefficients on the resource shares of the covariates (x_{it}). Column (1) keeps β constant across households and survey waves, whereas the rest parametrize it linearly on household time-varying controls, including the homicide rate, and a time fixed effect. Columns (3), (4), and (5) include Mundlak effects to account for unobserved heterogeneity. Figure C3 plots the distribution of the average predicted resource shares and the resource shares against household characteristics, based on column (3) of Table 5, the preferred specification, although the results are very similar across specifications. Reassuringly, the resource shares are all within 0 and 1, even though they were modeled as linear and not bounded.

Consistent with previous research, women's resource shares are positively correlated with the levels of education of household members, are lower in rural areas, and their relationship with women's age is significantly decreasing in post-reproductive ages (Tommasi 2019; Calvi 2020). As mentioned in section 5.1, they are also positively correlated with the intra-household decision-making variables (Table C2), consistent with recent work showing how these model-based measures of women's power are positively correlated with close-ended survey questions aimed to measure women's empowerment (Tommasi 2019; Calvi, Penglasi, and Tommasi 2022).

Finally, the coefficient on the homicide rate on women's resource shares is negative across the board (Table 5). Figure C4 also plots graphically the negative relationship between predicted changes in women's resource shares within a household ($\Delta\eta_i = \eta_{it} - \eta_{i,t-1}$) and the change in the local homicide rate for that particular household i between survey waves. According to these estimates, ceteris paribus, in households that experienced the average increase in crime during the period (15 homicides per 100,000 people), women's resource shares are estimated to decrease by about 5-8 percentage points, again consistent with the hypothesis that increases in local crime negatively affect women's intra-household bargaining power.

As a robustness check, appendix Table C3 restricts the sample to households with small children in both survey waves and expands the system of equations in (9) to include the Engel curve for children's goods, treating them as decision-makers in the household. The coefficient of homicides on women's resource shares remains negative, and the negative impact is picked up by an increase in male's resource shares, rather than a transfer to children's resource shares, suggesting the impacts are not driven by changes in altruism towards children.

5.3 Single Households

In this section, I re-estimate the Engel curves specified in equation (7) restricting the MxFLS-2 sample to those families whose household head was neither married nor in a domestic partnership at the time of the interview, and they were re-interviewed during MxFLS-3.[23] Table C5 shows the positive effects of crime on food or male clothing are not observed when we analyze the Engel curves of households whose head was male and single before the Mexican drug war started (MxFLS-2). They are also not observed if we drop those individuals who got married in between (columns (3) and (4)); if anything, the point estimates go in the opposite direction. I do not report the Engel curves for those who married in between, given they are only 51 individuals.

These results suggests that if the change in crime increased the taste toward male adult clothing, the taste shock did not affect unmarried individuals, which provides further compelling evidence that changes in consumption preferences are not the main driver behind the crime effects on intra-household resource allocation. In addition, the positive and statistically significant effect of crime on male clothing is present among female-headed households, but driven by those who married in between survey waves. Of course, given the sample selection threats and smaller sample sizes, these results have limitations for causal interpretation, but they provide further and complementary evidence of the bargaining-power mechanism.

6 Discussion

The direct and short-term effects of violent crime on households are evident: direct victimization can result in the loss of life, physical and mental health, and overall living standards (Sabia, Dills, and DeSimone 2013; Bindler, Ketel, and Hjalmarsson 2020). But, most generally, exposure to crime can indirectly affect households through the fear of victimization, without necessarily ever having been victimized themselves.

Within this paper's analytical sample, the increase in crime had a greater effect on women's fear of victimization than men's (Tables D1, D2). These results are consistent with a broader literature documenting that women tend to report more fear and a greater perceived risk of victimization than men, even in contexts where men are more likely to be the target victims (Ferraro 1996; Mesch 2000; Chataway and Hart 2019).[24] Heterogeneity analysis suggests fear of victimization

[23] Table C4 shows 337 male- and 994 female-headed households met these criteria. These individuals were mostly separated, divorced, or widowed. Of these, 13% of the women (127) and 15% of the men (51) got into a marriage or a domestic partnership between the two survey waves.

[24] Several theories exist for why women's fear of crime is greater than men's, even in contexts where men suffer

plays a role explaining the results in this paper (Table D3).[25] The reported effects of homicides on food, male clothing, and transportation are stronger in those households that report being more scared of victimization than before the Mexican drug war.

The relationship between fear of victimization and intra-household bargaining power may operate through multiple channels. Women's earnings capacity through labor markets is of course an important candidate, especially given previous findings (Dell 2015; Velásquez 2020). Velásquez (2020) finds the negative effects of the Mexican drug war on hours worked are much stronger for women who report fear of being assaulted, whereas these effects are not present in men. In this paper's sample, in which three fourths of the married women were already not working prior to the escalation in crime, the direct effect is bound to be limited. But lower female labor participation may lower women's bargaining power indirectly even for those who were not working before, by limiting their outside options in case of separation (Majlesi 2016; Sanin 2021). In fact, as opposed to the men in the sample, the increase in homicides negatively affected the number of hours women spend in leisure activities outside the household (Table B24).

The decrease in the time spent outside the household, beyond reflecting a deterioration in marital outside options, may have other negative impacts such as a decrease in socialization that might also shrink women's capacity to engage with empowering social networks (Oster and Thornton 2012; Kandpal and Baylis 2019; Andrew et al. 2020; Olivetti, Patacchini, and Zenou 2020).

Psychological impacts might be at play as well. The fear and anxiety of living in highly violent environments can be detrimental to psychological well-being (Cornaglia, Feldman, and Leigh 2014; Flores Martínez and Atuesta 2018; Alloush and Bloem 2022), especially for women (Dustmann and Fasani 2016). Previous research also shows women and men can have different reactions to acute stress (Taylor and Updegraff 2000; Tamres, Janicki, and Helgeson 2002; Wang and Detre 2007). For instance, Angelucci and Cordova (2018) find acute stress reduces women's productivity and changes their decisions leading to income losses not found in men. Fernández (2023) documents that Dutch women with higher levels of conscientiousness, self-esteem, and cognitive

greater rates of victimization. One common hypothesis is that fear of crime reflects fear of sexual assault (Ferraro 1996). Another hypothesis is that women are more likely to express fear not only for themselves but also for what happens to their children (Mesch 2000).

[25] The heterogeneity analysis is performed estimating equations (7) for each subsample of interest. Given the smaller sample sizes and numerical equivalence of the point estimates of the homicide rate, I do not instrument expenditure with wealth given the difficulty to implement the bootstrap approach. Only the regressions on food, male adult clothing, and transportation are presented. The rest of goods do not present relevant heterogeneities by fear of victimization variables, results available upon request.

engagement relative to their spouses tend to receive a larger proportion of their family resources. Although a growing body of research links mental health and labor market outcomes (Peng, Meyerhoefer, and Zuvekas 2013; Böckerman et al. 2017), little is still known about how it may affect individuals' willingness and capacity to participate in their household's decision-making process (Baranov et al. 2020).

7 Conclusion

This paper presents evidence that changes in violent crime can significantly affect households' behavior, and the effects are not gender neutral. I do so in the context of an unprecedented and unanticipated surge in violent crime in Mexico in the late 2000s. I estimate causal estimates using a rich longitudinal survey that follows the same households before and after the escalation in violence. The increase in violence had an effect on the composition of household expenditures.

The results suggest increases in homicides shifted the household Engel curves of food and other necessities (hygiene and personal care items) downward while increasing the share of household expenditures allocated to male goods. These results are consistent with a deterioration in women's bargaining power. To alleviate concerns about the results being solely driven by changes in consumption preferences, I further complement the findings analyzing intra-household decision-making measures, computing the effect of violence on women's bargaining power through the structural estimation of intra-household resource shares, and analyzing the Engel curves of single households.

Understanding the gendered effects of crime is crucial for effective policy design and evaluation. The impacts of cash-conditional transfers and other anti-poverty or women's empowerment programs may vary depending on exposure to community violence. The findings of this paper suggest that attention should not only be given to direct victims; living under the threat of violence alone can significantly influence households' behavior and welfare. Moreover, the effectiveness of the interventions may differ based on the gender of the household member being targeted.

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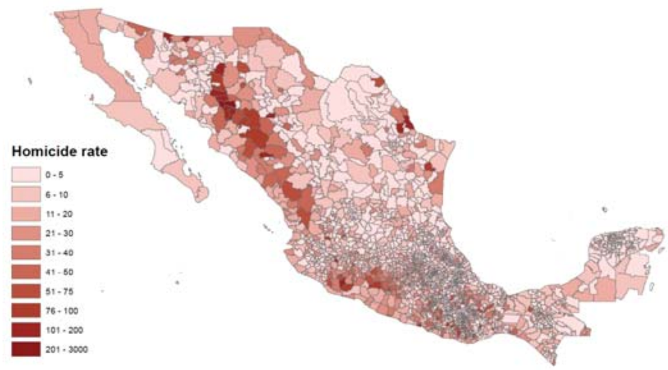
8 Online Appendix

A Violent Crime in Mexico

(a) 2005



(b) 2012

Figure A1: Annual Homicide Rates at the Municipality Level (per 100,000 People)

Notes: Annual homicide rates at the municipality level (per 100,000) in 2005 and 2012.

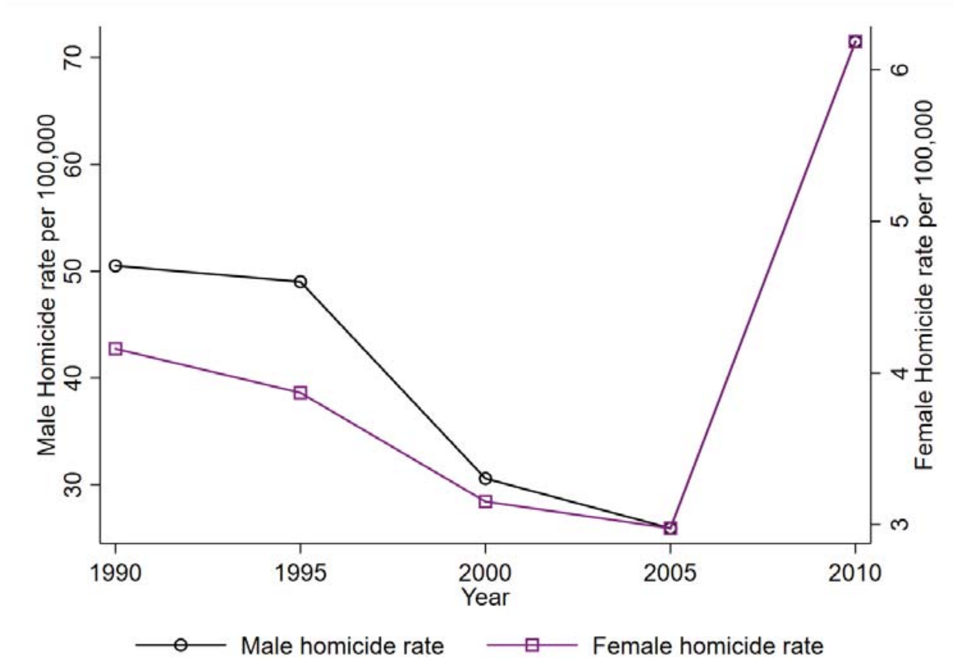


Figure A2: 15-39 Male and Female Homicide Rate per 100,000 People

Sources: INEGI, Office of the Mexican Attorney General, CONAPO.

Notes: This Figure plots the Mexican annual homicide rate over time of 15- to 39-year-old men (black line) and women (purple line).

B Summary Statistics and Additional Analysis

B.1 Sample Characteristics

Table B1 shows the MxFLS municipalities included in this paper's analytical sample are not statistically different in terms of the rise in the homicide rate from those not included. The dependent variable in Table B1 is the change in the homicide rate between 2005 and 2010. The coefficient of interest is an indicator variable if the municipality is included in this paper's sample. The point estimate is very small (-0.19 homicides per 100,000 people) and not statistically different from zero at any conventional significance level.

Table B1: Comparison of the Change in the Municipal Homicide Rate between Municipalities Included and Excluded in the MxFLS Sample

	Change from 2005 to 2010 (1)
MxFLS sample	-0.196
	(3.416)
Intercept	12.532***
	(1.851)
Observations	2,454
adj. R^2	-0.00

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level. The dependent variable in Table B1 is the change in the homicide rate between 2005 and 2010. The coefficient of interest is an indicator variable if the municipality is included in this paper's sample.

Table B2: MxFLS Expenditure Data: Good Categories

Good category	**Recall period**	**Desscription**
Food	7 days	Vegetables and fruits, cereals and grains, meats and other animal originated food, other processed food and drinks.
Drinks & Tobacco	7 days	Juices, purified water, beverages such as beer, tequila, rum, and powder for preparing water, cigarettes and tobacco.
Male adult clothing	3 months	Clothes and shoes for male adults such as: pants, shirts, sweaters, suits, underwear, etc.
Female adult clothing	3 months	Clothes and shoes for female adults such as: blouses, sweaters, skirts, underwear, pants, dresses, shoes, etc.
Children goods	1 month / 3 months	Clothes and shoes for boys and girls (excluding school uniforms). Toys in general, baby clothes and baby items such as: clothes, daycares, baby bottles, carriages, bath tubs, etc.
Hygiene and personal care	1 month	Toothpaste, shampoo, tissues, toilet paper, lotion, deodorant, shaving foam, haircuts, etc.
Other household goods	1month & 3 months & 1 year	Detergents, cleaners, light bulbs, brooms, candles, bar of soap, bleaches, glass lampshades, domestic service, laundry, dry cleaner's shop, tableware, dishes, glasses, pots, bedspreads, bed sheets, pillows, yarn, needles, any other domestic utensils, etc. Utilities: water, electricity, gas, garbage collection, firewood, coal, petroleum, telephone, telegraph, money orders, postage stamps, internet, etc. Value of gifts given to others. Property or income taxes. Funerals, vacations, parties, insurances, moving costs, other transportation services, and other expenditures.
Transportation	7 days/3 months	Transportation such as: bus, subway, taxi, and/or gasoline. Maintenance services for vehicles such as: fuel, oil, lubricants, pension, parking, car wash, mechanical shops, appliances, auto parts, etc.
Health	3 months	Healthcare and health services such as: medicine, medical and dental visits, hospitalization, etc.
Education	Current school period	Enrollments fees, exam fees, shcool supplies, uniforms, school transportation.
Recreation	7 days& 1 month	Food and drinks consumed outside the household. Culture and recreation as: books, magazines, newspapers, records, excursions, fairs, etc.
Gambling	1 month	Lottery and other such games of chance.

B.2 Attrition Analysis

Table B3 presents an analysis of the probability of attrition based on the following specification:

$$A_{ij} = P(\alpha + \beta H_j + \gamma X_{ij} + \pi_s + \varepsilon_{ij}),$$

where A_{ij} is an indicator variable equal to 1 if household i living in municipality j in 2005–2006 was not interviewed or had relevant missing information in 2009–2012 MxFLS-3. The regressor of interest H_j is the difference between the quartic root of the homicide rate in 2009 and 2005 in municipality j. The vector of household characteristics X_{ij} includes wife's and husband's age and age squared, wife's and husband's secondary-education dummy, log of total household size, rural locality indicator variable, and year- and month-of-interview fixed effects. π_s are state fixed effects. Finally, errors are clustered at the municipality level. Following Velásquez (2020), I also run a specification interacting the measure of violence with X_{ij}. These interactions aim to capture whether heterogeneity is present in selective attrition based on households' baseline attributes. The results are qualitatively equivalent using a linear probability model or a probit specification as shown in Table B3.

Tables B4 and B5 delve into potential sources of attrition. Table B4 shows that the probability of a household dropping from the sample in MxFLS-3 due to not completing the consumption module is not differentially affected by the escalation in crime. Table B5 shows the effect of the homicide rate on the household head or the spouse being widow or divorced in MxFLS-3.

Table B3: Prediction of Attrition

	LPM			Probit		
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta\sqrt[4]{H\_j}$	-0.005	0.001	0.122	-0.016	0.001	0.405
	(0.008)	(0.009)	(0.075)	(0.027)	(0.034)	(0.250)
$\Delta\sqrt[4]{H\_j}$ *Wife's age			0.004			0.016
			(0.006)			(0.021)
$\Delta\sqrt[4]{H\_j}$ *Husband's age			-0.009			-0.031
			(0.006)			(0.021)
$\Delta\sqrt[4]{H\_j}$ *Wife's age square			-0.000			-0.000
			(0.000)			(0.000)
$\Delta\sqrt[4]{H\_j}$ *Husband's age square			0.000			0.000
			(0.000)			(0.000)
$\Delta\sqrt[4]{H\_j}$ *Wife's secondary			-0.021			-0.077
			(0.017)			(0.062)
$\Delta\sqrt[4]{H\_j}$ *Husband's secondary			0.022			0.079
			(0.015)			(0.059)
$\Delta\sqrt[4]{H\_j}$ *log (household size)			-0.013			-0.053
			(0.023)			(0.090)
$\Delta\sqrt[4]{H\_j}$ *Rural locality			-0.003			-0.015
			(0.014)			(0.055)
Intercept	0.222***	0.638***	0.595***	-0.765***	0.556*	0.421
	(0.010)	(0.095)	(0.098)	(0.033)	(0.302)	(0.313)
Household controls		✓	✓		✓	✓
State FE		✓	✓		✓	✓
N	4,942	4,942	4,942	4,942	4,942	4,942
Mean dependent variable	0.22	0.22	0.22	0.22	0.22	0.22
adj. R^2	-0.00	0.05	0.05			
χ^2 interactions jointly=0 (p-value)			0.05			0.06

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level. The outcome variable is an indicator variable equal to 1 if the qualifying household in MxFLS-2 was not interviewed in MxFLS-3.

Table B4: Prediction of Consumption Module Missing in MxFLS-3

	LPM			Probit		
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta\sqrt[4]{H_{-}j}$	-0.005	0.005	0.021	-0.026	0.049	0.223
	(0.008)	(0.006)	(0.047)	(0.043)	(0.051)	(0.273)
$\Delta\sqrt[4]{H_{-}j}$ *Wife's age			-0.001			-0.002
			(0.005)			(0.029)
$\Delta\sqrt[4]{H_{-}j}$ *Husband's age			0.000			-0.000
			(0.004)			(0.026)
$\Delta\sqrt[4]{H_{-}j}$ *Wife's age square			0.000			-0.000
			(0.000)			(0.000)
$\Delta\sqrt[4]{H_{-}j}$ *Husband's age square			-0.000			0.000
			(0.000)			(0.000)
$\Delta\sqrt[4]{H_{-}j}$ *Wife's secondary			-0.014			-0.104
			(0.012)			(0.082)
$\Delta\sqrt[4]{H_{-}j}$ *Husband's secondary			0.015			0.119
			(0.011)			(0.080)
$\Delta\sqrt[4]{H_{-}j}$ *log (household size)			-0.013			-0.143
			(0.011)			(0.113)
$\Delta\sqrt[4]{H_{-}j}$ *Rural locality			0.013			0.079
			(0.011)			(0.079)
Intercept	0.110***	0.276***	0.264***	-1.225***	-0.193	-0.285
	(0.009)	(0.067)	(0.070)	(0.045)	(0.324)	(0.342)
Household controls		✓	✓		✓	✓
State FE		✓	✓		✓	✓
N	4,942	4,942	4,942	4,942	4,942	4,942
Mean dependent variable	0.11	0.11	0.11	0.11	0.11	0.11
adj. R^2	-0.00	0.05	0.05			
χ^2 interactions jointly=0 (p-value)			0.51			0.45

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level The outcome variable is an indicator variable equal to 1 if the qualifying household in MxFLS-2 had consumption module missing in MxFLS-3.

Table B5: Prediction of Not Married in MxFLS-3

	Women				Men			
	LPM		Probit		LPM		Probit	
	Widow	Divorced	Widow	Divorced	Widower	Divorced	Widower	Divorced
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\Delta\sqrt[4]{H_{-}j}$	0.006**	-0.000	0.173**	-0.026	0.001	-0.003	0.079	-0.073
	(0.003)	(0.002)	(0.077)	(0.133)	(0.003)	(0.003)	(0.092)	(0.112)
Intercept	0.089***	0.006	-2.186**	-4.416***	0.046**	0.050	-8.180***	-2.135**
	(0.029)	(0.018)	(0.899)	(1.324)	(0.021)	(0.037)	(1.474)	(0.976)
Household controls	✓	✓	✓	✓	✓	✓	✓	✓
State FE	✓	✓	✓	✓	✓	✓	✓	✓
N	4,560	4,560	4,134	4,331	4,553	4,553	4,152	4,446
Mean dependent variable	0.012	0.009	0.013	0.010	0.012	0.012	0.013	0.012
adj. R^2	0.046	0.005			0.040	0.006		

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level. A few observations are dropped in the probit specifications because Stata watches for "two-way causation", that is, a variable that perfectly determines the outcome, both successes and failures, and it is the case for some of the included fixed effects.

B.3 Selective Migration

Table B6 presents an analysis of the probability of migration based on the following regression specification:

$$M_{ij} = P(\alpha + \beta H_j + \gamma X_{ij} + \pi_s + \varepsilon_{ij}), \tag{B1}$$

where M_{ij} is an indicator variable equal to 1 if household i living in municipality j in 2005-2006 resided in a different municipality in 2009–2012 MxFLS-3. The regressor of interest H_j is the difference between the quartic root of the homicide rate in 2009 and 2005 in municipality j. The vector of household characteristics X_{ij} includes wife's and husband's age and age squared, wife's and husband's secondary-education dummy, log of total household size, rural locality indicator variable, and year- and month-of-interview fixed effects. Following Brown and Velasquez (2017) and Velásquez (2020), I also run a specification interacting the measure of violence with X_{ij}. These interactions aim to capture whether heterogeneity is present in selective migration based on households' baseline attributes. The results are qualitatively equivalent using a linear probability model or a probit specification as shown in Table B6.

Table B6: Prediction of Migration

	LPM			Probit		
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta\sqrt[4]{H_{-}j}$	-0.004	0.003	-0.057	-0.051	0.065	-0.596
	(0.007)	(0.006)	(0.067)	(0.093)	(0.086)	(0.498)
$\Delta\sqrt[4]{H_{-}j}$ *Wife's age			0.004			0.055
			(0.003)			(0.040)
$\Delta\sqrt[4]{H_{-}j}$ *Husband's age			-0.002			-0.027
			(0.003)			(0.041)
$\Delta\sqrt[4]{H_{-}j}$ *Wife's age square			-0.000			-0.001
			(0.000)			(0.000)
$\Delta\sqrt[4]{H_{-}j}$ *Husband's age square			0.000			0.000
			(0.000)			(0.000)
$\Delta\sqrt[4]{H_{-}j}$ *Wife's secondary			-0.002			-0.035
			(0.009)			(0.119)
$\Delta\sqrt[4]{H_{-}j}$ *Husband's secondary			0.019*			0.253**
			(0.011)			(0.127)
$\Delta\sqrt[4]{H_{-}j}$ *log (household size)			0.002			-0.030
			(0.008)			(0.154)
$\Delta\sqrt[4]{H_{-}j}$ *Rural locality			0.019			0.222
			(0.014)			(0.181)
Intercept	0.036***	0.100	0.120*	-1.803***	0.080	0.330
	(0.009)	(0.062)	(0.072)	(0.119)	(0.609)	(0.637)
Household controls		✓	✓		✓	✓
State FE		✓	✓		✓	✓
N	3,715	3,715	3,715	3,715	3,495	3,495
Mean dependent variable	0.03	0.03	0.03	0.03	0.04	0.04
adj. R^2	-0.00	0.05	0.05			
χ^2 interactions jointly=0 (p-value)			0.46			0.48

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level The outcome variable is an indicator variable equal to 1 if the household change the municipality of residence between MxFLS-2 and MxFLS-3. A few observations are dropped in the probit specifications because Stata watches for "two-way causation", that is, a variable that perfectly determines the outcome, both successes and failures, and it is the case for some of the included fixed effects.

B.4 Household Resources and Wealth Instrument

Table B7: Effect of Homicide Rates on Total Household Expenditure Controlling by Municipality Characteristics

	(1)	(2)	(3)	(4)
$\sqrt[4]{}$ Homicide rate last 12 months	-0.014	-0.022	-0.022	-0.032
	(0.025)	(0.027)	(0.027)	(0.032)
Gini index	-1.369*	-1.449*	-1.395	-0.389
	(0.776)	(0.847)	(0.850)	(0.890)
Food poverty index	-4.494	-7.654*	-7.233*	-10.504**
	(3.814)	(4.167)	(4.206)	(4.480)
Capacities poverty index	5.924	9.717*	9.314*	13.636**
	(4.794)	(5.217)	(5.271)	(6.048)
Assets poverty index	-1.400	-2.384	-2.403	-3.777*
	(1.586)	(1.663)	(1.708)	(2.175)
% Manufacturing employment		-0.163	-0.238	-0.184
		(0.632)	(0.632)	(0.782)
% Commerce employment		0.096	0.034	-0.589
		(0.969)	(0.983)	(1.021)
% Services employment		-0.928	-0.899	-0.979
		(0.561)	(0.550)	(0.686)
% of rural population			-0.703***	-0.547*
			(0.235)	(0.303)
log(total electricity consumption)				0.097***
				(0.029)
Household controls	✓	✓	✓	✓
Month and year of interview FE	✓	✓	✓	✓
Household FE	✓	✓	✓	✓
Observations	7,392	7,226	7,088	4,517
adj. R^2	0.15	0.15	0.16	0.17

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level. The outcome variable is the logarithm of total household expenditure on non-durable goods. Household controls include wife's and husband's age, wife's and husband's age squared, and number of household members by gender and age group. The municipality-level controls are the following: share of manufacturing, commerce, and services employment, share of rural population, Gini index, food poverty index, assets poverty index, and capacities poverty index. Sources: Population Census, Federal Electricity Commission, ENIGH, Technical Committee on Poverty Measurement. The three poverty measures are monetary poverty measures.

Wealth instrument: Households are assumed to engage in two-step budgeting. They first decide how much to allocate in each period t and then how the total expenditure is allocated within the current period (Chiappori and Mazzocco 2017). This assumption raises endogeneity concerns if we worry about households' time preferences being potentially correlated with unobserved preference heterogeneity. Additionally, recall bias and other types of non-random measurement error are a common concern when dealing with self-reported expenditure data.

The wealth instrument is constructed by taking the natural logarithm of the monetary value of the assets owned by the household. The MxFLS records households' assets by first asking, "Do/are you or any household member own [...]/owner of [...]?" If yes, it records a monetary value by asking, "What is the value of the [...]?"or "in case you had to sell, how much approximately would you ask for the [...]?" or "in case you had to buy an equivalent [...], approximately how much would it cost?" The wealth instrument is built by taking the natural logarithm of the monetary value of all the following household assets: dwelling occupied by this household (including the land), other dwelling/building/real state/land/plot/agricultural/cattle or forest land, bicycles, motorcycles/trucks/cars/any other motorized vehicle, electronic devices (radio, TV, VCR, DVD player, computer, etc.), washer and dryer, stove, refrigerator, furniture, appliance (iron, blender, microwave, toaster, etc.), savings, financial assets, stocks, checking accounts, AFORES, coins and others, tractor/other machinery or equipment, livestock (cows, bulls, horses, pigs, chickens, etc.), other assets.

Table B8 reports the results of the first-stage regressions. The instrument has the expected positive effect on total expenditure and is highly predictive (F statistic of 49). The first stage is also strong when we include the square of the wealth instrument, which I use when testing the validity of the linear specification in section 4.6.4. Given the selection of time-varying controls by double-lasso, the actual set of household controls in each first stage will vary by good category.

Table B8: First-Stage Regression for Total Household Expenditure

	ln(total expenditure)					
	(1)	(2)	(3)	(4)	(5)	(6)
ln(Wealth instrument)	0.084***	0.060***	0.030***	-0.121***	-0.089***	-0.013
	(0.005)	(0.004)	(0.004)	(0.014)	(0.012)	(0.012)
ln(Wealth instrument)^2				0.013***	0.010***	0.003***
				(0.001)	(0.001)	(0.001)
Wife's age		0.003	0.105***		-0.001	0.101***
		(0.007)	(0.021)		(0.007)	(0.021)
Husband's age		0.019***			0.014**	
		(0.007)			(0.007)	
Wife's age squared		0.000	-0.000		0.000	-0.000
		(0.000)	(0.000)		(0.000)	(0.000)
Husband's age squared		-0.000**	-0.000		-0.000**	-0.000
		(0.000)	(0.000)		(0.000)	(0.000)
Wife's secondary		0.283***			0.245***	
		(0.021)			(0.020)	
Husband's secondary		0.241***			0.213***	
		(0.023)			(0.022)	
Rural locality		-0.258***			-0.238***	
		(0.034)			(0.032)	
# HH members by gender and age group		✓	✓		✓	✓
Household FE			✓			✓
Year FE	✓	✓	✓	✓	✓	✓
Month FE	✓	✓	✓	✓	✓	✓
F instrument total expenditure	238.91	200.82	48.87	76.72	53.95	37.52
p-value instrument total expenditure	0.00	0.00	0.00	0.00	0.00	0.00
N	7,430	7,430	7,430	7,430	7,430	7,430
adj. R^2	0.15	0.30	0.16	0.22	0.33	0.16

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at municipality level.

B.5 Municipality Prices

Tables B9 and B10 present the results of the following specification:

$$\ln(p_{jt}^k) = \delta_j^k + \lambda_t^k + \beta^k H_{jt} + \pi_{st}^k + \varepsilon_{jt}^k, \quad \text{(B2)}$$

where $\ln(p_{jt}^k)$ is the logarithm of the median price of good k on municipality j and survey wave t. The prices come from a community questionnaire collected by the MxFLS survey that collects market price data from a variety of shops distributed across the municipality.

Table B9: Effects of Homicide Rates on Market Prices

	Food		Male clothing		Female clothing		Child clothing		Other HH goods	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$\sqrt[4]{}$ Homicide rate last 12 months	-0.039**	-0.015	-0.025	-0.032	-0.082**	-0.048	-0.003	0.025	-0.093**	-0.047
	(0.017)	(0.026)	(0.072)	(0.092)	(0.041)	(0.045)	(0.030)	(0.037)	(0.042)	(0.047)
_cons	2.218***	2.182***	5.109***	4.661***	5.116***	5.172***	4.946***	4.993***	2.866***	2.886***
	(0.023)	(0.043)	(0.105)	(0.216)	(0.059)	(0.064)	(0.041)	(0.097)	(0.057)	(0.090)
Municipality FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
State-Survey FE		✓		✓		✓		✓		✓
Y mean	2.38	2.38	4.64	4.64	5.05	5.05	5.12	5.12	2.79	2.79
Observations	255	255	251	251	236	236	235	235	255	255
adj. R^2	0.88	0.91	0.69	0.75	0.12	0.41	0.63	0.75	0.17	0.44

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level. The outcome variable is the logarithm of the median municipality price.

Table B10: Effects of Homicide Rates on Food Market Prices

	Fruit & Veg.		Cereals & Grains		Meat & Dairy		Other food	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$\sqrt[4]{}$ Homicide rate last 12 months	0.001	0.006	-0.014	-0.025	-0.060	-0.022	-0.055**	-0.053**
	(0.019)	(0.031)	(0.021)	(0.031)	(0.039)	(0.045)	(0.024)	(0.027)
_cons	1.979***	2.151***	1.880***	1.867***	3.717***	3.588***	2.136***	2.140***
	(0.027)	(0.046)	(0.029)	(0.051)	(0.052)	(0.078)	(0.031)	(0.036)
Municipality FE	✓	✓	✓	✓	✓	✓	✓	✓
State-Survey FE		✓		✓		✓		✓
Y mean	2.27	2.27	2.07	2.07	3.71	3.71	2.24	2.24
Observations	254	254	255	255	253	253	255	255
adj. R^2	0.88	0.92	0.88	0.90	0.20	0.34	0.90	0.92

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level. The outcome variable is the logarithm of the median municipality price.

B.6 Engel Curves: Additional Analysis and Robustness Checks

Table B11: Engel Curves: Coefficients on Log Expenditure

	(1)	(2)	(3)	(4)	(5)	(6)
Food	–17.49***	–17.49***	–17.25***	–17.25***	–17.92***	–17.92***
	(3.78)	(3.79)	(3.69)	(3.70)	(3.77)	(3.75)
Drinks and Tobacco	–0.13	–0.13	–0.15	–0.15	0.01	0.01
	(0.86)	(0.87)	(0.85)	(0.85)	(0.79)	(0.80)
Male adult clothing	1.31***	1.31***	1.28***	1.28***	1.31***	1.31***
	(0.44)	(0.44)	(0.44)	(0.44)	(0.48)	(0.48)
Female adult clothing	1.21*	1.18*	1.18*	1.14*	1.19*	1.16*
	(0.67)	(0.69)	(0.67)	(0.69)	(0.63)	(0.65)
Children goods	1.02	1.02	1.00	1.00	0.96	0.96
	(0.77)	(0.77)	(0.75)	(0.75)	(0.80)	(0.80)
Hygiene and care	–1.17	–1.17	–0.74	–0.74	–0.89	–0.89
	(1.13)	(1.14)	(1.01)	(1.02)	(1.36)	(1.36)
Other household goods	3.49	3.49	3.15	3.16	3.45	3.47
	(2.21)	(2.21)	(2.21)	(2.19)	(2.21)	(2.19)
Transportation	7.33***	7.33***	7.54***	7.54***	7.39***	7.39***
	(2.15)	(2.17)	(2.12)	(2.14)	(2.19)	(2.19)
Health	1.14	1.14	1.07	1.07	1.07	1.07
	(0.80)	(0.82)	(0.79)	(0.80)	(0.82)	(0.81)
Education	0.66	0.66	0.42	0.42	0.35	0.35
	(0.68)	(0.68)	(0.68)	(0.67)	(0.72)	(0.73)
Recreation	2.24*	2.24*	2.05*	2.05*	2.60**	2.60**
	(1.21)	(1.22)	(1.20)	(1.21)	(1.30)	(1.29)
Gambling	0.24	0.24	0.24	0.24	0.25	0.25
	(0.17)	(0.17)	(0.16)	(0.16)	(0.17)	(0.17)
Double Lasso	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓	✓
Instrument expenditure	✓	✓	✓	✓	✓	✓
Price proxy		✓		✓		✓
Excluding top 1% expenditure			✓	✓		
Excluding migrants					✓	✓
Observations	7,430	7,430	7,366	7,366	7,176	7,176

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Table B11 reports $\hat{\beta}^k$ on $\ln(y)$ of each demand equation (7). Estimates are based on a control-function approach bootstrapping standard errors (500 replications) clustered at the municipality level. The dependent variables are budget shares of household goods, defined as the expenditure on that good divided by total household expenditure multiplied by 100.

Table B12: Expenditure Elasticities

	Elasticity	90% Confidence Interval Lower bound	Upper bound
Food	0.69	0.58	0.80
Drinks and Tobacco	0.96	0.53	1.39
Male adult clothing	1.96	1.43	2.50
Female adult clothing	1.85	1.08	2.62
Children goods	1.52	0.88	2.16
Hygiene and care	0.80	0.49	1.12
Other household goods	1.26	0.99	1.53
Transportation	1.76	1.39	2.13
Health	1.70	0.89	2.50
Education	1.26	0.82	1.70
Recreation	1.95	1.11	2.80
Gambling	4.67	0.54	8.80

Notes: The elasticities are calculated as $1+\frac{\beta^k}{W^k}$, with W^k equal to the average budget share for good k across the two survey waves. The estimates come from column (1) of Table B11.

Table B13: Effect of Homicide Rates on Food Type Expenditure Shares

	(1)	(2)	(3)	(4)	(5)	(6)
Fruit & Veg.	–0.29	–0.29	–0.29	–0.29	–0.31	–0.31
	(0.23)	(0.23)	(0.23)	(0.23)	(0.24)	(0.24)
Cereals & Grains	–0.23	–0.23	–0.25	–0.25	–0.22	–0.22
	(0.27)	(0.27)	(0.27)	(0.27)	(0.29)	(0.29)
Meat & Dairy	–0.43	–0.43	–0.48	–0.48	–0.51	–0.51
	(0.40)	(0.40)	(0.40)	(0.40)	(0.42)	(0.42)
Other food	–0.16	–0.15	–0.16	–0.16	–0.14	–0.14
	(0.19)	(0.19)	(0.19)	(0.19)	(0.21)	(0.21)
Drinks and Tobacco	0.02	0.02	0.01	0.01	0.03	0.03
	(0.13)	(0.13)	(0.14)	(0.14)	(0.14)	(0.14)
Male adult clothing	0.25***	0.25***	0.25***	0.25***	0.26***	0.26***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Female adult clothing	0.04	0.04	0.04	0.04	0.04	0.04
	(0.07)	(0.08)	(0.07)	(0.08)	(0.07)	(0.07)
Children goods	–0.15	–0.15	–0.13	–0.13	–0.14	–0.14
	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)
Hygiene and care	–0.38*	–0.38*	–0.42**	–0.42**	–0.42**	–0.42**
	(0.20)	(0.20)	(0.19)	(0.19)	(0.19)	(0.19)
Other household goods	0.23	0.23	0.24	0.18	0.28	0.22
	(0.30)	(0.30)	(0.31)	(0.31)	(0.30)	(0.32)
Transportation	0.58*	0.58*	0.66**	0.66*	0.61*	0.61*
	(0.34)	(0.34)	(0.33)	(0.34)	(0.33)	(0.33)
Health	0.15	0.15	0.15	0.15	0.16	0.16
	(0.18)	(0.18)	(0.18)	(0.18)	(0.19)	(0.19)
Education	0.08	0.08	0.06	0.06	0.09	0.09
	(0.12)	(0.12)	(0.12)	(0.12)	(0.13)	(0.13)
Recreation	0.18	0.18	0.19	0.19	0.17	0.17
	(0.20)	(0.19)	(0.19)	(0.18)	(0.21)	(0.21)
Gambling	0.06	0.06*	0.06	0.06	0.06	0.06
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Double Lasso	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓	✓
Instrument expenditure	✓	✓	✓	✓	✓	✓
Price proxy		✓		✓		✓
Excluding top 1% expenditure			✓	✓		
Excluding migrants					✓	✓
Observations	7,430	7,430	7,366	7,366	7,176	7,176

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. This Table reports coefficient $\hat{\gamma}^k$ on the quartic of the homicide rate in 100,000 of each equation (7). Estimates are based on a control-function approach bootstrapping standard errors (500 replications) clustered at the municipality level. The dependent variables are budget shares of household goods, defined as the expenditure on that good divided by total household expenditure multiplied by 100.

Table B14: Effect of Homicide Rates on Hygiene Expenditure Shares

	(1)	(2)	(3)	(4)	(5)	(6)
Food	–1.10*	–1.10*	–1.17**	–1.17**	–1.16**	–1.16**
	(0.56)	(0.56)	(0.56)	(0.56)	(0.58)	(0.58)
Drinks and Tobacco	0.02	0.02	0.01	0.01	0.03	0.03
	(0.13)	(0.13)	(0.14)	(0.14)	(0.14)	(0.14)
Male adult clothing	0.25***	0.25***	0.25***	0.25***	0.26***	0.26***
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Female adult clothing	0.04	0.04	0.04	0.04	0.04	0.04
	(0.07)	(0.08)	(0.07)	(0.08)	(0.07)	(0.07)
Children goods	–0.15	–0.15	–0.13	–0.13	–0.14	–0.14
	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)	(0.15)
Household hygiene and care	–0.20	–0.20	–0.23	–0.23	–0.24	–0.15
	(0.14)	(0.14)	(0.14)	(0.14)	(0.15)	(0.15)
Male care goods	–0.09*	–0.10	–0.09	–0.10	–0.10*	–0.12*
	(0.05)	(0.06)	(0.06)	(0.06)	(0.05)	(0.06)
Female care goods	–0.06	–0.06	–0.06	–0.06	–0.06	–0.01
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)	(0.08)
Other household goods	0.23	0.23	0.24	0.18	0.28	0.22
	(0.30)	(0.30)	(0.31)	(0.31)	(0.30)	(0.32)
Transportation	0.58*	0.58*	0.66**	0.66*	0.61*	0.61*
	(0.34)	(0.34)	(0.33)	(0.34)	(0.33)	(0.33)
Health	0.15	0.15	0.15	0.15	0.16	0.16
	(0.18)	(0.18)	(0.18)	(0.18)	(0.19)	(0.19)
Education	0.08	0.08	0.06	0.06	0.09	0.09
	(0.12)	(0.12)	(0.12)	(0.12)	(0.13)	(0.13)
Recreation	0.18	0.18	0.19	0.19	0.17	0.17
	(0.20)	(0.19)	(0.19)	(0.18)	(0.21)	(0.21)
Gambling	0.06	0.06*	0.06	0.06	0.06	0.06
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Double Lasso	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓	✓
Instrument expenditure	✓	✓	✓	✓	✓	✓
Price proxy		✓		✓		✓
Excluding top 1% expenditure			✓	✓		
Excluding migrants					✓	✓
Observations	7,430	7,430	7,366	7,366	7,176	7,176

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. This Table reports coefficient $\hat{\gamma}^k$ on the quartic of the homicide rate in 100,000 of each equation (7). Estimates are based on a control-function approach bootstrapping standard errors (500 replications) clustered at the municipality level. The dependent variables are budget shares of household goods, defined as the expenditure on that good divided by total household expenditure multiplied by 100.

Table B15: Effect of Homicide Rates on Expenditure Shares: MxFLS Wave 1 and Wave 2 Placebo Test

	(1)	(2)	(3)	(4)	(5)	(6)
Food	1.78**	1.66**	1.70**	1.66**	1.89**	1.75**
	(0.83)	(0.82)	(0.82)	(0.82)	(0.82)	(0.82)
Drinks and Tobacco	–0.35*	–0.36*	–0.24	–0.36*	–0.35*	–0.36*
	(0.20)	(0.20)	(0.17)	(0.20)	(0.20)	(0.20)
Male adult clothing	–0.14	–0.14	–0.15	–0.14	–0.15	–0.15
	(0.11)	(0.11)	(0.11)	(0.11)	(0.12)	(0.12)
Female adult clothing	–0.11	–0.10	–0.12	–0.10	–0.11	–0.10
	(0.11)	(0.11)	(0.11)	(0.11)	(0.11)	(0.12)
Children goods	–0.29*	–0.26	–0.30*	–0.26	–0.29*	–0.27
	(0.18)	(0.18)	(0.18)	(0.18)	(0.17)	(0.17)
Hygiene and care	0.02	0.02	0.05	0.02	0.03	0.03
	(0.22)	(0.22)	(0.20)	(0.22)	(0.23)	(0.23)
Other household goods	–0.58	–0.54	–0.54	–0.54	–0.59	–0.55
	(0.49)	(0.50)	(0.50)	(0.50)	(0.46)	(0.47)
Transportation	–0.27	–0.22	–0.30	–0.22	–0.30	–0.25
	(0.55)	(0.54)	(0.54)	(0.54)	(0.55)	(0.55)
Health	0.18	0.21	0.12	0.21	0.18	0.21
	(0.27)	(0.28)	(0.26)	(0.28)	(0.27)	(0.27)
Education	–0.29**	–0.29**	–0.29**	–0.29**	–0.29**	–0.29**
	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)	(0.12)
Recreation	–0.01	–0.07	–0.02	–0.07	–0.02	–0.08
	(0.19)	(0.19)	(0.19)	(0.19)	(0.19)	(0.20)
Gambling	–0.00	–0.01	–0.01	–0.01	–0.01	–0.01
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Double Lasso	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓	✓
Instrument expenditure	✓	✓	✓	✓	✓	✓
Price proxy		✓		✓		✓
Excluding top 1% expenditure			✓	✓		
Excluding migrants					✓	✓
Observations	7,886	7,886	7,804	7,886	7,862	7,862

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. This Table reports coefficient $\hat{\gamma}^k$ on the quartic of the homicide rate in 100,000 of each equation (7) using data from MxFLS-1 and MxFLS-2 and the homicide rate of the subsequent survey wave. Estimates are based on a control-function approach bootstrapping standard errors (500 replications) clustered at the municipality level. The dependent variables are budget shares of household goods, defined as the expenditure on that good divided by total household expenditure multiplied by 100.

Table B16: Effect of Homicide Rates on Expenditure Shares: Municipality Economic Controls

	(1)	(2)	(3)	(4)	(5)	(6)
Food	–1.06	–1.04*	–1.09*	–1.14*	–1.12*	–1.10*
	(0.67)	(0.61)	(0.66)	(0.60)	(0.68)	(0.59)
Drinks and Tobacco	0.03	0.06	0.02	0.05	0.05	0.08
	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)	(0.14)
Male adult clothing	0.27***	0.23***	0.27***	0.23***	0.29***	0.25***
	(0.09)	(0.08)	(0.09)	(0.08)	(0.10)	(0.08)
Female adult clothing	0.09	0.05	0.08	0.05	0.09	0.04
	(0.09)	(0.08)	(0.09)	(0.08)	(0.09)	(0.07)
Children goods	–0.14	–0.16	–0.13	–0.15	–0.14	–0.16
	(0.14)	(0.15)	(0.14)	(0.15)	(0.14)	(0.16)
Hygiene and care	–0.37	–0.37*	–0.41*	–0.41**	–0.40*	–0.41**
	(0.24)	(0.20)	(0.23)	(0.20)	(0.24)	(0.20)
Other household goods	0.25	0.14	0.25	0.15	0.27	0.18
	(0.37)	(0.31)	(0.37)	(0.32)	(0.37)	(0.31)
Transportation	0.43	0.53	0.52	0.65*	0.48	0.61*
	(0.40)	(0.37)	(0.39)	(0.36)	(0.40)	(0.33)
Health	0.16	0.15	0.17	0.17	0.17	0.15
	(0.21)	(0.18)	(0.21)	(0.18)	(0.21)	(0.18)
Education	0.14	0.06	0.11	0.08	0.14	0.06
	(0.13)	(0.13)	(0.13)	(0.12)	(0.13)	(0.12)
Recreation	0.12	0.17	0.16	0.19	0.12	0.15
	(0.23)	(0.21)	(0.22)	(0.20)	(0.23)	(0.22)
Gambling	0.06	0.07	0.06	0.07	0.06	0.07
	(0.05)	(0.04)	(0.05)	(0.04)	(0.05)	(0.05)
Municipality controls	✓	✓	✓	✓	✓	✓
Double Lasso		✓		✓		✓
Survey FE	✓	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓	✓
Instrument expenditure	✓	✓	✓	✓	✓	✓
Excluding top 1% expenditure			✓	✓		
Excluding migrants					✓	✓
Observations	7,088	7,088	7,036	7,036	6,846	6,846

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. This Table reports coefficient $\hat{\gamma}^k$ on the quartic of the homicide rate in 100,000 of each equation (7). Estimates are based on a control-function approach bootstrapping standard errors (500 replications) clustered at the municipality level. The dependent variables are budget shares of household goods, defined as the expenditure on that good divided by total household expenditure multiplied by 100. The municipality-level controls are the following: share of manufacturing, commerce, and services employment, share of rural population, Gini index, food poverty index, assets poverty index, and capacities poverty index. Sources: Population Census, Federal Electricity Commission, ENIGH, Technical Committee on Poverty Measurement. The three poverty measures are monetary poverty measures. Capacities poverty is defined as the lack of sufficient household resources to maintain expenditures on a minimum diet, education, and health care. Assets poverty expands the notion of capabilities poverty to include households that cannot afford clothing, housing, energy, and transportation expenditures.

Table B17: Effect of Homicide Rates on Expenditure Shares: Familywise Error Rate p-values

	(1)	(2)	(3)	(4)	(5)	(6)
Food	–1.10**	–1.10**	–1.17**	–1.17**	–1.16**	–1.16**
	(0.03)	(0.03)	(0.02)	(0.02)	(0.02)	(0.02)
Drinks and Tobacco	0.02	0.02	0.01	0.01	0.03	0.03
	(0.89)	(0.89)	(0.95)	(0.95)	(0.85)	(0.85)
Female adult clothing	0.04	0.04	0.04	0.04	0.04	0.04
	(0.54)	(0.54)	(0.58)	(0.59)	(0.62)	(0.63)
Male adult clothing	0.25***	0.25***	0.25***	0.25***	0.26***	0.26***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Children goods	–0.15	–0.15	–0.13	–0.13	–0.14	–0.14
	(0.33)	(0.33)	(0.38)	(0.38)	(0.37)	(0.37)
Education	0.08	0.08	0.06	0.06	0.09	0.09
	(0.50)	(0.50)	(0.60)	(0.60)	(0.45)	(0.45)
Health	0.15	0.15	0.15	0.15	0.16	0.16
	(0.38)	(0.38)	(0.37)	(0.37)	(0.35)	(0.35)
Transportation	0.58*	0.58*	0.66**	0.66**	0.61*	0.61*
	(0.08)	(0.08)	(0.05)	(0.05)	(0.07)	(0.07)
Hygiene and care	–0.38*	–0.38*	–0.42**	–0.42**	–0.42**	–0.42**
	(0.05)	(0.05)	(0.03)	(0.03)	(0.03)	(0.03)
Other household goods	0.23	0.23	0.24	0.18	0.28	0.22
	(0.42)	(0.42)	(0.40)	(0.53)	(0.30)	(0.41)
Recreation	0.18	0.18	0.19	0.19	0.17	0.17
	(0.37)	(0.37)	(0.31)	(0.31)	(0.41)	(0.41)
Gambling	0.06	0.06	0.06	0.06	0.06	0.06
	(0.34)	(0.34)	(0.34)	(0.34)	(0.36)	(0.36)
Double Lasso	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓	✓
Instrument expenditure	✓	✓	✓	✓	✓	✓
Price proxy		✓		✓		✓
Excluding top 1% expenditure			✓	✓		
Excluding migrants					✓	✓
Observations	7,430	7,430	7,366	7,366	7,176	7,176

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. p-values, in parentheses, are calculated controlling for the familywise error rate (FWER), this is the probability of making any type I error across the 12 equations. The procedure allows for p-values to be correlated across specifications using a bootstrapping approach (3,000 replications) and clustering errors at the municipality level. Calculations use the *mhtreg* Stata package developed by Andreas Steinmayr, LMU Munich. This Table reports coefficient $\hat{\gamma}^k$ on the quartic of the homicide rate in 100,000 of each equation (7).

Table B18: Effect of Homicide Rates on Expenditure Shares: Transformations of Homicide Rates

	(1)	(2)	(3)	(4)	(5)	(6)
	log (Hom. rate)			IHS (Hom. rate)		
Food	–0.69*	–0.73*	–0.75*	–0.33*	–0.37*	–0.38*
	(0.39)	(0.39)	(0.41)	(0.20)	(0.19)	(0.20)
Drinks and Tobacco	0.03	0.02	0.04	0.01	0.01	0.02
	(0.09)	(0.09)	(0.09)	(0.04)	(0.05)	(0.05)
Male adult clothing	0.18***	0.18***	0.19***	0.09***	0.09***	0.09***
	(0.06)	(0.06)	(0.06)	(0.03)	(0.03)	(0.03)
Female adult clothing	0.04	0.04	0.04	0.02	0.02	0.02
	(0.05)	(0.05)	(0.05)	(0.03)	(0.03)	(0.02)
Children goods	–0.12	–0.11	–0.12	–0.06	–0.05	–0.06
	(0.10)	(0.10)	(0.10)	(0.05)	(0.05)	(0.05)
Hygiene and care	–0.28**	–0.31**	–0.31**	–0.14**	–0.16**	–0.16**
	(0.13)	(0.13)	(0.12)	(0.06)	(0.06)	(0.06)
Other household goods	0.16	0.17	0.20	0.08	0.08	0.10
	(0.21)	(0.21)	(0.21)	(0.10)	(0.11)	(0.11)
Transportation	0.32	0.36	0.34	0.16	0.18	0.17
	(0.23)	(0.23)	(0.23)	(0.12)	(0.12)	(0.11)
Health	0.12	0.13	0.13	0.05	0.06	0.06
	(0.12)	(0.12)	(0.12)	(0.06)	(0.06)	(0.06)
Education	0.04	0.03	0.05	0.02	0.02	0.02
	(0.08)	(0.08)	(0.09)	(0.04)	(0.04)	(0.05)
Recreation	0.13	0.14	0.13	0.06	0.07	0.06
	(0.13)	(0.12)	(0.14)	(0.06)	(0.06)	(0.07)
Gambling	0.04*	0.04*	0.04	0.02*	0.02*	0.02
	(0.02)	(0.02)	(0.03)	(0.01)	(0.01)	(0.01)
Double Lasso	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓	✓
Instrument expenditure	✓	✓	✓	✓	✓	✓
Excluding top 1% expenditure		✓			✓	
Excluding migrants			✓			✓
Observations	7,430	7,366	7,176	7,430	7,366	7,176

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. This Table reports the different coefficient $\hat{\gamma}^k$ on the several transformations of the homicide rate in 100,000 of each equation (7). Estimates are based on a control-function approach bootstrapping standard errors (500 replications) clustered at the municipality level. The dependent variables are budget shares of household goods, defined as the expenditure on that good divided by total household expenditure multiplied by 100.

Table B19: Effect of Homicide Rates on Expenditure Shares: QUAIDS

	(1)	(2)	(3)
Food	–1.08*	–1.16**	–1.14**
	(0.55)	(0.55)	(0.56)
Drinks and Tobacco	0.02	0.00	0.02
	(0.13)	(0.14)	(0.14)
Male adult clothing	0.25***	0.26***	0.27***
	(0.08)	(0.08)	(0.08)
Female adult clothing	0.04	0.04	0.03
	(0.07)	(0.07)	(0.07)
Children goods	–0.15	–0.14	–0.15
	(0.15)	(0.15)	(0.15)
Hygiene and care	–0.38*	–0.41**	–0.42**
	(0.19)	(0.19)	(0.19)
Other household goods	0.23	0.24	0.28
	(0.30)	(0.31)	(0.30)
Transportation	0.56	0.64*	0.59*
	(0.35)	(0.34)	(0.33)
Health	0.15	0.16	0.16
	(0.18)	(0.18)	(0.19)
Education	0.07	0.06	0.08
	(0.12)	(0.12)	(0.12)
Recreation	0.19	0.20	0.17
	(0.19)	(0.18)	(0.20)
Gambling	0.06	0.06	0.06
	(0.04)	(0.04)	(0.04)
Double Lasso	✓	✓	✓
Survey FE	✓	✓	✓
Household FE	✓	✓	✓
Instrument expenditure	✓	✓	✓
Excluding top 1% expenditure		✓	
Excluding migrants			✓
Observations	7,430	7,366	7,176

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. This Table reports coefficient $\hat{\gamma}^k$ on the quartic of the homicide rate in 100,000 of each equation (7) augmented with $\ln(y)^2$. Estimates are based on a control-function approach bootstrapping standard errors (500 replications) clustered at the municipality level. The dependent variables are budget shares of household goods, defined as the expenditure on that good divided by total household expenditure multiplied by 100.

Table B20: Effect of Homicide Rates on Expenditure Shares: Alternative Household Types

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Food	–1.01*	–1.03*	–1.01*	–1.30**	–1.30**	–0.98*	–0.98*
	(0.56)	(0.55)	(0.52)	(0.63)	(0.63)	(0.51)	(0.51)
Drinks and Tobacco	0.02	–0.01	–0.00	–0.01	–0.01	0.05	0.05
	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)	(0.13)
Male adult clothing	0.24***	0.26***	0.25***	0.28***	0.28***	0.23***	0.23***
	(0.08)	(0.08)	(0.08)	(0.09)	(0.09)	(0.07)	(0.07)
Female adult clothing	0.05	0.05	0.05	0.06	0.06	0.06	0.06
	(0.08)	(0.07)	(0.07)	(0.09)	(0.09)	(0.07)	(0.07)
Children goods	–0.12	–0.13	–0.13	–0.11	–0.11	–0.07	–0.05
	(0.15)	(0.15)	(0.15)	(0.19)	(0.19)	(0.14)	(0.13)
Hygiene and care	–0.38**	–0.39**	–0.38**	–0.37*	–0.37*	–0.46**	–0.46**
	(0.19)	(0.19)	(0.19)	(0.20)	(0.20)	(0.18)	(0.18)
Other household goods	0.19	0.16	0.15	0.53*	0.53*	0.25	0.25
	(0.30)	(0.28)	(0.27)	(0.32)	(0.32)	(0.27)	(0.27)
Transportation	0.56	0.61*	0.61*	0.29	0.29	0.42	0.42
	(0.35)	(0.33)	(0.34)	(0.37)	(0.37)	(0.29)	(0.29)
Health	0.14	0.13	0.13	0.24	0.24	0.24	0.24
	(0.18)	(0.17)	(0.17)	(0.21)	(0.21)	(0.16)	(0.16)
Education	0.07	0.07	0.06	0.07	0.07	0.08	0.08
	(0.12)	(0.11)	(0.12)	(0.14)	(0.14)	(0.09)	(0.10)
Recreation	0.17	0.18	0.20	0.20	0.20	0.09	0.09
	(0.20)	(0.19)	(0.19)	(0.23)	(0.23)	(0.18)	(0.18)
Gambling	0.06	0.06	0.06	0.08	0.08	0.06*	0.06*
	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)	(0.03)	(0.03)
Includes always household composition controls	✓						
No offspring restriction in MxFLS-3		✓	✓				
Nuclear households				✓	✓		
All households						✓	✓
Double Lasso	✓	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓	✓	✓
Instrument expenditure	✓	✓	✓	✓	✓	✓	✓
Price proxy			✓		✓		✓
Observations	7,430	7,706	7,706	5,834	5,834	8,834	8,834

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. This Table reports coefficient $\hat{\gamma}^k$ on the quartic of the homicide rate in 100,000 of each equation (7). Estimates are based on a control-function approach bootstrapping standard errors (500 replications) clustered at the municipality level. The dependent variables are budget shares of household goods, defined as the expenditure on that good divided by total household expenditure multiplied by 100.

B.7 Randomization-Based Inference

To analyze the likelihood that the main results could have occurred by chance, I generate randomness in the exposure to increased local violence and calculate randomization-based p-values (Athey and Imbens 2016; Young 2019). It consists on randomly reassigning increases in homicides, drawing values from the original distribution in the sample of interest. I then reestimate the main set of results and calculate what the coefficient of interest would have been under this

Table B21: Effect of Homicide Rates on Expenditure Shares (Excluding Old Households)

	(1)	(2)	(3)	(4)	(5)	(6)
Food	–0.97	–0.87	–1.09*	–0.96	–1.05	–0.90
	(0.60)	(0.67)	(0.60)	(0.67)	(0.64)	(0.75)
Drinks and Tob.	–0.08	–0.27	–0.08	–0.28	–0.07	–0.27
	(0.16)	(0.19)	(0.16)	(0.19)	(0.17)	(0.20)
Male adult clothing	0.25***	0.23**	0.26***	0.24**	0.27***	0.25***
	(0.08)	(0.09)	(0.08)	(0.09)	(0.08)	(0.09)
Female adult clothing	0.08	0.08	0.08	0.08	0.08	0.06
	(0.08)	(0.10)	(0.08)	(0.10)	(0.08)	(0.09)
Children goods	–0.22	–0.16	–0.20	–0.14	–0.22	–0.16
	(0.18)	(0.20)	(0.18)	(0.20)	(0.17)	(0.19)
Hygiene and care	–0.35*	–0.24	–0.39*	–0.29	–0.40*	–0.30
	(0.21)	(0.23)	(0.21)	(0.23)	(0.21)	(0.23)
Other household goods	0.33	0.11	0.37	0.13	0.39	0.20
	(0.31)	(0.36)	(0.32)	(0.36)	(0.33)	(0.36)
Transportation	0.55	0.78*	0.62	0.84**	0.57	0.78*
	(0.39)	(0.42)	(0.38)	(0.41)	(0.39)	(0.44)
Health	0.08	0.05	0.10	0.06	0.10	0.06
	(0.18)	(0.20)	(0.18)	(0.20)	(0.19)	(0.22)
Education	0.04	0.03	0.00	0.02	0.04	0.03
	(0.11)	(0.13)	(0.12)	(0.12)	(0.13)	(0.14)
Recreation	0.24	0.06	0.27	0.10	0.24	0.06
	(0.22)	(0.21)	(0.21)	(0.20)	(0.23)	(0.22)
Gambling	0.02*	0.02*	0.02*	0.02*	0.02	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Double Lasso	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓	✓
Instrument expenditure	✓	✓	✓	✓	✓	✓
Price proxy		✓		✓		✓
Excluding top 1% expenditure			✓	✓		
Excluding migrants					✓	✓
Observations	6,570	6,570	6,516	6,516	6,326	6,326

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Table 3 reports $\hat{\gamma}^k$ on the quartic of the homicide rate in 100,000 of each equation (7). Estimates are based on a control-function approach bootstrapping standard errors (500 replications) clustered at the municipality level. The dependent variables are budget shares of household goods, defined as the expenditure on that good divided by total household expenditure multiplied by 100. The sample is limited to households whose head and spouse's head were less than 60 years old at the MxFLS-2 survey.

new distribution of homicide rates. The observed outcome variables do not change for any unit under the null hypothesis, but the estimate of the coefficient on homicides does. I repeat the procedure 2,000 times.[26] The randomization-based p-value is the proportion of reassigned estimates at least as large in absolute value as the actual estimate. I plot the distribution of coefficient estimates in Figure B1. The vertical dashed line in each graph plots the estimated coefficient in the main specification. The p-values associated with these statistics, also reported in Figure B1 footnotes, are approximately 0.03 (food budget share), 0.03 (hygiene/personal care budget share), 0.001 (male adult clothing), 0.50 (female adult clothing), 0.08 (transportation), and 0.14 (children goods). These p-values indicate that the sharp null hypothesis—that the increase in homicides had no effect on households' expenditure shares among these good categories—should be rejected further confirming the main results.

[26] Young (2019) finds no appreciable changes in rejection rates after 2,000 repetitions.

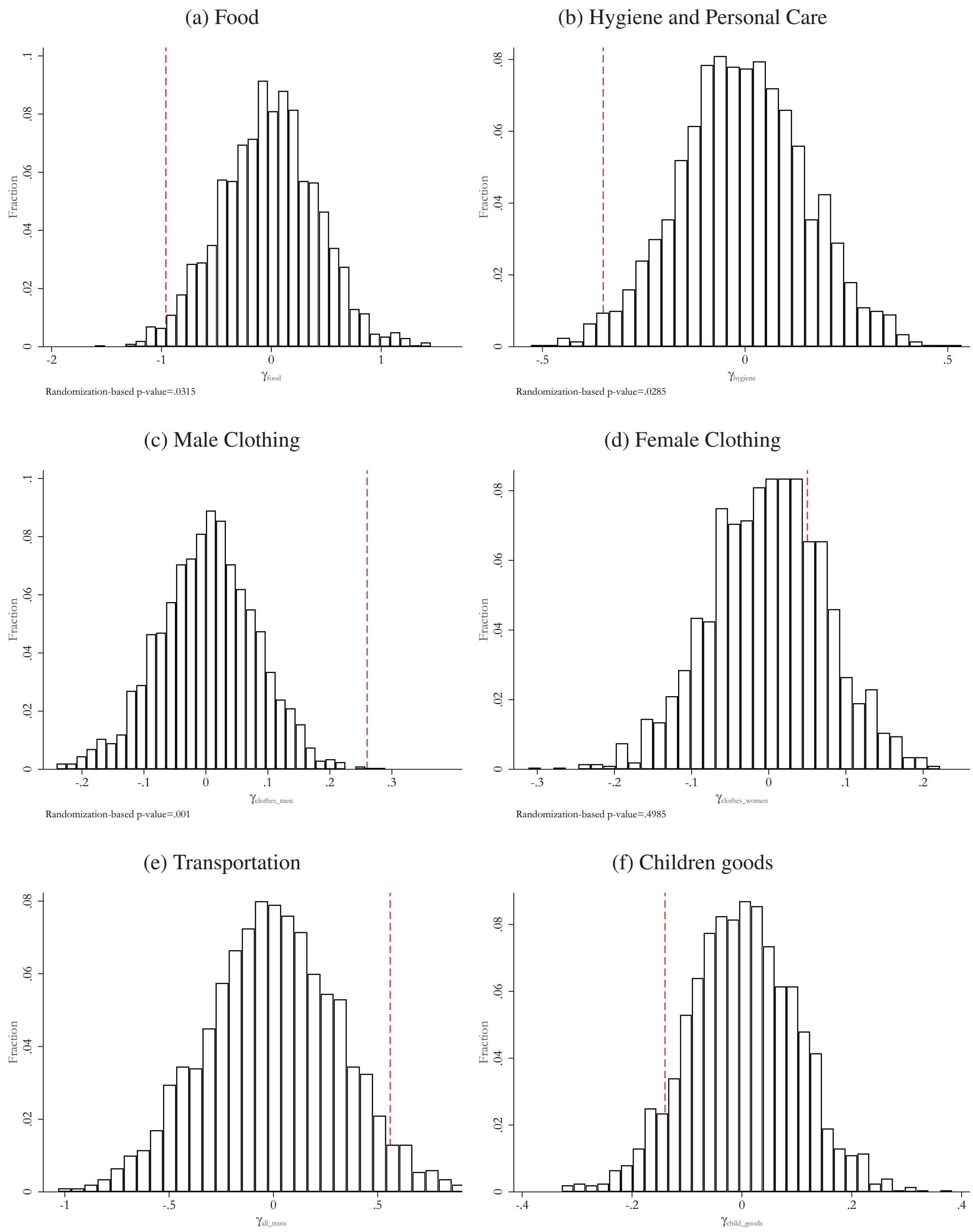


Figure B1: Randomization Inference of Homicide Rate's Effects on Expenditure Shares

Notes: These figures show the distribution of the homicides coefficients obtained from column (1) specification of Table 3 while randomly replacing the change in the quartic root of the municipality's homicide rate. The random reassignments come from the original distribution of homicide rates of the analytical sample. The red dashed line represents actual estimates from the main specification.

B.8 Potential Mechanisms

Table B22: Effect of Homicides on Household Composition

	Number Female					Number Male						
	0-6	7-11	12-18	18-55	+55	0-6	7-11	12-18	18-55	+55	HHsize	Log(hhsize)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$\sqrt[4]{\text{Homicide rate last 12 months}}$	-0.010	0.025	-0.019	-0.009	0.001	0.008	-0.032**	0.008	0.005	-0.001	-0.013	-0.003
	(0.012)	(0.018)	(0.017)	(0.015)	(0.006)	(0.011)	(0.016)	(0.016)	(0.016)	(0.005)	(0.026)	(0.004)
Intercept	4.668***	-0.470	-0.780	-0.685	1.154***	4.023***	1.108	-2.189***	0.022	0.466	3.750**	1.207***
	(0.748)	(0.580)	(0.756)	(0.864)	(0.279)	(1.219)	(0.828)	(0.763)	(1.138)	(0.417)	(1.551)	(0.256)
Household controls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Month and year of interview FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Observations	7,430	7,430	7,430	7,430	7,430	7,430	7,430	7,430	7,430	7,430	7,430	7,430
adj. R^2	0.23	0.02	0.03	0.03	0.10	0.22	0.01	0.02	0.02	0.11	0.16	0.17

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level. Columns (1)-(5) outcome variable is the number of female members in the corresponding age group living in the household. Columns (6)-(10) outcome variable is the number of male members in the corresponding age group living in the household. Columns (11) and (12) outcome variables are the number and logarithm of household size, respectively.

Table B23: Effect of Homicides on Male Labor Supply

	Husband Worked Last Week		Husband $\sqrt[4]{\text{Hours Worked Last 12 Months}}$		Household Men $\sqrt[4]{\text{Hours worked last 12 months}}$	
	(1)	(2)	(3)	(4)	(5)	(6)
$\sqrt[4]{\text{Homicide rate last 12 months}}$	-0.005	0.001	0.025	0.095	0.013	0.100
	(0.013)	(0.012)	(0.087)	(0.077)	(0.094)	(0.075)
Household controls	✓	✓	✓	✓	✓	✓
Month and year of interview FE	✓	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓	✓
Observations	6,364	5,317	6,078	5,123	5,308	4,517
adj. R^2	0.05	0.18	0.03	0.12	0.04	0.06

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level. Column (1)-(2) outcome variable is an indicator variable equal to 1 if the husband worked last week. Columns (3)-(4) outcome variable is the quartic root of the number hours worked by the husband in the last 12 months. Column (5)-(6) outcome variable is the quartic root of the number hours worked by all male members of the household in the last 12 months. Columns (2), (4), and (6) only include households whose husband reported positive hours worked during the MXFLS-2 survey.

Table B24: Effect of Homicides on Time Spent on Social Activities Outside the Household

	Wife			Husband		
	Extensive margin	# Hours	Quartic root hours	Extensive margin	# Hours	Quartic root hours
	(1)	(2)	(3)	(4)	(5)	(6)
$\sqrt[4]{}$ Homicide rate last 12 months	-0.017**	-0.068	-0.023*	-0.004	-0.008	-0.002
	(0.008)	(0.058)	(0.012)	(0.012)	(0.118)	(0.018)
Intercept	0.457	3.904	0.760	0.129	-0.005	0.171
	(0.535)	(2.980)	(0.799)	(0.837)	(7.157)	(1.405)
Household controls	✓	✓	✓	✓	✓	✓
Month and year of interview FE	✓	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓	✓
Observations	7,021	7,018	7,018	5,457	5,452	5,452
adj. R^2	0.00	0.01	0.01	0.01	0.00	0.01

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level. Column (1) outcome variable is an indicator variable equal to one if the respondent reported any hours participating in sports, cultural, or entertainment activities outside the household during the last week. Columns (2) and (3) outcome variables are the number of hours and the quartic root of the number of hours, respectively, participating in sports, cultural, or entertainment activities outside the household during the last week.

Table B25: Effect of Homicide Rates on $\sqrt[4]{}$ Household Earnings Last Year

	All household members	Husband	All male members	Wife	All female members
	(1)	(2)	(3)	(4)	(5)
$\sqrt[4]{}$ Homicide rate last 12 months	0.053	-0.289	0.018	-0.037	-0.060
	(0.292)	(0.233)	(0.308)	(0.135)	(0.203)
Household controls	✓	✓	✓	✓	✓
Month and year of interview FE	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓
Observations	7,430	6,437	5,568	6,433	5,553
adj. R^2	0.02	0.03	0.08	0.05	0.11

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level. Column (1) outcome variable is the quartic root of last year labor earnings of all household members above 14 years old. Columns (2) to (5) outcome variable is the equivalent when restricting the earnings by the husband head of the household, all male members of the household, the wife head, and all female members of the household, respectively.

Table B26: Effect of Homicide Rates on Expenditure Shares: Purchased versus Home Production/Gifts

	(1) Purchased	(2) HP/Gifts	(3) Purchased	(4) HP/Gifts	(5) Purchased	(6) HP/Gifts
Food	–0.88	–0.02	–0.92	–0.05	–0.94	–0.05
	(0.59)	(0.21)	(0.58)	(0.20)	(0.61)	(0.21)
Drinks and Tobacco	0.04	–0.02*	0.03	–0.02*	0.05	–0.02
	(0.14)	(0.01)	(0.14)	(0.01)	(0.14)	(0.01)
Male adult clothing	0.26***	–0.01	0.26***	–0.01	0.27***	–0.01
	(0.08)	(0.01)	(0.08)	(0.01)	(0.08)	(0.01)
Female adult clothing	0.05	–0.01	0.05	–0.01	0.05	–0.01
	(0.07)	(0.01)	(0.07)	(0.01)	(0.07)	(0.01)
Children goods	–0.10	–0.05*	–0.09	–0.05*	–0.09	–0.05*
	(0.14)	(0.03)	(0.14)	(0.03)	(0.13)	(0.03)
Hygiene and care	–0.38*		–0.42**		–0.42**	
	(0.20)		(0.19)		(0.19)	
Other household goods	0.23		0.24		0.28	
	(0.30)		(0.31)		(0.30)	
Transportation	0.37	–0.01	0.40	–0.01	0.41	–0.01
	(0.29)	(0.01)	(0.29)	(0.01)	(0.28)	(0.01)
Health	0.14	0.01	0.14	0.01	0.15	0.01
	(0.18)	(0.01)	(0.18)	(0.01)	(0.19)	(0.01)
Education	0.08		0.06		0.09	
	(0.12)		(0.12)		(0.13)	
Recreation	0.12		0.13		0.10	
	(0.16)		(0.16)		(0.17)	
Gambling	0.06		0.06		0.06	
	(0.04)		(0.04)		(0.04)	
Observations	3,715		3,683		3,588	
Double Lasso	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓	✓
Instrument expenditure	✓	✓	✓	✓	✓	✓
Price proxy		✓		✓		✓
Excluding top 1% expenditure			✓	✓		
Excluding migrants					✓	✓
Observations	.	7,430	.	7,366	.	7,176

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. This Table reports coefficient $\hat{\gamma}^k$ on the quartic of the homicide rate in 100,000 of each equation (7). Estimates are based on a control-function approach bootstrapping standard errors (500 replications) clustered at the municipality level. The dependent variables are budget shares of household goods, defined as the expenditure on that good divided by total household expenditure multiplied by 100.

Table B27: Effect of Homicide Rates on Expenditure Shares: Households with Same Respondent Across Survey Waves

	(1)	(2)	(3)	(4)	(5)	(6)
Food	–0.84	–0.84	–0.89	–0.89	–0.83	–0.83
	(0.66)	(0.66)	(0.67)	(0.67)	(0.67)	(0.67)
Drinks and Tobacco	–0.07	–0.30*	–0.08	–0.31*	–0.06	–0.29
	(0.16)	(0.17)	(0.16)	(0.17)	(0.17)	(0.18)
Male adult clothing	0.25***	0.25***	0.26***	0.26***	0.27***	0.27***
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Female adult clothing	0.07	0.07	0.08	0.08	0.08	0.08
	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
Children goods	–0.09	–0.09	–0.09	–0.09	–0.10	–0.10
	(0.16)	(0.16)	(0.16)	(0.16)	(0.17)	(0.17)
Hygiene and care	–0.41	–0.41	–0.46*	–0.46*	–0.45*	–0.45*
	(0.26)	(0.26)	(0.25)	(0.25)	(0.24)	(0.24)
Other household goods	0.50	0.50	0.52	0.52	0.56*	0.56*
	(0.34)	(0.34)	(0.34)	(0.34)	(0.31)	(0.31)
Transportation	0.35	0.35	0.44	0.44	0.33	0.33
	(0.39)	(0.39)	(0.38)	(0.38)	(0.44)	(0.44)
Health	–0.05	–0.05	–0.04	–0.04	–0.07	–0.07
	(0.14)	(0.14)	(0.14)	(0.14)	(0.16)	(0.16)
Education	0.02	0.02	0.02	0.02	0.01	0.01
	(0.15)	(0.15)	(0.14)	(0.14)	(0.16)	(0.16)
Recreation	0.23	0.23	0.19	0.19	0.20	0.20
	(0.21)	(0.21)	(0.21)	(0.21)	(0.23)	(0.23)
Gambling	0.07	0.07	0.07	0.07	0.07	0.07
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Double Lasso	✓	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓	✓
Instrument expenditure	✓	✓	✓	✓	✓	✓
Price proxy		✓		✓		✓
Excluding top 1% expenditure			✓	✓		
Excluding migrants					✓	✓
Observations	5,670	5,670	5,608	5,608	5,488	5,488

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. This Table limits the sample to those households who had the same respondent on the consumption module in MxFLS-2 and MxFLS-3. It reports coefficient $\hat{\gamma}^k$ on the quartic of the homicide rate in 100,000 of each equation (7).

Table B28: Effect of Homicides on Who Is Present at the Time of the Interview

	Wife responds, nobody present (1)	Wife responds, spouse present (2)	Husband responds, nobody present (3)	Husband responds, spouse present (4)
$\sqrt[4]{}$ Homicide rate last 12 months	-0.009 (0.023)	-0.004 (0.012)	0.006 (0.008)	-0.006 (0.004)
Intercept	0.441 (0.754)	0.731 (0.549)	-0.744* (0.404)	-0.092 (0.330)
Household controls	✓	✓	✓	✓
Household FE	✓	✓	✓	✓
Outcome mean	0.52	0.10	0.05	0.02
Observations	7,420	7,420	7,420	7,420
adj. R^2	0.04	0.02	0.01	0.00

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level. Column (1) outcome variable is an indicator variable equal to one if the wife responds and nobody else is present at the time of the interview. Column (2) outcome variable is an indicator variable equal to 1 if the wife responds and the spouse is present at the time of the interview. Column (3) outcome variable is an indicator variable equal to one if the husband responds and nobody else is present at the time of the interview. Column (4) outcome variable is an indicator variable equal to 1 if the husband responds and the spouse is present at the time of the interview.

C Intra-Household Bargaining Power

C.1 Intra-Household Decision-Making Power

C.1.1 Exploratory factor analysis

I examine the dimensional structure of the intra-household decision-making questions by conducting exploratory factor analysis (EFA). Given that the decision-making subscales are likely to be correlated, I rotate the axes implementing oblique rotation. Table C1 presents the four factors that emerge from the data with the corresponding factor loadings for each item.

Table C1: Women's Intra-Household Decision-Making Power: Exploratory Factor Analysis

	(1)	(2)	(3)	(4)
	Factor 1	Factor 2	Factor 3	Factor 4
The education of your children	0.79			
Health services and medicine for your children	0.77			
Your children's clothes	0.44			
If you should work or not		0.49		
If you or your spouse/partner use contraceptives		0.42		
Money that is given to your family		0.42		
Money that is given to your spouse/partner's family			0.55	
If your spouse/partner should work or not			0.48	
Large expenditures for the house			0.39	
Your spouses'/partners' clothes			0.27	
Food eaten in the house				0.55
Your clothes				0.55

Notes: 3,440 observations with a non-missing response in every domain used in EFA. Given that the decision-making subscales are likely to be correlated, EFA is implemented rotating the axes with oblique rotation.

C.1.2 Decision-Specific Regressions

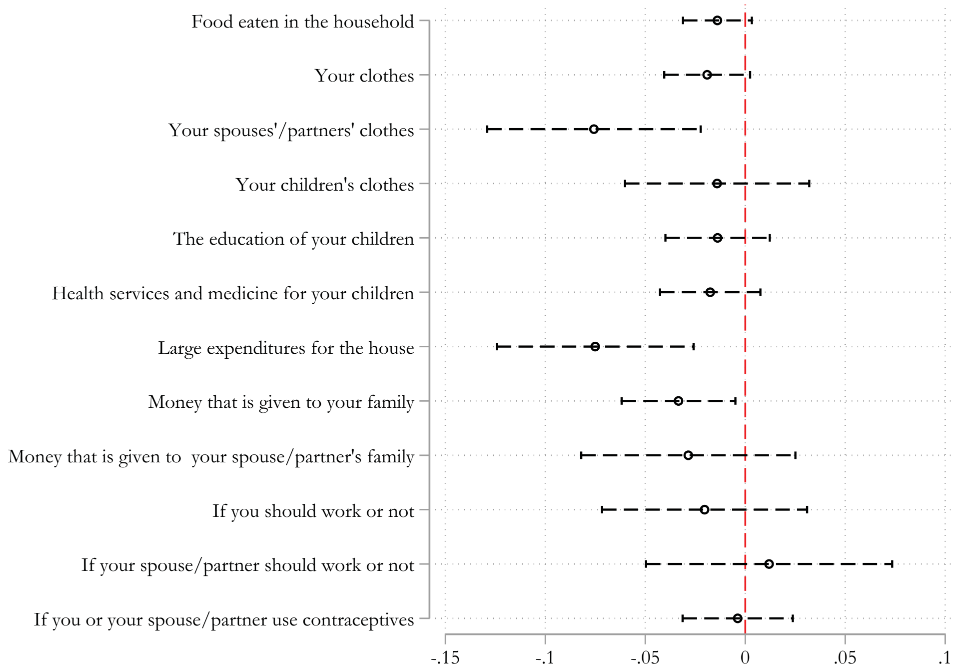


Figure C1: Effect of Homicides on Women's Intra-Household Decision-Making Power: Decision-Specific Regressions

Notes: This figure reports the coefficients $\hat{\gamma}$ on the quartic of the homicide rate in 100,000 of each equation (8) where the dependent variables are binary variables equal to one if the woman reports she has a say on each of the decisions described in the y-axis. 90% confidence intervals are reported. Confidence intervals are constructed with a 90% significance level.

C.1.3 Correlation Analysis

Table C2 shows the different decision-making subscales display a positive and statistically significant correlation among them and that the decision-making subscales and the resource shares structurally estimated in section 5.2 have expected correlations with other variables of women's status such as age, education, and working status. Samewise, the resource shares are statistically correlated with the intra-household decision-making variables.

Table C2: Correlation Matrix Between Women's Status Variables

	(1)	(2)	(3)	(4)	(5)	(6)
	PCA Index	EFA Factor 1	EFA Factor 2	EFA Factor 3	EFA Factor 4	Resource share $\hat{\eta}$
Age	–0.24***	–0.37***	–0.03	–0.04*	–0.01	–0.24***
	(0.00)	(0.00)	(0.19)	(0.05)	(0.79)	(0.00)
Secondary education	0.11***	0.08***	0.06***	0.02	0.03	0.13***
	(0.00)	(0.00)	(0.00)	(0.33)	(0.20)	(0.00)
Worked last week	0.04*	–0.01	0.04*	0.02	–0.02	0.11***
	(0.06)	(0.64)	(0.05)	(0.46)	(0.27)	(0.00)
Self-employed	0.00	–0.00	–0.00	–0.01	–0.01	0.08***
	(1.00)	(0.93)	(0.88)	(0.64)	(0.68)	(0.00)
Wage worker	0.05**	–0.02	0.07***	0.02	–0.01	0.04***
	(0.03)	(0.43)	(0.00)	(0.29)	(0.61)	(0.00)
Resource share $\hat{\eta}$	0.05**	0.07***	0.01	–0.01	0.01	
	(0.03)	(0.00)	(0.55)	(0.73)	(0.66)	
EFA Factor 1	0.76***					
	(0.00)					
EFA Factor 2	0.52***	0.18***				
	(0.00)	(0.00)				
EFA Factor 3	0.55***	0.17***	0.23***			
	(0.00)	(0.00)	(0.00)			
EFA Factor 4	0.45***	0.22***	0.22***	0.01		
	(0.00)	(0.00)	(0.00)	(0.54)		

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

C.2 Resource Shares

In Figure C2, for a hypothetical household with one adult woman and one adult man, I plot the hypothetical budget shares of two different goods against the resource share of the woman. The woman has a stronger preference for good 1 than the man ($\alpha_w^1 > \alpha_m^1, \beta_w^1 = \beta_m^1$), and vice versa for good 2. We can see a range of η exists for which $\eta < 0.5$ and $W_w^1 > W_m^1$, and another for which $\eta > 0.5$ and $W_w^2 < W_m^2$. Therefore, using $\frac{W_w^k}{W_m^k} \gtreqless 1$ to determine $\eta \gtreqless 0.5$ would not be correct unless we assume identical preferences, which highlights the need to estimate the resource shares within a structural setting; see Calvi (2020) for another example.

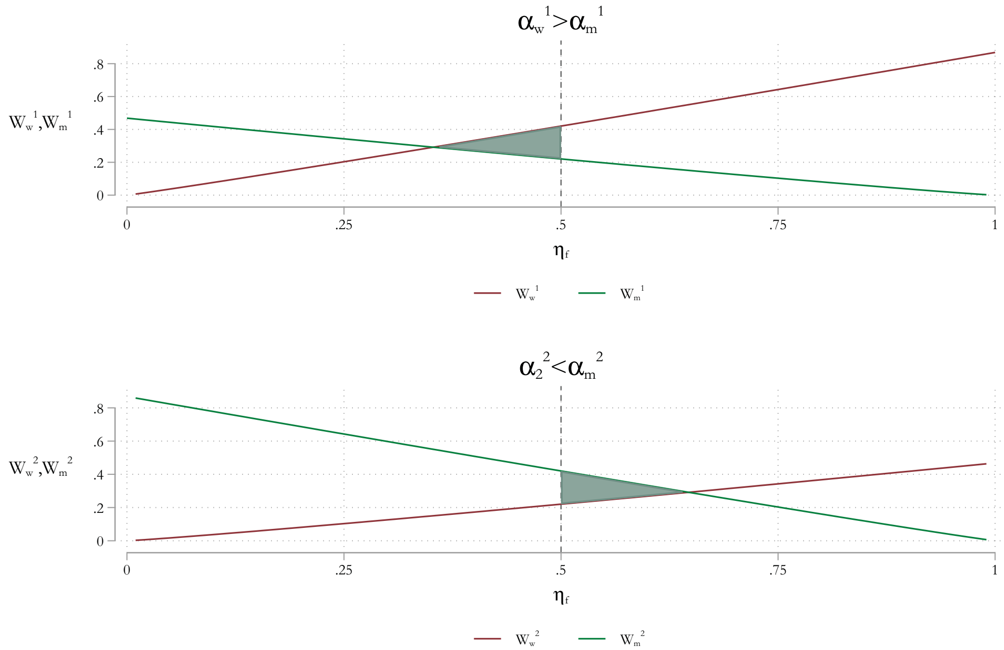


Figure C2: Budget Shares vs. Resource Shares

Notes: This figure, for a hypothetical household with one adult woman and one adult man, plots the hypothetical budget shares of two different goods against the resource share of the woman. The woman has a stronger preference for good 1 than the man ($\alpha_w^1 > \alpha_m^1, \beta_w^1 = \beta_m^1$), and vice versa for good 2. We can see a range of η exists for which $\eta < 0.5$ and $W_w^1 > W_m^1$, and another for which $\eta > 0.5$ and $W_w^2 < W_m^2$. Therefore, using $\frac{W_w^k}{W_m^k} \gtreqless 1$ to determine $\eta \gtreqless 0.5$ would not be correct unless we assume identical preferences.

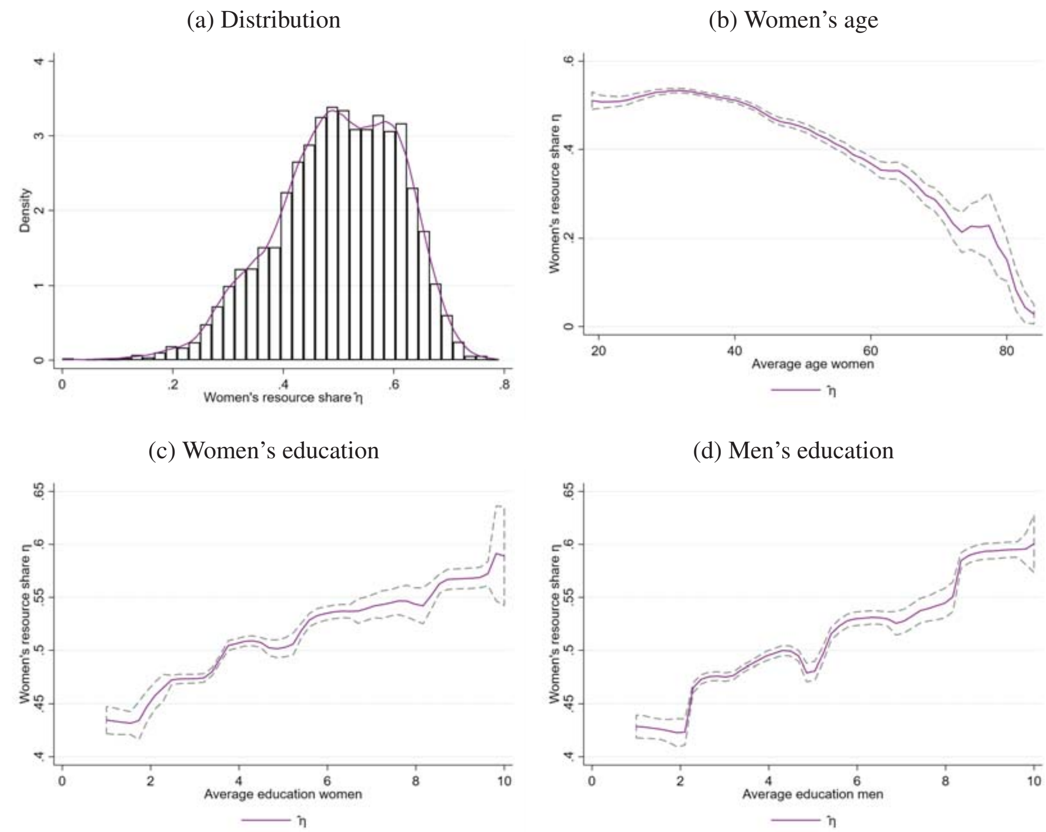


Figure C3: Average Predicted Women's Resource Shares

Notes: This figure plots the average predicted women's resource share. Estimates come from column (3) of Table 5. Figure C3a plots the distribution of the average predicted shares. Figures C3b, C3c, and C3d show women's average resource shares against the average age of adult women in the household, the average education of adult women in the household, and the average education of adult men in the household, respectively. The dashed lines are 95% confidence intervals.

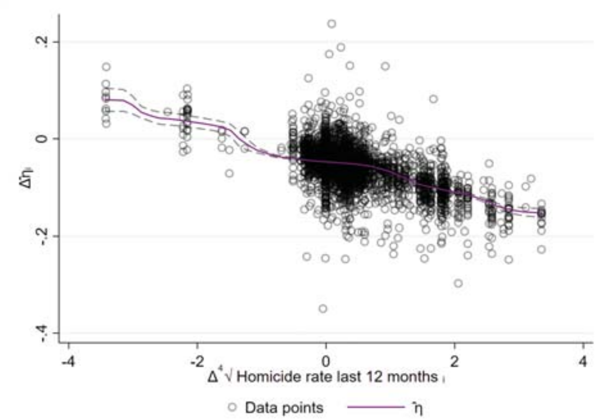


Figure C4: Predicted Changes in Women's Resource Shares vs. Changes in $\sqrt[4]{}$ Homicide Rates

Notes: The figure plots the predicted change in women's resource share within households against the change in the quartic root of the homicide rate in the 12 months prior to the interview for each household between MxFLS-2 and MxFLS-3. The dashed lines are 95% confidence intervals. Estimates come from column (3) of Table 5.

Table C3: Intra-Household Resource Shares: Including Children's Resource Shares

	(1)	(2)
	Women's Resource Share Coefficients	Men's Resource Share Coefficients
$\sqrt[4]{}$ Homicide rate last 12 months	–0.01	0.01
	(0.02)	(0.02)
Rural locality	–0.06**	0.04*
	(0.02)	(0.02)
Avg. education adult women	–0.00	–0.00
	(0.01)	(0.01)
Avg. education adult men	0.01**	–0.02***
	(0.01)	(0.01)
Avg. age adult women	–0.00	–0.00
	(0.01)	(0.01)
Avg. age all women^2	–0.00	0.00
	(0.00)	(0.00)
Avg. age adult men	0.01	–0.01
	(0.00)	(0.01)
Avg. age adult men^2	–0.00*	0.00
	(0.00)	(0.00)
# hh members <=18	0.03***	–0.01
	(0.01)	(0.01)
Central region	0.01	–0.01
	(0.03)	(0.03)
North region	–0.04	0.04
	(0.03)	(0.03)
West region	0.02	–0.02
	(0.03)	(0.03)
MxFLS-3	–0.01	0.01
	(0.02)	(0.02)
Intercept	0.43***	0.55***
	(0.14)	(0.14)
$\beta(.)$	Constant	Constant
Observations	5,763	5,763

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Table C3 reports the nonlinear seemingly unrelated regression estimates of the determinants of $\eta(x_{ijt})$ based on a system of equations of adult women's, adult men's and children's goods. Standard errors, in parentheses, clustered at the municipality level.

C.3 Single Households

Table C4: Descriptive Statistics: Single-Household Characteristics in 2005-2006

	(1) Male head	(2) Female head
Age	59.31	57.43
Secondary education	0.23	0.23
Never married	0.34	0.19
Separated/Divorced	0.22	0.29
Widowed	0.44	0.53
Household size	2.64	3.27
# hh members ≤ 18	0.63	1.14
Observations	337	994

Notes: Columns (1) and (2) report the average characteristic described in each row for male- and female-headed single households in MxFLS-2, respectively.

Table C5: Effect of Homicide Rates on Expenditure Shares: Single-Households

	Male-headed households		Female-headed households		
	All	Remain single	All	Remain single	Married in Between
	(1)	(2)	(3)	(4)	(5)
Food	0.51	1.75	–0.68	0.04	–8.33***
	(1.71)	(1.86)	(1.11)	(1.16)	(2.21)
Drinks and Tob.	0.13	0.22	0.31	0.11	0.95
	(0.66)	(0.72)	(0.35)	(0.40)	(0.69)
Male adult clothing	–0.40	–0.50	0.18	0.11	0.81**
	(0.33)	(0.34)	(0.12)	(0.13)	(0.38)
Female adult clothing	–0.13	–0.23	–0.17	–0.14	0.05
	(0.17)	(0.14)	(0.26)	(0.28)	(0.74)
Children goods	0.09	–0.06	0.01	–0.03	0.44
	(0.18)	(0.14)	(0.13)	(0.15)	(0.50)
Hygiene and care	–0.27	–0.30	0.49	0.35	0.87
	(0.65)	(0.70)	(0.48)	(0.51)	(0.98)
Other household goods	1.01	1.11	–0.08	–0.01	1.17
	(1.10)	(1.10)	(0.82)	(0.79)	(2.25)
Transportation	0.77	0.36	0.70	0.59	3.29**
	(1.05)	(0.98)	(0.63)	(0.66)	(1.62)
Health	–0.15	–0.29	–0.48	–0.69	0.56
	(0.79)	(0.88)	(0.47)	(0.53)	(0.96)
Education	0.34	0.20	0.01	–0.09	0.73*
	(0.26)	(0.17)	(0.22)	(0.29)	(0.38)
Recreation	–1.87	–2.24*	–0.23	–0.19	–0.61
	(1.22)	(1.35)	(0.33)	(0.38)	(1.24)
Gambling	–0.02	–0.02	–0.06	–0.06	0.07
	(0.02)	(0.02)	(0.05)	(0.06)	(0.11)
Household controls	✓	✓	✓	✓	✓
Survey FE	✓	✓	✓	✓	✓
Household FE	✓	✓	✓	✓	✓
Instrument expenditure	✓	✓	✓	✓	✓
Observations	674	572	1,988	1,734	254

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Table C5 reports coefficient $\hat{\gamma}^k$ on the quartic of the homicide rate in 100,000 of each equation (7) of single households. Estimates are based on a control-function approach bootstrapping standard errors (500 replications) clustered at the municipality level. The dependent variables are budget shares of household goods, defined as the expenditure on that good divided by total household expenditure multiplied by 100.

D Discussion

Table D1: Effect of Homicides on Women's Fear of Victimization

	Scared attacked day (1)	Scared attacked night (2)	Feels safer than 5 years ago (3)	Expect attack next year (4)	Frequency go out at night (5)
$\sqrt[4]{}$ Homicide rate last 12 months	0.059	0.087**	-0.083***	0.107*	-0.046*
	(0.037)	(0.040)	(0.028)	(0.056)	(0.027)
Intercept	0.259	1.470	0.243	0.143	1.175
	(1.910)	(1.802)	(1.073)	(2.163)	(1.720)
Household controls	✓	✓	✓	✓	✓
Month and year of interview FE	✓	✓	✓	✓	✓
Individual FE	✓	✓	✓	✓	✓
Observations	5,313	5,313	5,313	4,713	5,315
adj. R^2	0.01	0.01	0.04	0.02	0.01

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level. Columns (1) and 2 outcome variables are responses to 4-point Likert scales on how scared individuals feel of being attacked or assaulted during the day and during the night, respectively. Column (3) outcome variable are responses to 3-point Likert scales on how safer individuals feel compared to five years ago. Column (4) outcome variable are responses to 4-point Likert scales on the likelihood individuals attach to being assaulted or robbed next year. Column (5) outcome variable are responses to 4-point scale on the frequency individuals report going out at night.

Table D2: Effect of Homicides on Men's Fear of Victimization

	Scared attacked day (1)	Scared attacked night (2)	Feels safer than 5 years ago (3)	Expect attack next year (4)	Frequency go out at night (5)
$\sqrt[4]{}$ Homicide rate last 12 months	0.059	0.039	-0.047*	0.079	-0.036
	(0.037)	(0.036)	(0.027)	(0.053)	(0.033)
Intercept	-1.647	-1.796	1.126	-3.170**	5.203***
	(1.674)	(1.758)	(1.569)	(1.237)	(1.477)
Household controls	✓	✓	✓	✓	✓
Month and year of interview FE	✓	✓	✓	✓	✓
Individual FE	✓	✓	✓	✓	✓
Observations	5,247	5,247	5,247	4,752	5,248
adj. R^2	0.03	0.02	0.05	0.02	0.02

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors, in parentheses, are clustered at the municipality level. Columns (1) and 2 outcome variables are responses to 4-point Likert scales on how scared individuals feel of being attacked or assaulted during the day and during the night, respectively. Column (3) outcome variable are responses to 3-point Likert scales on how safer individuals feel compared to five years ago. Column (4) outcome variable are responses to 4-point Likert scales on the likelihood individuals attach to being assaulted or robbed next year. Column (5) outcome variable are responses to 4-point scale on the frequency individuals report going out at night.

Table D3: Effect of Homicide Rates on Expenditure Shares: Heterogeneity Analysis by Fear of Victimization

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	By wife's fear				By husband's fear			
	Food	Adult male clothing	Transportation	N	Food	Adult male clothing	Transportation	N
Greater fear of victimization								
Scared to be attacked during day	–1.64*	0.40**	–0.15	719	–2.51***	0.44*	1.56**	636
	(0.89)	(0.19)	(0.65)		(0.89)	(0.26)	(0.76)	
Scared to be attacked during night	–0.80	0.26	–0.60	737	–2.15**	0.35*	2.10***	643
	(0.84)	(0.19)	(0.67)		(0.95)	(0.19)	(0.76)	
Feeling of unsafety	–0.60	0.22**	0.57	2070	–1.52***	0.26**	0.89**	2074
	(0.56)	(0.10)	(0.37)		(0.57)	(0.12)	(0.43)	
Expect attack next year	–2.93***	0.16	1.25*	687	–1.27	0.33**	1.37	673
	(0.75)	(0.14)	(0.73)		(1.01)	(0.15)	(0.96)	
Same/less fear of victimization								
Scared to be attacked during day	–0.66	0.16	0.75*	1916	–0.68	0.17	0.27	1932
	(0.68)	(0.12)	(0.44)		(0.71)	(0.12)	(0.41)	
Scared to be attacked during night	–0.78	0.21*	0.90**	1898	–0.79	0.19	0.13	1925
	(0.66)	(0.12)	(0.43)		(0.69)	(0.12)	(0.37)	
Feeling of unsafety	–1.98	0.24	0.26	565	1.20	0.02	–0.94	494
	(1.25)	(0.25)	(0.84)		(1.52)	(0.22)	(0.79)	
Expect attack next year	–0.41	0.28*	0.37	1404	–0.93	0.23*	0.30	1433
	(0.68)	(0.17)	(0.55)		(0.62)	(0.13)	(0.45)	

Notes: * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$. Standard errors are clustered at the municipality level. This Table reports coefficient $\hat{\gamma}^k$ on the quartic of the homicide rate in 100,000 of each equation (7) where the dependent variable are the food, adult male clothing, and transportation expenditure shares. Each coefficient is estimated in a separate regression in which the sample is restricted to the categories reported in the left column. Columns (1) to (3) and (5) to (7) display the coefficients of regressions where the subsamples are constructed based on the wife's and husband's change in fear of victimization between MxFLS-2 and MxFLS-3, respectively. For instance, the coefficient on the first row of Column (1) is estimated with the subsample in which the wife reports a higher fear of being attacked during the day in MxFLS-3 than in MxFLS-2. Columns (4) and (8) report the number of observations of the regressions reported in the three previous columns.